STATISTICAL OBSERVATIONS

RELATIVE TO THE

COUNTY

OF

KILKENNY,

MADE

IN THE YEARS 1800 & 1801.

by W Tighe

Παντῶιον γὰς γᾶια μετ' ἀνδρᾶςιν ἶλθον ἄξει,
Ἀενάοις ποταμοῖςι κατάῤῥυτος ἴνθα καὶ ἴνθα.

Dion. Perieg. 1123.

Dublin.

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TO THE

DUBLIN SOCIETY,

THESE OBSERVATIONS,

MADE FOR THEIR CONSIDERATION,

AND UNDER THEIR DIRECTION,

ARE

HUMBLY DEDICATED

BY

THEIR OBEDIENT SERVANT,

WILLIAM TIGHE.

WOODSTOCK, INISTIOGE,
April, 1802.

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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 to its improvement.*

The Society do not deem themselves pledged to any opinion given by the Author; and they desire, that nothing contained in this Survey, be considered as their sentiments:—They have published it only for the comments and observations of all persons, which they entreat may 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 they will meet with the fullest attention in a future edition.

ERRATA.

Page 1, *line* 12, *for* that, *read* than.
3, — *penult*, *read*, according.
4, — 1, *read*, Gowran.
24, — *last*, *read*, beyond.
28, — 10, *insert* it.
54, — 17, for *broad*, read *board*.
ib. — 21, *after* layers, *insert* of.
76, — *last*, *for* received, *read* made.
77, — 13, *read* are.
81, — 16, for *skips*, read *a skip*.
108, — 2, for *Athain*, read *Athair*.
ibid. — 6, for *lugh*, read *luibh*.
123, — *penult*, *for* one, *read* our.
151, — 24, *for* weirs, *read* rivers.
257, *read* Woollen-Grange and Dunbell.
186, — 22, *read* banished.
192, — 22, *read* adapted.
207, — 21, read *scabiosa*.
208, — 5, read *arvense*.
214, — 17, *for* crop, *read* corn.
235, — 9, *after* Reade, *insert* of.
251, — 1, *read* call—*ib. line* 21, *read* barley.
276, — 3, *for* 22, read 23—*and line* 5 *and* 6, *for* 22 and 23, *read* 21 and 22.
283, — 21, *for* in, *read* into.
285, — 23, *for* and oats, *read* or oats.
297, — 1, *read* simple.
303, — 1, *read* adopted.
355, — 4, *for* Castlecomer, *read* Castlewarren.
372, — 21, *read* extend.
382, — 26, *for* young, *read* growing.
389, — 27, *dele* but.
417, — 12, *for* of *read* if.
467, — 6, *read* 179—*ib. line* 7, *for* 155 *read* 164.

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Page 35, *line* 5, *read* Kilfane, *twice*.
37, — 1, *read* County.

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State

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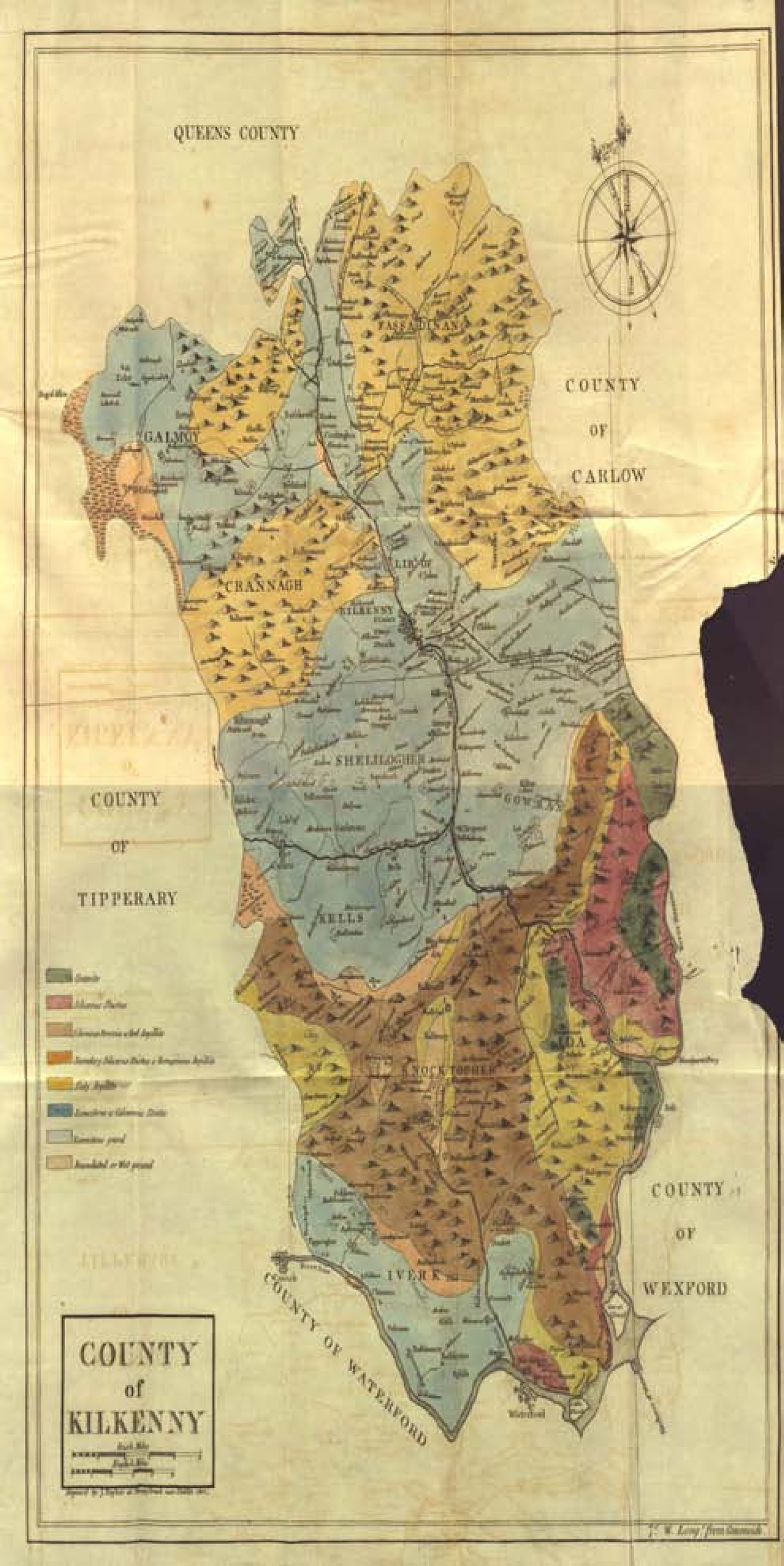
QUEENS COUNTY
COUNTY
OF
CARLOW
GALMOY
CRANNAGH
KILKENNY
SHELILOGHER
COUNTY
OF
TIPPERARY
KELLS
KNOCKTOPHER
IVERK
COUNTY OF WATERFORD
COUNTY
OF
WEXFORD
COUNTY
of
KILKENNY

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STATISTICAL SURVEY

OF THE

COUNTY OF KILKENNY.

PART. I.

GEOLOGICAL STATE AND CIRCUMSTANCES.

SECT. 1. *Situation and Extent.*

THE surface of the county of Kilkenny extends from 52°. 14′. to 52°. 52′. north latitude, and from 6°. 56′. to 7°. 37′. west longitude from Greenwich. Its superficial contents were formerly calculated at 300,350 square plantation acres; but by a survey lately made for the use of the Grand Jury, they are stated at 318,249, which are equal to 510,882 English acres. In this survey, the town of Newbridge, with a small tract adjoining, on the banks of the Barrow, is omitted; so that, if the measurement is in other respects accurate, the county contains some more acres that what are mentioned. The part omitted, belongs to the Barony of Gowran.

The greatest length of this county, from north to south, from the Slewmargy hills to the Suir, is thirty-six Irish miles; and its greatest breadth from east to west, is about nineteen; but in the narrowest part, from the mouth of the river Lingan, which forms its south western boundary to the river Barrow on its eastern side, its breadth, in a direct line, is not above twelve miles; from whence it widens irregularly towards the north.

On the north, the county of Kilkenny is bounded by the Queen's county, from whence it is divided in the lower grounds, by two or three little streams, and in other parts by common fences, except where the Nore, the Oonbeg or Iron-Mills river, and the Donane river form the boundary, each for a small space. On the east it is joined by the county of Carlow, from whence its limits are obscurely marked, over a tract of wild and boggy mountain, until at last they sink into the plain, and run to the Barrow; from hence that river continuing in a course nearly north and south, separates it first from the county of Carlow, and afterwards from the county of Wexford: and at last joins the Suir, which on the southern side divides this county from that of Waterford. On the western side lies the county of Tipperary, separated from it at first by the small and rapid river Lignan, afterwards by ditches not easily traced, through a moist and low plain, until they meet a part of the King's river: to the north of Callan its mearing is formed for several miles by a mountain stream called the Munster river,

ver, from thence to its north west angle, its principal bounds are ditches, part of which run through a branch of the bog of Allen, near Urlingford, which part was styled anciently Mon Ely bog. Its southern and western limits are also those of the province of Leinster, of which this county forms the south west extremity.

Beyond its ancient limits to the north, an insulated portion of the Queen's county, containing with the town of Durrow, 1902 acres, was annexed to this county by act of Parliament, at the instance of the Duke of Ormonde. His object was, to repress the outrages committed by the Fitzpatricks against his tenantry, who when tried in the Queen's county were always acquitted, but when brought to Kilkenny never escaped with impunity. This piece of ground forms part of the barony of Galmoy, and is separated at its south east angle from the county of Kilkenny by a very narrow slip of land.

Sect. 2. *Divisions.*

This county contains nine baronies, besides the county of the city of Kilkenny, and the liberties of the town of Callan. Their several contents in Irish acres, acording to the late survey, are as follows:

Barony of Gorwan,	. . .	64,225 Acres,
——— Fassadinan,	. . .	41,066
——— Galmoy,	. . .	27,315
——— Crannagh,	. . .	31,810
——— Shillelogher,	. . .	17,386
——— Kells,	. . .	23,822
——— Knocktopher,	. .	31,788
——— Iverk,	. . .	24,964
——— Idagh,	. . .	37,310
County of the city of Kilkenny,		14,903
Liberties of Callan,	. . .	3,660
	Total,	318,249

The northern part of Fassadinan, which signifies *the wilderness of the Dinan*, was anciently called the territory of Idough, sometimes written *hy-duach*, and Idagh was formerly divided into three Baronies or districts, Ida or Idagh, Igrim and Ibercon; districts probably denominated from the first Gaëlic tribes by which they were occupied; *ibh* generally written with a single *i*, signifying sept or tribe. The same origin may be attributed to the name of Iverk, and of some other ancient districts.

Baronies are divided into townlands, of which this county has near 800. The Down survey does not contain so many names of lands as exist at present, as they are liable to arbitrary divisions and subdivisions. Townlands are extremely various in size, but many of them here were originally very large, and exceeded 1000 acres.

The

The ecclesiastical division consists of parishes of which this county appears formerly to have contained 147; almost every one of which has still remaining the ruins of its ancient church: besides which there are ruins of other country churches which were not parochial, but merely chapels of ease, and usually dependant upon monasteries; as the church of Sheepstown near Knocktopher, the church of Kilcross near Inistioge, the churches of Ballyphilip, Templegall and Rath, in the parish of Erke, one of which was however probably the parish church. On the surrender of the last abbot of Jerpoint, that abbey was found to be seized in this county of the rectories of Ballylinch, Grangelegan, Dunbell, Grange of Kilree, Bawn alias Blacknow, Woolengrange alias Mollgrange, Blackrath, Grangecloran alias Grangeclovan (now Grange Maccomb) Garran and Grange Moctowne alias Moncktown alias Rathbin; these are still styled rectories and parochial churches in the titles to the union of Burnchurch to which they now belong, and therefore must be reckoned in the list of parishes belonging to this county, though the situations of Bawn, and Moncktown are unknown: in the episcopal registry they are considered as rectories, and pay proxies to the bishop as such. Besides these, the abbey of Jerpoint possessed in this county the rectories, tithes, and alterages of Foraghmore, Shrowleswood, Ballyadullin, and Ardshinnan; places that if they ever constituted parishes, are now no longer heard of as such.

In

In the following list, the parishes are placed according to the baronies to which they more immediately belong; but some further notice will be taken of each parish, when their present ecclesiastical disposition and circumstances come to be considered.

Gowran has the parishes of

1. Rathcool,
2. Kilkyran,
3. Kilderry,
4. Tascoffin,
5. Clara,
6. Blackrath,
7. St. Martins,
8. Dunbell,
9. Blanchfieldstown,
10. Smithstown,
11. Abbey-Jerpoint,
12. Ballylinch,
13. Grangelegan,
14. Woolengrange,
15. West-Jerpoint, or Killarney,
16. Garran,
17. Ballyreddin or Treadingstown,
18. Tulloherin,
19. Kilfane,
20. Dungarvan,
21. Thomastown,
22. Columkill,
23. Tamaghchurch,
24. Brownsbarn,
25. Inistioge,
26. Graigue,
27. Ullard,
28. Powerstown,
29. Grange-Sylvia,
30. Kilmacahill,
31. Shankill,
32. Gowran,

These two parishes

33. Bawn or Blacknow,
34. Moncktown or Rathbin were probably in this barony, but their situations are not known.

Part of the parish of Kilmodum is in this barony.

Fassadinan

Fassadinan has the parishes of

35. Comer,
36. Kilmennan,
37. Kilmocar,
38. Donoghmore,
39. Kilcormick,
40. Coolcraghin,
41. Conahy,
42. Mayne,
43. Jenkinstown,
44. Grange Maccomb, or Grangecloran.
45. Desert,
46. Macullee,
47. Kilmodum,
48. Kilmedimoge,
49. Mothell,
50. Attanna or Rathanna, part of which is in the Queen's county.

Part of Dunmore is in this barony and a small part of Rosconnel, the rest of which belongs to the Queen's county. Of the existence of Conahy as a parish there may be some doubt, though it is considered as such by Sir William Petty.

Galmoy has

51. Erke,
52. Glashare,
53. Fartagh,
54. Rathlogan,
55. Urlingford,
56. Sheffin,
57. Coolcashin,
58. Acharney,
59. Durrow, part of which is in the Queen's county.

Sheffin seems to have been once divided into two parishes, Balleen and Clone.

Crannagh has

60. Cloghmanta,
61. Killrush,
62. Tubbrid-brittain,
63. Killaghy,
64. Kildrinagh,
65. Ballylarkin,
66. Aghour or Freshford,
67. Clontubbrid,
68. Clashicroe,
69. Rathbeagh or Bannagh or Castledough,
70. Ballinamara,
71. Odough or Three Castles,
72. Ballicallen,
73. Tullaroan,
74. Kilmanagh.

Part of Fartagh, part of Killaloe, and part of the parish of Kilcooley, the remainder of which is in Tipperary, and belongs to the diocese of Cashell.

Shillelogher has

75. Kilfera,
76. Grange of Kilree,
77. Burnchurch or Kiltraneen,
78. Outrath,
79. Inchiholohan or Castleinch,
80. Grange,
81. Tullahanbroge or Grove.
82. Earlstown,
83. Dunfert,
84. Aghnamult,
85. Ennisnag,
86. Stamcarty,
87. Tullamain,
88. Killaloe or Graige Awly.

Kells

Kells has

89. Kells,
90. Dunamagin,
91. Killree,
92. Ballaghtobin,
93. Mallardstown,
94. Coulaghmore,
95. Kilmagany,
96. Tullohoght,
97. Killamery,
98. Rosanany.

It may be doubted whether Rosanany was a distinct parish though it has the ruins of a church.

Knocktopher has

99. Church Jerpoint,
100. East or Hill Jerpoint,
101. Knocktopher,
102. Kilkerill or Kilkeel,
103. Killtorkan,
104. Derinhenly or Derrynahinch,
105. Kilneddy or Kilcreddy,
106. Aghaviller,
107. Kilkeasy,
108. Kilbeacon,
109. Killahy,
110. Rosinan.

Part of Listerlin, of Fiddown, of Mancully, and of Abbey Jerpoint.

Iverk has

111. Fiddown,
112. Bewley or Owny,
113. Whitechurch or Templegal,
114. Tibberaghny or Tybrachny,
115. Tubbrid,
116. Mancullee or Muccully,
117. Clonmore,
118. Polcroan or Polcowan,
119. Portnascully,
120. Ballytarsney,
121. Alish,
122. Rathkyran,
123. Aglish or Aglis-Martin,
124. Ullid,
125. Killmacow.

Ida

Idagh has

126. Clonamery,
127. Roer,
128. Desertmoan,
129. Shanbough or Shanbeagh,
130. Rosbercon,
131. Ballygurrin,
132. Kilmacevoge,
133. Rathpatrick,
134. Kilcollin,
135. Listerlin,
136. Killbride,
137. Killcoan,
138. Dunkit or Dunkill,
139. Gaulskill or Kiltogegan.
140. Kilcloheen, or Killcullyheen.

And part of east Jerpoint.

The Liberties of the city of Kilkenny contain the parishes of

141. St. John's,
142. St. Mary's,
143. St. Canice,
144. St. Patrick's,
145. St. Maul's,
146. Dunmore,

It has been doubted whether St. Maul's was a distinct parish.

The Liberties of Callan include the parish of

147. Callan.

Six of these parishes belong to the diocese of Leighlin; Graigue, Ullard, Powerstown, Grange-Sylvia, Kilmacahill and Shankill; and the remainder to the diocese of Ossory.

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The ecclesiastical division and boundaries having no connection with the civil, is a cause of some confusion: but the revenue districts being coincident with neither is a source of greater inconvenience, though they were probably at first arranged to suit some local purpose. No map or survey of the district within the collection of Kilkenny appears to exist: and in the course of last year the proprietors of an illegal still, which was detected in a house belonging to a clergyman, within this county and near the bounds of Carlow, could not be brought to punishment, as both the surveyor of Gowran, and the surveyor of the adjoining district in the county of Carlow, denied that it lay within their respective jurisdictions.

Part of this county pays quit-rent and licences to the collection of Ross, while it pays hearth-money and other taxes to the collection of Kilkenny. The parish of Kilcloheen and the barony of Iverk lie within the collection of Waterford; and Durrow within the collection of Maryborough. The collection of Kilkenny extends to some places in Tipperary, and to some in Wexford.

In ancient times the whole of this county formed part of the kingdom of Ossory. The name of *Uisraigagh* modernized in Ossory is supposed to be expressive of its local situation, being compounded of the Gaëlic words *Uisge* water and *rioghachd* kingdom, as lying between the rivers and extending to their junction. The portion lying between the Nore and Barrow is sometimes excluded from the

the kingdom of Ossory; it was anciently styled *Hy breoghain gabhran*; the southern part of this county was sometimes called *Comar na tri uisge*, the high district of the three waters. The countries of Ely O-Carrol and Hy-carthin, comprized some of the north west portion of this county. The kingdom was sometimes tributary to Leinster, and sometimes to Munster.

Sect. 3. *Climate.*

No accurate observations have been made upon the state of the weather, the variations of climate, or the relative salubrity of this district, in comparison with others: Yet this county seems to possess some advantages in these points which it is just to observe. The general slope of its surface is to the south east, which is the most favourable exposure; that slope which from its northern to its southern limits cannot be less than 500 feet, is sufficient to carry off all superficial water with rapidity, and does so in effect; the river Nore which flows through its centre, falls at the rate of about 13 feet in a mile. The Dinan, and other torrents which join it, have a descent much more precipitate; there is but little bog, marsh or stagnant water in the county; great part of the substratum is limestone, or limestone gravel, brittle shistus, or porous argillite; and in the northern district only, is found for a certain space a retentive clay.

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The vicinity of the ocean renders the climate mild; while the clouds which are driven forward by the western and south western winds, are not arrested here by high mountains, but passing over our low secondary hills, and extended plains, are attracted towards the lofty and primary ranges of rocks which rise on the north east, so that more rain may be supposed to fall in the counties of Wicklow and Dublin: observation confirms this opinion, and experiment might easily prove it.

The crops are generally said to be a week or two earlier, than in the tillage countries to the northward, but more particularly so, when on a limestone bottom. Some districts in this county are earlier than others, as may be seen by the foliation of trees; for instance, the oak in 1801 put out its leaves at Belline in the Barony of Iverk on the 25th of April, while in the same season it only came into leaf in the parish of Inistioge on the 4th of May.

The relative time of the florescence of plants, is a good criterion of comparison both with regard to seasons, and with regard to districts. In 1801 the catkins of the hazle, *Corylus avellana*, began to open at Woodstock on the 9th of January; in 1802 they did not open until the 28th of January upon the same trees. In 1801 the *helleborus hyemalis* blew on the 3d of February, and the *anemone hepatica* on the same day; in 1802 the former did not blow until the 13th of February, and the latter not until the 18th: the first of these was an early, and the second a late season.

Compared

Compared also with those parts of England which lie within the same parrallels, this county may seem to have some advantages; the western or Welsh part is too much chilled by mountains, while the opposite coasts of Norfolk and Suffolk, are low and damp, and the central districts of Leicestershire, and the counties adjoining, are perhaps less mild from their distance to the sea, which, as we have before seen, does not add much to the moisture, while it contributes to the temperature of our situation. At least, with a soil equal, or in general superior to any of those counties, Kilkenny is capable of every agricultural improvement that could succeed in them.

Many persons have supposed, that the general climate of this county has become more uncertain, and less temperate, than it was some years ago; it is said that orchards and gardens were more regular and plentiful in their produce, and that delicate plants withstood the winter better than they do now: there are not however sufficient facts to establish the opinion beyond doubt: myrtles indeed appear to have borne exposure, and to have flourished in the open air of this district better than they do at present: 50 or 60 years ago they were not uncommon in shrubberies, and grew to a large size, and in abundance, at Greenville and other places, at present however there is a beautiful hedge of myrtles growing luxuriantly at Annfield the seat of Mr. Osborne in the barony of Iverk; they are planted in a very high situation, open to

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the south east, a steep hill, and a low wall, protecting them at the back from the north and west: the plants consist of different varieties of the *Myrtus Communis*, all equally healthy. The *Arbutus unedo* thrives well in all sheltered situations, many beautiful specimens of it, ornament, with fruit and flowers, the shrubberies of Mount-Juliet, Ballaghtobin, and other places. There is an *Arbutus* in the garden of the glebe at Kilmacow growing on a small mound, which rises from the ground with four stems, the largest of which measured near the bottom, two feet seven inches in circumference, in April 1801; the branches are vigorous and healthy, and extend over a circuit of thirty yards.

In former times, the convents of this country are said to have had vine-yards; and Ireland is described by Bede as a country "non vinearum expers," and that at a time when the island being full of forests and morasses, the climate must have been both cold and damp: increase of tillage and population ought to have improved its temperature, in the same proportion as they have done in Germany, and North America; and yet grapes will scarcely ripen now in the open air, in good situations: in the summer of 1800, however, some did ripen upon house-walls at Kilfane, and at Westcourt near Callan.

From every account, the climate of the northern parts of Europe appears to have grown more severe than it was formerly; the nearer to the pole, the more sensible has been the change. Von Troil in his Account of Iceland, says, the climate has become

come latterly much colder, and he shews from history, and from the timber found in bogs, that considerable woods existed once, where no firs or pines will now grow, and where the birch scarcely exceeds eight or twelve feet in height: nor will corn now ripen, where it was formerly cultivated with success: he attributes this change to the increase of violent winds, and of the floating ice from Greenland. He observes that the climate of Greenland has also changed, as does the accurate Crantz, who resided there several years, (See I. Crantz, 245.—see also Hearne's Journey, p. 102. note). The Russian discoveries prove the increase of northern ice, and that navigation could go once farther in the frozen ocean than it can at present. Indeed the gradual augmentation of the Arctic ice, is a fact well established; but whether it has much affected the climate of Ireland, may be matter of doubt. Dr. Garnet in his tour through the Highlands of Scotland, observes that "the woody Morven" is now destitute of trees, nor is it possible to raise any of a tolerable size; before 1775, he says, the *Laurus Nobilis*, or bay-tree, grew in Glasgow, but since that time, it has been unable to exist there; something similar has taken place on the western coast of Ireland, where trunks of large trees are found buried, in places where no timber can now be raised. In this district, though the north winds are said to be more severe; and the north east, which blow in spring, more injurious to early blossoms than

than formerly, yet the characteristics of its climate are mildness and temperance.

Sect. 4. *Soil and Surface.*

There is very little ground in the county unfit for tillage; very little that with proper treatment may not be made to produce good grain, or excellent herbage. In taking a general view of the variations of soil, we find the northern part of the barony of Fassadinan consisting chiefly of a moory turf a few inches in depth, lying over a bed of stiff yellow or whitish clay; this is the worst soil in the county, and requires perhaps more attention in its improvement than any other; it is the only ground in the county liable to be injured by surface water; it demands a peculiar mode of draining, and will not suffer the plough to go deep with impunity. But when improved by sinking, into the substratum, ditches, which should be left open, by judiciously burning the surface, and mixing it with lime or limestone gravel, it will produce very fine grass. Some ground in this district has been greatly improved by Mr. Den; he usually lays down his grass lands without a crop of corn, manuring with lime and gravel, and after the first year, manuring them again on the surface: an acre and a half of this ground will fatten a good sized beast between spring and November: he buys some of the best cattle that are sold at the fairs of Kilkenny, Durrow, and

Ballinakill, and sells them at a profit of between four and five pounds a beast. Considering its situation in the wildest and poorest district of this county, Mr. Den's place, which he has called Chatsworth, is highly worthy of admiration, both for its useful and ornamental improvements, and sets forth a pattern for imitation to the neighbourhood.

The southern part of this barony, has in general a light soil, covering an argillaceous shistus; and the northern part of the barony of Gowran is similar in quality, until its hills subside into a rich plain, covered by good loam of various qualities, resting upon limestone. Following the borders of the county, we find, in the parishes of Kilmacahill and Gowran, a deep brownish loam, mixed with stones, producing, when not ill-treated, great crops of wheat, and capable of any tillage; a fine blackish loam appears in some part, sloping gently towards the Barrow. Some of the finest soil in this part, may be found on the sides of the little valley, that runs from Gowran towards that river, passing by Low-Grange. An excellent wheat soil, consisting of a clayey loam, mixed with stones, continues through the lower part of the parish of Powerstown, and through the centre of the parish of Dungarvan, until it is met by the hills which run from Mount-Loftus in a south west direction to the neighbourhood of Thomastown; that is to say, from the Barrow to the Nore. The soil from hence towards the south east, to the junction of these rivers, is truly styled mountainy land; the surface consists of a light stony

stony dry and friable earth, except where it inclines to a black moory, but shallow turf, which it generally does in the higher parts. At first the substratum of this district consists of red argillite, afterwards in the lower parts of argillaceous, and then of siliceous shistus, and lastly of granite, which occupies the higher hills.

The rest of the barony of Gowran, which lies to the east of the Nore, consists, from the neighbourhood of Kilkenny to that of Thomastown, of low hills or gently sloping grounds of a good soil, dry and sometimes deep, but decreasing in quality as it approaches the river. The ground that skirts the western bank of the Nore, below Kilkenny, is of a poorer quality, consisting of an hungry, clayey loam, lying immediately over a bed of limestone: in general the nearer the limestone comes to the surface, the poorer the soil; but this bank of the river, as well as the opposite, seems admirably calculated by nature, to form the best kind of sheep-walks; where they are permitted, they produce close and green herbage, are extremely dry, and tend by nature to produce white clover and wild burnet, but give miserable crops of corn. These grounds seem also perfectly adapted to the cultivation of Saintfoin, which as green food, would be invaluable so near a large city. The lands of Warringstown are among the worst of these farms, yet it is said by persons who remember them many years ago, that before they were broken up for tillage, they were excellent sheep-walks; at present they

exhibit near the banks of the river, a scene of ruins, wretchedness and sterility.

A light soil appears all round Kilkenny, sometimes gravelly, and to the north of the town, inclining even to a sandy gravel, particularly on the eastern bank: on the western appear, a little beyond the town, slaty hills and gravelly bottoms. Following the banks of the Nore towards the north, some good meadow ground is found, formed apparently by the sediment of water in ancient times; some of it consists of deep loam, blackish, seeming to be the product of decayed vegetables, and which affords heavy crops of hay; the only extensive piece of ground, however, of this kind, forms the lands of Inch, on the banks of the river not far from Freshford. As the whole of this piece of ground seems to have been produced by aquatic depositions, it may not be unreasonable to suppose, that the Nore formerly obstructed below by rocks, which its impetuosity has now removed, or before it had worn down its channel to the present level, formed here an expanse of water, or a kind of lake, whose edges may be traced round the flat plain inclining towards Freshford, and into which the streams from that parish formerly ran. The district may have taken its name from this circumstance, as *Achadh-ur*, the old name of Freshford, signifies literally, *Field of water*.

The valley of Freshford forming the northern part of the Barony of Crannagh, has some of the best ground in this district; but constantly varying, as

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it rises up the hills, into a light and gravelly loam. The northern and western parts of Galmoy are chiefly occupied by hills, the higher of which consist of a ferruginous slate, and the lower ones of limestone, which often appears on the surface; the soil though not deep, is of a kind quality and inclined to produce a fine herbage; the *thymus serpyllum*, wild thyme, is fond of the highest parts of these calcareous hills; on their lower parts sometimes grows the *tanacetum vulgare*, common tansey, an evidence of a good soil. The heath grows on the slaty hills only, which may at a distance be immediately distinguished from the others, by the dark hue of that plant; and often where the limestone begins, the heath ends abruptly. From the whitish appearance of the calcareous hills, this district was probably denominated *Geal-Magh, white field*. The country declines into a varied plain, of still better soil, in the parish of Erke, until it is bounded by a branch of the bog of Allen. Passing from hence into the Barony of Crannagh, most, even of the lower grounds, appear very light and poor, though inclined to grass: the centre of this barony is formed of hills, sometimes moory, but always with a slaty subsoil, capable of great improvement, as they are so easily rendered dry. Below them lies a rich and extensive plain, spreading on one side, to the vicinity of Kilkenny, and to the low hills which border the Nore; on the other, to the bounds of the county, extending from Killmanagh to the south of Callan, as far as Coulaghmore, watered

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watered in its southern part by the King's river, and running westward towards Kilmagany and Knocktopher. This district, besides a varied surface and a limestone bottom, has all the gradations between a stiffish, but rich clayey loam, and a light gravel. An argillaceous soil may be considered as predominant, not only in this but in every part of the county. Near Callan and Kells, some of the greatest crops of wheat are produced: a second crop has been sometimes equal to the first, without additional manure, though it is rarely tried.

The hills that bound this plain to the south, have a soil generally dry and kind, or capable of being easily made so, as it is placed on a base of red, porous argillite; this stone sometimes gives the earth a tinge of its peculiar colour. The sides of these hills seem inclined to red clover, and often to the *lathyrus pratensis* or yellow vetch, a sign of a good soil; this grows plentifully in the meadow ground of Ballyhoyle, which is some of the best in this neighbourhood. At the back of these hills lie some veins of a stiff, and yellowish clay, particularly on the lands of Smithstown. High grounds of a similar quality, having a light soil on a slaty bottom, run westward, occupying great part of the barony of Knocktopher, and also to the south-west, forming the northern part of the barony of Iverk. The lower part of this barony has a fertile soil of various depths, which, for the most part, encreases in goodness as it approaches the Suir. In the angle formed by the parish of Portnascully, is some of the richest,

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and deepest ground in the county, and along the river are some embanked, and valuable meadow lands. Part of the adjoining barony of Ida has also excellent ground in the parishes of Gaulskill and Dunkitt; that is to say, as far as it is accompanied by a limestone bottom: in part of the demesne of Mr. Boyce at Bishopshall, in the former parish, the vegetable earth exceeds two feet it depth, between which and the limestone rock, there intervenes a stratum of clayey gravel; and immediately above the limestone a thin layer of black vegetable mould often appears, which runs into the fissures of the rock; which the rain waters perhaps, having washed through the intermediate bed, have deposited there. The remainder of the barony of Ida consists in general of low and slaty hills covered by a light and dry soil, rarely moory, producing good crops of oats, and as the surface has a large proportion of argill, it is peculiarly productive after any calcareous manure.

Sect. 5. *Minerals.*

As the soil of this county is seldom much raised above the rock that forms its basis, it is not very difficult to trace the various stony substrata, which often appear near the surface; and by their position seem to shew the successive order in which they were deposited by the operations of nature. That order

order in this district seems to have been, granite, siliceous shistus, siliceous breccia, varieties of argillite, some sand-stone, and lastly limestone.

Granite. The granite hills which form a very small part of this county, are the termination of a chain of mountains, which taking their rise in the county of Wicklow, and passing through part of Carlow, include in their evident, but interrupted range, the primary rocks of Mount Leinster and Blackstairs, and lastly those of Brandon; after which they subside into low and secondary hills, that run to connect themselves to the southward with the mountains of Waterford. From the western extremity of these last mountains, commences another parallel chain of primitive rocks taking a north east direction through Tipperary, and terminating near the bog of Allen, including a wide plain; of which the County of Kilkenny occupies but a part.

Granite occupies a portion of this county which lies chiefly between the Nore and the Barrow; it forms the immediate base of part of the parish of Roer, of the greater part of the parish of Graigue, the entire of Ullard, and the eastern side of Powerstown. In this district, between the two rivers, and not far above their junction, rises the mountain of Brandon; its elevation is not very considerable, and is inferior to that of Mount Leinster; its summit however commands a grand prospect, comprehending great part of the course of the two rivers beneath, the entrance of the harbour of Waterford, the small islands of the Saltees, and the sea beyound. This

hill

hill wherever there is soil for plants is covered to its top with heath, in some parts it inclines to bog, from whence a few springs arise, which joining into streams, cut the lower sides of the mountain in deep gullies. Great part of the top is covered with large and loose fragments of granite; and where the rock itself appears, it exhibits fissures nearly horizontal, dividing the stone into beds of two or three feet in thickness, which are again intersected by other fissures nearly perpendicular: but very little of the solid rock appears. No Alpine plants occupy its summit which shews its height to be inconsiderable. This mountain, like most hills in this county, is steep and abrupt on the eastern and north eastern sides, and slopes much more gently to the other points.

The stone which usually joins the granite, appearing to be imposed upon it, is siliceous shistus, and lower down occurs argillaceous slate; on the surface of the lower grounds, are found not only broken pieces of granite, but of quartz, of which there is no rock in this neighbourhood; large boulders of that stone often lie on the surface; they are sometimes pure white, sometimes streaked with red, sometimes inclosing yellow mica, in small masses, or coarsely disseminated, often containing crystals, and appearing in some smaller pieces, to incline into an opake but imperfect jasper.

The Barrow flows between rocks, and upon a bed of granite, beneath Brandon, and above Graigue; in all the higher part of the granite district, the rock often appears above the surface; besides

sides which the face of the earth to the north of Graigue, is every where strewed with great masses of granite, unless where they have been removed with excessive labour for the purposes of agriculture; in which case, it is generally necessary to blast them; dry walls are made of the stones that once covered the field; a good deal of ground however still remains in its original state; the roads near Graigue are mostly paved with granite.

In this district are occasionally found a few beds of marle and limestone gravel, that have been deposited in the lower parts; a large quantity of the latter is found on the other side of the Barrow opposite to Graigue, and some though very little, near the foot of Brandon. On the farm of Miss Doyle, which lies at no great distance, marle of a very good quality was discovered by Donald Stewart some years ago, of which no use whatever has been made as yet.

The granite varies in shades of grey, red and yellow, and in the fineness of its grain, though none of it is very coarse. The best is raised in a quarry at Mount-Loftus, which is a beautiful stone of a light yellow cast, fine grained and compact; the quartz and feldspar are nearly in equal proportions, and uniformly intermixed, accompanied by white mica; black mica is also found in it, together with specks of iron ore, as well as crystals of schörl, which are sometimes in small masses. This stone can be raised in blocks of a very large size, and may to be chiselled into any form. It is mostly used

used in single stones for gate posts, nor can there be any kind handsomer or more durable, nor at the same time cheaper; a pair of gate posts costing lately but one guinea. This granite cannot be seen any where to better advantage than in the porch lately erected by Mr. Power at Kilfane, which consists of four pillars, each a single block, surmounted by a freize, in the execution of which the delicate mouldings are as well expressed as they could have been in any other stone.

Below Inistioge, on the western side of the Nore, part of the hills are composed of granite, which ends near Tullagher; these hills are mostly covered by large detached boulders; the stone is even grained and whitish. Where the rock itself is seen, it appears divided by fissures almost horizontal, two, three and four feet asunder, the beds inclining a little to the south west, and on the side of the hill, often broken into the appearance of steps. On the summit of one of these hills the most numerous fissures run in a direction nearly north west and south east, intersected by others at right angles, the surface has usually a thin heathy sod, mixed with broken fragments of the rock, in which, as in other exposed parts, the feldspar is partly decomposed. At some distance from the summit, the shistus rock is closely applied to the granite; it is a dark coloured siliceous shistus interspersed with mica, and with quartz, the lamellæ are often undulated, or perpendicular; and the whole is irregularly cracked. Lower down

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is a loose shingly soil, with fragments of the higher rocks on its surface. On this hill grows the *Lycopodium clavatum*, club-moss, and the *Lycopodium alpinum*, which is not so common. A superstitious respect is paid to these plants by the common people, who sometimes carry them as a charm, as well as the *Lycopodium selago*, which is found in moist grounds below; this is particularly called in Irish *smarogh gulliogh*, and also *Ladies shamrock*; is remarkable that the Lycopodium is a plant esteemed sacred in India, and introduced there in Phallic mysteries. See notes on Delille's L'homme des champs, p. 232, who says it is regarded in the Indies as an excellent aphrodisiac.

On the lower part of these hills, the yellow mica is sometimes found by itself in large masses; a kind of bed of it appears at Inistioge. The detached stones which form the surface of the hills are worked up for common uses, and are called *fire-stones*, being used chiefly for hearths; they are also formed into troughs, window stools, and applied to various purposes.

Granite appears again in the barony of Ida, forming a hill which runs in a north east direction, through part of the parishes of Kilmacevoge and Kilcollin, towards the Nore.

Near the northern extremity of the granite district, Sir Edward Loftus, has discovered in his demesne, pieces of a very fine deep red and compact Jasper, of various sizes; the largest ten or twelve inches in length, and about half as broad. The

pieces

pieces are generally obtusely angular, and more square at one end than the other; they are found a few feet below the surface, imbedded in yellow clay, in the northern declivity of a granite hill. Some of this jasper contains, though rarely, a few brilliant particles. At the foot of this hill, and here only, does the limestone approach close to the granite. Gneiss sometimes adjoins it; specimens of which containing schörl crystals one-third of an inch diameter, have been found near Mount-Loftus.

Siliceous shistus. This stone is of a blackish colour, sometimes containing veins of quartz, when broken has a shivery texture, and thin lamellæ, and is hard enough to scratch glass. This description seems necessary, as other shistose stones containing a large proportion of *silex* might be called by the same name. This stone generally appears in contact with granite, reposing upon it; the base of Brandon, on the side of the Barrow, and the hill running thence to Graigue, is composed of it; it often contains mica, and varies into a micaceous shistus. The north west side of Brandon is also covered by a hill of siliceous shistus, with argillite at the bottom, in which are very coarse ochres of different colours; the base of several hills uncovered by the Barrow, the Nore, and the Suir, appear composed of this stone: between Inistioge and Ross, it is quarried out of the steep banks of the river for building; the town of Ross is mostly constructed of it: in a good quarry three men can raise a boat load, containing eleven ton, in a day; in other places, according

according to the difficulty, more men are required: a boat load costs 7*s.* or 8*s.* 8*d.*; and in some places 13*d.* is paid for the liberty of quarrying such a freight. The dip of these quarries on the west bank of the Nore, is towards the river, or to the east, which renders them very easy to be worked. On the other side of the river, as they incline from it, no stones are raised: it is not a good building stone, being apt to settle and requiring much mortar.

Martial pyrites frequently lies between the beds of this stone; the strata are also intersected at various angles, by broad veins of quartz, which often appears on the surface in a cellular state: iron ochre occurs in it, and it is much tinged by iron. A few sparks of copper are sometimes perceived, but no vein has ever been discovered. A small quantity of fine grained galena has been found in it, in detached fragments.

As metallic veins might be expected in this district, one attempt was made on the banks of the Nore between Ross and Inistioge, on the lands of Ballinakill, for the purpose of searching for copper ore: two shafts were sunk many years ago, as it is said, by persons from the county of Wicklow, but without success: the rock through which they sunk, is extremely hard, and about the mouth of the pits is now to be seen a quantity of brown blende, and among the adjoining shistus is much martial pyrites.

Below Ross, the siliceous shistus accompanies the banks of the Nore, together with argillite: at

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the foot of the great hill of Drumgowny, it is washed by the river and forms its bed; and the siliceous pudding-stone or breccia which forms the upper part of the hill seems to rest upon it. The same thing occurs near the bridge of Waterford, where a great quarry of siliceous shistus is laid open, whose strata are mostly perpendicular, but divided into great beds, dipping towards the west and north-west. The upper part of the hill almost immediately over it, is composed of siliceous breccia, dipping north west with perpendicular fissures; the surface of the hill is covered with detached masses of this last stone.

Siliceous breccia forms many of the lower hills of this county; it consists principally of fine quartz sand united by a siliceous cement, and enveloping rounded pebbles of quartz, which have often a reddish tinge, and are from the size of a pea, to two or three inches diameter; it also incloses pieces of fieldspar, and sometimes even pieces of compact red argillite: it seems to be one of the stones styled by Mr. Kirwan *semiprotolites*, from their supposed period of formation. It may be observed, that where its base can be discovered, it appears to lie upon siliceous shistus, which latter stone never rises above it: it constitutes the principal part of many hills, which are low in comparison of those formed by granite.

Hills of this kind run in a direction east and west from Sliegh-na-man in the County of Tipperary towards

towards Knocktopher, and spread to the south east, occupying the northern part of the barony of Iverk. This stone is constantly accompanied by a *red argillite*, which covers the sides of the hills, but scarce ever the summits; and appears to have been deposited upon the breccia: the strata of the argillite follow the inclination of the sides of the hill, while those of the breccia are usually horizontal. The argillite is often of a shingly texture towards the surface, and contains a large quantity of mica; from its appearance it is sometimes called *red slate*; the lower strata are thicker, more compact and less micaceous. This stone appears in greater quantity on the northern than on the opposite side of these hills.

On the top of the hill above Castle-Morres called the King's mountain, these stones form four great ridges which run nearly north and south; the eastern ridge which is somewhat lower than the others, is composed of red argillite, and the rest of breccia; of these latter the strata are nearly horizontal, and the edges have a very broken and worn appearance. From the summit of this hill is an extensive view over a rich and cultivated plain, towards Kells and Kilkenny.

Beyond Knocktopher these hills are met by other ranges of the same description, which run generally from north to south: the Nore flows between them below Thomastown, near Brownsbarn; the strata of breccia on the summit of Carrick-morne above

above Brownsbarn, dip a little to the north west. These hills continue as far northward, inclining to the east, as the parish of Powerstown, where they end in a sharp angle, near the granite. On the lower part of these hills towards Thomastown, are found detached masses of an imperfect jasper, or kind of hornstone, inclining to jasper. Limestone gravel approaches to the bottom of these hills in some places; close to Thomastown is a fine quarry of light-coloured compact siliceous shistus, which is raised in large flags; this stone extends about a quarter of a mile from the river, until it meets the limestone gravel; on the other side of the Nore it appears again, beneath beds of red argillite; and the two stones are used indiscriminately for building.

The hills of Breccia run southward from the Nore, forming the rocks of Glanpipe, which are covered by bog; and joining the hills above Knocktopher, they spread towards the south and south east; they approach Waterford, and extend to the banks of the river below Ross. The great hill of Drumdowny forms the extremity of the principal range, which occupying part of Idagh, runs through the parish of Rathpatrick, and is bounded by the Ross river; as the stone is here of a fine grain, and conveniently situated, it is worked for mill-stones.

On the top of the hill of Drumdowny there are about 300 acres inclosed by a dry stone wall which are appropriated to the purpose of quarrying these stones; there is a constant demand for them, and

formerly they were exported from hence to England, but a duty having been laid there on their importation, of 40*s.* a pair, the trade has ceased. They are sent however coastways to Cork, Dublin, and other Irish ports. Ten guineas was lately the price of the largest pair of mill-stones, but 11 or 12 guineas are now sometimes demanded; the workmen employed receive six guineas for a pair; an able and successful stone-cutter can sometimes finish a single stone in a week, but as the stone chosen, sometimes fails by flaws which cannot be perceived until it is worked, and must be abandoned when half finished, the profit to the labourers is uncertain. The dimensions of some of the largest are five feet diameter and sixteen inches in the eye. Smaller ones, which are called *horse mill-stones* are about three feet eight inches diameter and thirteen inches thick in the eye, and they are sold for half the price of the others. The stones are near the surface, or appear above it; a cavity is formed round the piece fixed upon, which is chiselled in its original situation, and when finished is rolled down the hill, by means of a pole passed through the eye, and directed by ropes, where it is shipped with ease into the vessel which is ready to receive it. This inclosure feeds about 200 sheep for a part of the year, but the rent is paid by the quarry.

A similar but lower hill extends to the south of Drumdowny, forming the south east angle of the county, from whence is a magnificent prospect of the banks of the Suir, and the harbour of Waterford.

Besides

Besides the red argillite which always attends this stone, it is sometimes accompanied by a fine grained white sandstone, a kind of *grit* or *freestone* as it is called in the country, consisting principally of quartz sand with a siliceous cement. Near Kilmagany are quarries of this kind, from whence stones have been raised to floor part of the cathedral of Waterford; but more quarries occur on the south side of these hills, from whence the inhabitants of Iverk obtain handsome freestones, and the farmers sometimes build very neat cut stone chimnies of them. Mr. Peter Walsh of Belline has used it in building a very excellent house, to which he is about to add wings faced by the same materials. The stones to be used are previously very neatly squared; they are easily worked, and have no defect, except that they cannot be raised in blocks sufficiently large; the strata are very thin, seldom exceeding ten inches. Stone of the same sort, more or less fine, is found in the side of the hills east of Knocktopher, and in the hills of Coulagh south of Callan: some of this stone has been used in the house of Castletown, particularly in the wings. It also answers very well in making roads. Besides this stone at Coulagh is siliceous shistus, capable of being raised for flags and sometimes used.

Slaty argillite often forms the lower parts of these hills, or is found at the bottom of them: a large portion of the barony of Idagh has this stone for its basis, and part of Knocktopher; it varies from reddish brown to shades of a greenish or bluish hue, and more

frequently to a yellowish colour; but it no where makes good slates in this part of the county, though it is used as such in some places, particularly below Rosbercon.

But in the other side of the county, in the parish of Tullohoght near Kilmac-oliver, is an extensive quarry of excellent slates, which are in demand not only in this but in the adjoining counties. The quarry lies in the southern extremity of the barony of Kells, from whence hills of argillite run in a north east direction, terminating near the bog of Brownstown, and in that part they are accompanied by some shistose horn-stone and Gneiss: these hills occupy the northern angle of Iverk, and some of the adjoining part of Knocktopher. The price of slates at the quarry is from 11*s.* 4½*d.* to 12*s.* 6*d.* per thousand, but there are some raised of a superior quality, scarce exceeded by any slates in colour and lightness, and which bear an advanced price of about 3*s.* per thousand.

The northern part of this county, including almost the whole of Fassadinan, and the upper part of Gowran, consists either of a *ferruginous argillite*, sometimes accompanied by a siliciferous argillite, and by a siliciferous limestone;* or of *siliceous shistus*, which varies it into argillite, and is more or less micaceous. These latter stones generally occupy the edges of this district, where they are raised in several quarries for the purpose of flags; while the other strata form in the interior part, the covering of collieries, which extend into the Queen's county.

* See page 60.

county. In the north west of Fassadinan, are hills of quartzy sandstone and siliceous shistus.

Ferruginous argillite is always found above the coal, and is therefore sometimes called *coal-covers*; but its presence does not seem necessarily to indicate coal. It consists of a brittle blackish slate impregnated with iron ochre, and more or less inlaid with nodules of iron ore, varying very much both in size and quality. This slate in the colliery district, sometimes appears close to the surface, forming extensive hills, and sometimes covered at various depths by a siliceous shistus, varying into a siliciferous limestone. These latter stones have usually a greenish grey colour, and are called *green rock*; beneath which is found the *black slate*, and beneath that coal.

The black slate extends from the collieries to the south and to the west: it forms the banks of the Dinan almost to its confluence with the Nore, and appears on the opposite bank of that river in the hill of Barnyglissane. Here the nodules of iron ore appear of a very great size, from two to three feet diameter, but of an inferior quality; the same stone forms some lower hills which run towards the river, between that and Kilkenny, and in which the nodules of compact argillaceous iron ore, are sought for under the name of *honestones*, and are particularly used in polishing the Kilkenny marble; they are also used as hones, for all other purposes. The lower grounds near the river, are here covered by limestone gravel.

From

From the river these hills of ferruginous argillite extend in a south west direction, through the barony of Crannagh, until they join the Sleighvardagh hills in Tipperary, which are full of collieries beneath a similar slate. This connecting range has its southern boundary, not very far from Kilkenny, and crossing the parish of Ballycallen near its centre, runs through the northern part of Kilmanagh: its northern boundary begins near Three Castles, crosses the parish of Clashicroe a little above the glebe house, takes in a small part of the parish of Freshford, the southern extremity of Ballylarkin, and turning to the south west, through part of Killaghy, runs out of the county, in the parish of Kilcooley: these hills are more steep and abrupt on the northern, than the southern side. Within this district, attempts have been made to discover coals, but without success; if proprietors did not find it within twenty or thirty yards of the surface, they gave up all farther search; nor was the search ever made by skilful, and experienced miners.

In different parts, and on both sides of these hills are indications of coal, as at Adamstown in the northern part, where smut appears on the surface, and at Ballyquidehy in the southern, where black slate containing pyrites has been raised, but pits have been sunk near Uppercourt, at Ballybea, at Knocknamona and other places without success. One attempt however, lately made in the parish of Ballycallen is worthy of being mentioned as it seemed to promise well. A common labourer on the lands of Ballyfrunke

Ballyfrunke near Ballevan, sunk two pits about three years ago at his own expence, that is to say, by his own labour and the assistance of a neighbour. The pits were thirty seven yards deep, from whence some culm was raised, and as they say some solid coal; the incumbent strata, were black slate, with some pyrites. The undertaker having ascertained to his own satisfaction the existence of a colliery, caused information to be sent of it to the proprietor of the soil, who is an absentee, but no answer was ever returned, nor any notice taken of the attempt. The man not being able to create machinery or work the mine any further by himself, was obliged by his neighbours to fill up the pits again, lest their cattle should fall into them. The slate raised from these pits, was all of one quality, blackish and brittle, with some nodules of iron ore, and martial pyrites; the *green rock* accompanies these hills as in Fassadinan.

The higher hills in the northern part of Galmoy, are formed of similar strata; they occupy the parish of Glashare, part of Fartagh, of Coolcashin, Balleen and Acharney; running into the Queen's county, and ending on one side about half a mile from Durrow. The spa of Ballyspellan rises in the south west extremity of this district; and on the high hills to the east of it, in the parish of Coolcashin, are some deep pits and large excavations, that seem to have been made in former times for raising iron ore; there is no tradition of their use at present: except in the similarity of strata with the hills last mentioned

mentioned, this district gives no indications of coal; and though it probably exists in the barony of Crannagh, yet in so narrow a tract of country, which seems only to be a connecting link between the Castlecomer and the Tipperary collieries, the mines when found may probably be neither extensive nor worth working. Good coals have not yet been raised near the confines of these strata, in this county, but only at a good distance from them, and where the hills were not too abrupt, but accompanied by gently sloping plains.

Unfortunately, if coal exists in these districts, it no where runs out to the surface; which, had it been at the usual depth it is in Fassadinan, it probably would, in so hilly a tract; but if the coals of Castlecomer and Feroda, the only ones now worked in this county, had not run out at particular places, it is likely those collieries would never have been opened.

The north of Galmoy resembles the colliery district, in having quarries of flags near its boundaries; these flags which consist of a siliciferous shistose argillite, containing mica, skirt both here and on the other side of the Nore, the hills of ferruginous argillite: quarries of these are worked in Galmoy, at Lisdowny, and at Ballyring; at the latter place, they are sold at about two pence halfpenny per foot.

On the other side of the Nore, a flag quarry is worked at Conahy; the flags here, as in most of the other quarries, are often separated by a thin bed of clay, which in this place seems to contain a little sulphuric

sulphuric acid; it sometimes appears to be a good, but coarse potters clay. The surfaces of the flags are usually tinged by iron. At Conahy some thin flags are raised, which are used for slating; for flooring they are sold undressed at about 6*d*. a small load. The best are sold dressed at 6½*d*. a foot: those that are raised for slating will cost about 4*s*. 10½*d*. for a load of seven and an half cwt.: they are used for hearths and other purposes.

But the principal flag quarries are on the other side of these hills at Kellymount and at Shankill, at the former place, the quarry begins at ten or twelve feet from the surface, and is worked to a depth of about forty feet; about six feet lower is said by the workmen to be found a soft slaty rock. The strata dip towards the south, and are of various thickness; the quarry employs constantly about sixteen men, twelve at 10*d*. and four squarers at 1*s*. per day; it is rented for 30 guineas a year: some of the best flags are sold at 18*d*. a yard and those for heath stones for 2*s*. the price for drawing a load, from hence to the Barrow, about three miles is 15*d*.

The quarry of Shankill is on the other side of the same hill; it employs about the same number of men, but they usually work by the piece; formerly at 3*d*. a yard, and now sometimes at 4*d*.; the workmen can make from 1*s*. to 16*d*. a day. A bed of hard rock or compact siliceous shistus, occurs in the quarry, which is thrown out and used for building: a load to the Barrow costs from 13*d*. to 15*d*. draft: the quarry is rented for 30*l*. A pump is necessary

necessary to drain the water out of this great excavation. The flags raised are sent by the Barrow navigation to Dublin, to Waterford and other places. In Dublin they go under the denomination of Carlow flags. All the hills running from hence to Old Leighlin, consist of quarries of a similar nature, varying in goodness: near Old Leighlin are many old flag quarries no longer worked. In the other direction the hills extending towards Kilkenny contain flags, whence some stones are raised, which in general differ from those of Shankill, in being of a harder texture, containing more silex, and having their surfaces uneven or *blistered*. These flags can be raised of a very great size, and like others they are coloured on the outside by iron ochre; the hollows on their surface render them less fit for flooring, but from their hardness they are to be preferred for all works in the open air, as they are not injured by the weather, like softer flags: they make good tops to corn stands. Mr. Robertson of Kilkenny, the architect employed to build the new county jail, proposes to cover it with these flags, as the most solid, durable and secure protection for such a building, over an arched roof of stone.

It may be observed of the stones of these hills in general, that they vary from argillaceous to siliceous shistus, and often contain a good proportion of mica. The different flag quarries all occurring near the bounds of this natural district and on the sides of similar and low hills, which incline more to a north and south direction than to any other, appear

pear as far as can be judged by the eye, to be placed nearly on the same level.

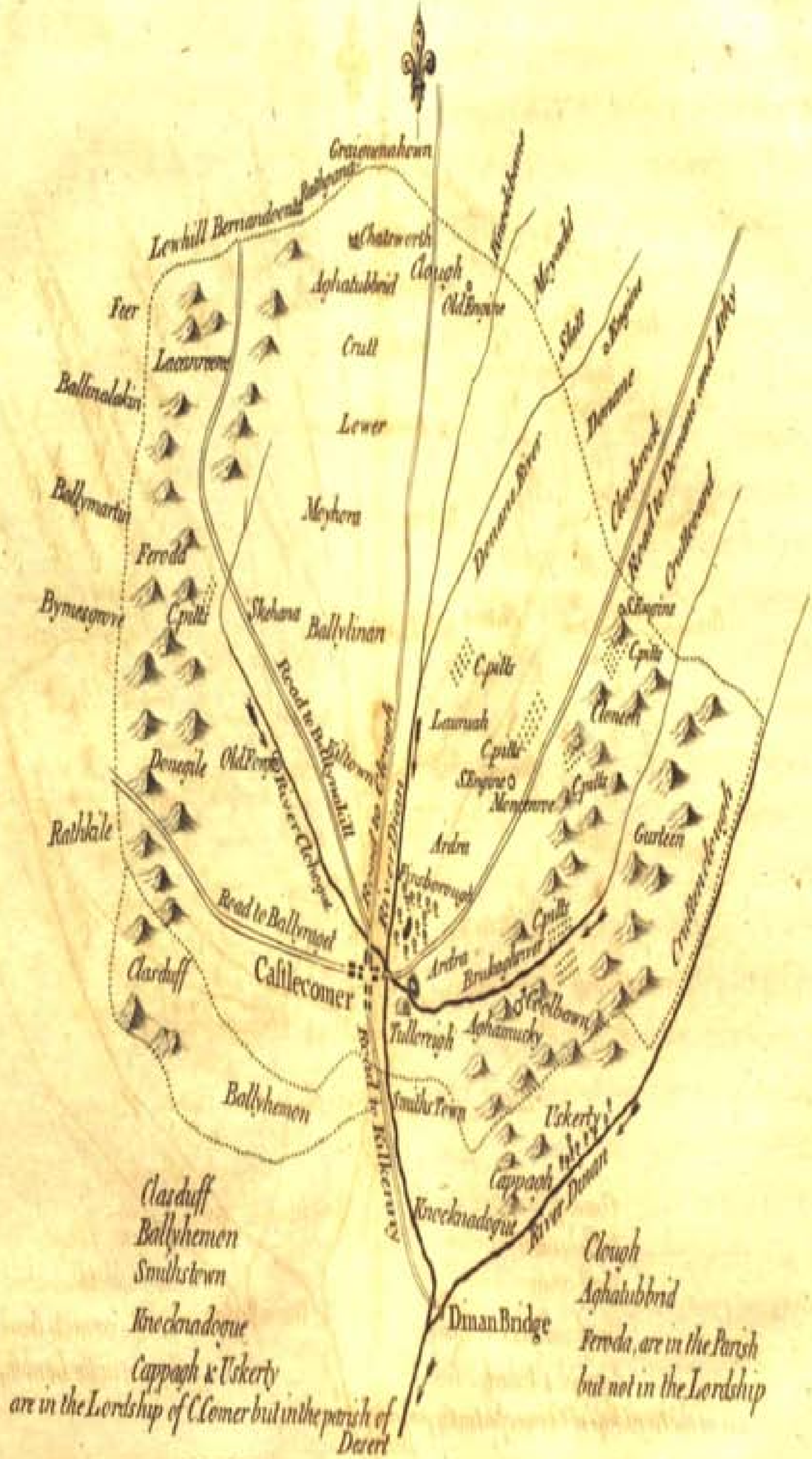
Collieries. The collieries of Castlecomer have been worked for about a century. Boate in his Natural History of Ireland, (Dublin 1726), takes notice of their first discovery; speaking of the probability of meeting with coals in this country, he says, "Already one coal mine has been found in Ireland, a few years since, by mere hazard, and without having been sought for; in an iron mine belonging to Mr. Christopher Wandesford, after having raised the ore from it for a great while, they came at last to coal, so as ever since all the people dwelling in those parts have used it for their firing, finding it very cheap; for the load of an Irish car drawn by one garron, did stand them, besides the charges of bringing it in, nine pence only, three pence to the digger and six pence to the owner." This then was the original price of coal in this district, about three halfpence per cwt. as the car could take about six cwt.

Boate observes that "there are coals enough in this mine to furnish a whole country, nevertheless there is no use made of them farther than among the neighbouring inhabitants, because the mine being situated far from rivers, the transportation is too chargeable by land: these coals are very heavy, and burn with little flame, but lye like charcoal and continue so for the space of seven or eight hours, casting a very great and violent heat." "In the place where the mine standeth do lye little smiths coals above

above the ground dispersed every where in great quantity, from whence the smiths dwelling in the parts round about did use to come and fetch them even before the mine was discovered." And yet though the coals were so apparent, the original Irish proprietors never attempted to raise them; in a few places indeed, where the beds run out to the surface, they occasionally dug them out, or as it is called, *butted* them: butting is an offence sometimes practiced even now, and punished at the collieries.

The sept of the Brennans, a branch of the Fitzpatricks, and who are supposed to have taken their name from, or to have given name to the district called *hy Breoghan*, were the former proprietors of that part of the territory of Idough, erected by Charles I. into the Lordship of Castlecomer, and comprising above 13,400 acres. During the administration of Lord Strafford in Ireland, Sir Christopher Wandesford purchased this territory from the Brennans; and the quartering a few soldiers here to protect the possession, was one of the facts alleged in the articles of impeachment against that nobleman. The last representative of that branch of the Brennans, who were the ancient proprietors, died in a reduced condition about six or seven years ago, and what is remarkable, he constituted, by his will, the present Countess of Ormonde his sole heir.

The father of the late Lord Wandesford was the first person who worked the collieries to any profit. The first pits were made near the town of Castlecomer; to prevent theft, Lord Wandesford inclosed a part



PARISH and LORDSHIP of CASTLECOMER

J. Taylor Sculp!

a part of the colliery, of about forty acres, with a high wall, but the mine within the place enclosed turned out badly. It has always been very difficult to prevent theft of various descriptions. The coals would be stolen from the mouths of the pits if not closely watched, and even the watchmen employed have sometimes been detected as accomplices in pilfering. For the better government of the collieries, Lord Wandesford obtained some regulations by acts of parliament, which, however, are not now put in force, or do not still exist. Lady Ormonde's agent has, as a magistrate, sufficient jurisdiction to keep good order, and to preserve very proper conduct in the collieries.

No pits were originally worked but what were very shallow, from whence the coals were easily raised, and sold at a tolerably cheap rate; what was deep, or difficult to work, was left behind; and they have been sometimes obliged to turn back upon these old works, and seek those parts of the beds formerly abandoned, which has caused among other circumstances, an increased expence in the management. The expence of working was formerly inconsiderable, to what it has been lately; the price of labour was at least one half less, and the principal cost of sinking deep pits was avoided. The late Lord Wandesford used to clear £6000 or £7000 a year by the collieries, and sometimes more. The principal working has been between the small river Dian, and the side of the hills to the east and north east, extending from Castlecomer towards Donane.

The

The account of the quantity of Coals raised, and the profit on their sale for three years, is as follows:

	Coals landed. Barrels.	Colliers Money.	Coals sold. Barrels.	Value at 6*s.* 3*d.* per Barrel.	Value of Culm sold.	Expence of Servants and Contingencies.
From 1st April, 1797, To 31st March, 1798,	57,820	£.5,782	49,557½	£.15,527 3 2	£.1,011 9 7½	£.12,794 4 1
From 1st April, 1798, To 31st March, 1799,	57,180	£.5,718	49,063½	£.14,960 8 9	£.397 7 7	£.12,929 13 4
From 1st April, 1799, To 31st March, 1800,	59,980	£.5,998	47,861½	£.16,566 15 8	£.839 15 8	£.15,252 8 6

Lady Ormonde finding the expence so great and the profits so small, raised the price of coals in 1800, from 6*s.* 3*d.* to 8*s.*, 8*d.* a barrel; and the account of the first four months, stood as follows:

	Barrels landed.	Colliers Money.	Barrels sold.	Value at 8*s.* 8*d.*	Culm sold.	Servants and Contingencies.
April . .	4,830	£.483	3,260	£.8,375 7 4	£.687 15 3½	£.6,256 17 6½
May . .	4,000	£.401	3,422			
June . .	3,550	£.355	6,041½			
July . .	3,840	£.384	6,016			
Total . . .	16,220	£.1,623	18,739½			

Two shillings a barrel is allowed to the colliers for raising the coal; besides which, the expences to the proprietors are stated for the last four months under the following heads:

	£.	s.	d.
Landing . . .	2,343	7	1½
Contingencies .	2,902	17	7½
Engine tenders .	102	13	10½
Finlan (director of the steam engines)	55	13	9
Charities . . .	110	11	10
Wages . . .	741	13	3½
Total .	£.6,256	17	6
Add colliers money	1,623	0	0
Total expence	£.7,879	17	6

for raising 18,739½ barrels.

These expences may be considered as exorbitant; the value of coal sold at the increased price was only . . . . . £.8,375 7 4

And of culm . . 687 15 3½

9,063 2 7½

Deduct expences . . 7,879 17 6

Profit to the proprietors for 4 months £.1,183 5 1½

These four months include June and July, the best season in the year for the sale of coals; the profit during the rest of the year is much less, consequently £.3,000 a year is rather more than the proprietors had

had reason to expect. The younger children of the late Earl of Ormonde are the present proprietors. In some years, the profits have scarcely, if at all, paid the expences: during the course of last year very little coal was sold, on account of the stoppage of the distilleries; but as the working of the colliery must constantly continue at the usual expence, the proprietors may in such a case be losers when the quantity of coal raised greatly exceeds the sale. Nothing but facilitating the carriage by canals, or rail-roads, can render the sales more certain or extensive than they are at present; unless, indeed, the price of the coal at the pits was reduced; and this cannot well be done by the proprietors, if new regulations do not take place in every part of the management. The same mode of working is still continued that was adopted at the commencement, when the sinking of shallow pits was neither difficult nor expensive: their number and proximity to each other seems totally unnecessary, and while the greatest part of the profits are wasted in superfluous labour, another portion is thrown away on supernumerary clerks and servants.

Lady Ormonde finding the expences increase, and the profits diminish annually, proposed a few years ago to let the coal-mines, and advertised them for that purpose; the circumstances of the times prevented any agreement being made. A company whose sole profit would have depended on good management, would certainly have put the whole upon a new footing, and have ultimately benefited

the

the proprietors; but if that can be done without such intervention it will be better, and therefore the first idea has been justly abandoned, and a skilful person has been brought from the neighbourhood of Hull in England to inspect and regulate the collieries. This person having been conversant in the management of English coal mines, may give much information; but firmness and perseverance as well as knowledge will be required, to combat private interest, ignorance and prejudice.

Formerly the colliers received half the profit of the *small coal*, as well as of the culm sold, but for some years past, the denomination of small coal has been wisely abolished, as it was only an inducement to the colliers to break it in the pits or landing. By the last regulations the *fugel money*, which was a charge of 1*s.* per barrel demanded by the colliers at the pits is abolished; but the same sum is still paid by the purchaser, which makes the price of coal at the pits 9*s.* 9*d.* paid to the proprietors: in consequence of which the same sum has been added to the payment of the master colliers, who receive now £.3. 1*s.* 8*d.* per score barrels, instead of 40*s.* The purchaser usually pays at the pits a penny *basket money* to the colliers for a barrel, or even for a *draft*, which is half a barrel; this, though perhaps optional, is customary, and may be considered a slight augmentation to the price, as may also the expence of 2*d.* for turnpike; so that a

barrel of coal drawn from the colliery, costs the carrier at least 10*s.* :—or 20*s.* per ton, a barrel containing 10 cwt.

In the town of Castlecomer the coal is retailed for 13*d.* a cwt, in Kilkenny the price has for some years past varied from 15*d.* to 2*s.* 2*d.* per cwt. In summer a carman can go to the colliery from Kilkenny and return the same day, and a car can usually take 7½ cwt. or a draft and a half of coal: it is called a draft from being the quantity which is put into the scale at a time; but in weighing, it is customary at the pits, to give very full measure, exceeding the real weight in every draft, greatly to the advantage of the carriers, who have an additional profit on retailing it by more accurate weights in Kilkenny; independent of this a carman taking but 7 cwt. to Kilkenny, for which he pays 12*d.* per cwt. would receive an additional price of 3*s.* 6*d.* per cwt. by retailing it at 18*d.*, this may be considered about the average profit, and not a very extravagant charge for the expence of a man, horse and car: there are cars however, which with good horses will draw 10 or even 12 cwt.; in winter they take two days, but it is not the usual season for going.

If a navigation now existed from Castlecomer to Kilkenny, and if the price of carriage was even 2*d.* a ton per mile, coal could be afforded at 14*d.* per cwt, besides that the supply as well as price would be constant and certain. If the price of carriage was lower, as it ought to be, and the price

price of coals reduced at the pits, by good management, they might be sold at Kilkenny for less than they now cost at the colliery.

Culm is sold at the pits for 16*d.* or 18*d.* a kish, according to the size of the kish: 13*d.* was the price three years ago; a kish will take a common load, from six to seven cwt.; the principal use to which it is applied is burning lime; but much of it is also consumed by the common people for fuel, made up into balls with one third of wet clay: the cinders of the coal are purchased at Kilkenny by lime-burners, who give 2*s.* a barrel for them, and mix them with culm.

In the year 1800 there were sixteen pits at work together in the Castlecomer colliery: this is about the average number; it is many years since twenty four pits were worked at the same time, and the smallest number that has been known is twelve. From a pit there is usually raised from 20 to 30 barrels a day of coal, independent of culm. The proprietors are at the expence and hazard of sinking pits; this is the principal charge to them under the head of contingencies, in which is also included the purchase of timber, pensions to disabled colliers and other articles. An abstract is returned every week of the accounts by the agent of the collieries, in which, whenever the expences of sinking are high, the proprietors find a balance against them; this seems therefore the principal point to be attended to; if the *views* of the pits can be made more extensive, while air is communicated to a distance

under ground, by very easy methods, and while advantage is taken of every descent of the beds for the cheaper conveyance of loads to the shafts; if the sinking is never undertaken but under the direction of experienced persons, and conducted on scientific principles, great savings may be made in this article. It happens sometimes that coming to *a fault* or striking upon it in sinking, colliers proceed blindly and miss their aim, or are obliged to abandon the work, or seek for assistance after having incurred unnecessary expence and labour.

Sinkers are sometimes paid by the yard, the cost encreasing with the depth; or else they receive which is more usually the case, from 18*d*. to 20*d*. a day, and master sinkers who direct the work 2*s*. a day. Sinking a pit will sometimes take two or three months, sometimes much longer; and on some, even a year has been employed: the men work night and day from ten to twelve hours at a time; forty men are sometimes required to a pit when there is a great deal of water, in which case, there must be a stage, and two sets of pullers, who keep four buckets at work; each pair of buckets demands the attention of ten men who relieve each other. If such a pit is deep, it will cost above 200*l*.; the expence of pits has varied from 30*l*. to 300*l*. and some have been made at a great expence without any advantage. There was one lately sunk which cost 200*l*.; at the depth of 28 yards a bed of coal was found but 8 inches thick, and it was thought in vain to proceed any farther.

A pit

A pit once completed is taken by a master collier, who besides the 3*s.* a barrel receives the price of half the culm, which is sold by clerks, and divided with the proprietors: the master and the men whom he employs constitute a crew; according to the difficulty of the work they vary from 30 to 40 men; 35 is not an unusual number, besides a horse to a gin for raising water at 4*s.* 4*d.* a day.

The crew are divided into *colliers*, whose pay has been lately raised from 18*d.* to 20*d.* a day, of whom a pit requires from 20 to 24; *hurriers* whose pay has been raised from 16*d.* to 18*d.* and of whom there are generally 4, but sometimes 3; *thrusters* usually 3, sometimes 2, at the same wages; and *pullers* from 4 to 5 at 13*d.* a day.

The colliers are again classed into *clearers*, *cutters*, and *breakers*; the first clear away the slate from the top of the coal, with a pick adapted to the purpose; the second with a cutting pick, which is a larger instrument, separate the sides of the mass from the *backs*, by which the beds are divided; and lastly the breakers drive their wedges in at the bottom of the coal, which, falling out, is loaded into a bucket, holding about 3½ cwt., placed upon a small sledge, which, by an iron bar hooked into a ring at the front, is drawn by the hurriers to the bottom of the pit, while the thrusters push it behind; the bucket is raised by the pullers, and, as soon as it is landed, is placed on a small sledge, similar to the one below, and the coal drawn

drawn to the pile, at a little distance from the pit: besides these men, a scavenger attends each pit at 13*d*. a day.

The colliers throw the backs and rubbish behind them, and proceed in the same way, to the end of their *view*; a *view* is the space commanded by the pit, the extent of which is about 70 yards from east to west, it varies from 60 to 80, and in the contrary direction is 5 or 6 yards narrower: the *backs* which are thin perpendicular slips, from 2 to 3 inches thick, divide the entire stratum of coal nearly at every 3 feet, running through it in a direction almost north and south: the line of pits are therefore sunk in the same sense, that the working may be parallel to the backs, which in this direction is called "*working by the end*", and from east to west is called "*working by broad*", crossing the backs diagonally is called "*half working*", which rarely takes place. The backs consist of slate, with intermediate layers of fine quartz, often transparent, and striated, and with some layers white calcareous earth, which effervesces strongly with acids: a similar slate, with the same *white illinitions* as they are termed by Mr. Kirwan, is occasionally found immediately beneath the coal, and sometimes above it: the slate above, has usually many thin layers of calcareous earth, and seldom any quartz; but the slate adjoining the coal, varies in its appearance; sometimes, and in the best pits it is black and shining; this kind is much esteemed by the common colliers, who attribute

medicinal

medicinal virtues to it, for pains in the bowels and internal complaints; if it has any effect, it may arise from the sulphuric acid which it probably contains. In other places the top slate is extremely full of martial pyrites, almost forming a continued bed; these sort of slates are called *brats* by the colliers, and are not reckoned a good sign for the quality of the coal beneath. Small portions impregnated with martial pyrites are sometimes found in the substance of the coal itself. A bad kind of coal, and whose lamellæ are bent, and appearance slaty, containing some striated calcareous spar, and sometimes a little quartz and pyrites, is found above the true bed in some places and called *saddle coal*.

The depth of the bed of coal that is worked, varies from 2 feet 6 inches to 3 feet 1 inch, which latter thickness it has never exceeded. For the facility of working, it is necessary to detach part of the slate from the roof, which causes some additional labour; but as little of this is done as can well be avoided, and the colliers never having room to stand upright, are obliged to work sitting on a low wooden stool, and leaning sideways. The roof itself is not very good, for which reason pillars are left to support it about 6 feet distant from each other, and which often measure 3 feet on one side, and 6 on the other: where the roof is better, the pillars may be a little more distant, and but 3 feet square; but where the roof is very bad, they are but 3 feet asunder,

or else large blocks are left four or five yards square.

Part of the *coal-sill* or *seat* of the coal, is sometimes brought up with it, as it generally comes in immediate contact with, and adheres to it. This is a soft, black and brittle stone, falling to pieces when exposed to the influence of the weather for any time; it is full of shining impressions, which are long, rarely striated, about two or three lines broad, crossing each other in all directions, scarce ever appearing branched, and not sufficiently determined to be called vegetable impressions, though more resembling the obscure marks of the roots of rushes, than any thing else. They are seen best in a fresh fracture; impressions similar but more faint, sometimes appear on the slate above the coal. The marks of shells are said to have been found in part of the Colliery formerly worked in Cloncen, but there are none in the present pits. In the museum of Trinity College, Dublin, there are four pieces of black slate said to have been brought from Castlecomer, with impressions of ferns; one much resembles the *polypodium vulgare*. These minerals were collected by the late Doctor Hamilton, together with specimens of the different stones belonging to the collieries, one of which seems to contain manganese. Marks of shells and of ferns may have been occasionally found in some part of the collieries, but they are far from being an usual accompaniment, and are entirely unknown to the colliers at present.

The

The *seat* of the coal has properties which appear worthy of attention; it has been long used at Castlecomer for backs of grates, and is known to stand fire in a peculiar manner. Mr. Finlan, the late director of the steam engines, constructed by means of it a small reverberating furnace, in which he smelted iron; and made crucibles of it which stood the heat of the strongest fire. Mr. Whitmore Davis, the architect, employed in building the new barracks at Castlecomer, made some experiments upon it which he communicated to the Dublin Society last year. He formed fire-bricks of it, of the very best quality, and he observes, that "by pulverizing the coal seat, and making it into mortar, nothing can better stand the fire and answer all purposes for fire-works, as the more fire it gets, the harder it grows". This he affirms from repeated trials, and says he is convinced from the handsome colour it assumes, "it will not only answer every purpose in earthen ware, but he hopes also, that of pots for glass-house purposes; and being convinced of the great utility of the coal seat in the fire, he made trial of it also in water, and found that when properly prepared, it would answer every purpose of terras; he made trials also of its utility as to external incrustation on walls, where it set firmly and has every reason to think will answer well." The best bricks made by Mr. Davis consisted of two parts of coal seat, and one of clay: a sixth part of sand being added, made them run too much: the coal seat which he used in building a brick cistern, was first calcined in a lime-kiln and then pulverized; it held water immediately

in

in the most perfect manner. The coal in its natural state burnt in a strong fire becomes white, and as hard as many siliceous stones. Mr. Davis sent specimens to Dublin, which were examined by Mr. Higgins, who returned it as part of his opinion, that the coal seat "would answer for porcelain, as one of the ingredients." Its uses under water appear more doubtful, for though pieces of it found in the stream of Castlecomer, had become very hard in the water, they were also brittle, and perhaps would rather crack than set like terras, whose property of swelling in water depends upon the quantity of iron it contains, which becomes oxygenated by combining with the oxygen of the water. The coal seat appears to contain no iron, or a very trifling quantity: finely powdered and digested in marine acid, it did not lose quite a grain in an hundred of its weight: the solution gave no precipitation with volatile alkali, a very slight one indeed with prussiate of pot-ash; but with pure pot-ash it gave a little precipitation; by which it appears to contain a small quantity of calcareous earth: the remainder consisted, as near as it could be analized of 54 per cent silex and 44 argill; and the colouring matter appeared to be carbon, in a small proportion. One hundred grains digested repeatedly in concentrated sulphuric acid, left forty-eight grains of siliceous sand with a little carbon: the solution gave a white precipitate with volatile alkali; none with prussiate of pot-ash. By another analysis one hundred grains appeared to contain sixty-one per cent.

of

of silex, thirty-six of argill, the remaining three grains were carbon and calcareous earth, with an almost imperceptible quantity of iron. On the whole then it appears to contain a larger proportion of silex than of argill, and not enough of any other mineral to effect its qualities.

An objection made to the use of this mineral in large quantities, is the expence of raising it; for in working the coal, the tops and backs, and all the rubbish which the colliers throw behind them as they proceed, lie over it, and must be removed: this however would be of little consequence considering the value it might be of, and the purposes it might be applied to; nor is it impossible but the backs themselves might afford a material, useful in manufacturing porcelain, earthen ware, or glass, as they contain a quantity of very fine quartz, in a state easily reduced to powder, and easily washed from the slate, between whose lamellæ it is deposited, and which might answer any purpose to which powdered flint, or fine siliceous sand is applied.

The depth of the pits varies from twenty-four to forty-four yards: the soil of the surface is a stiff clay, covered by a thin moory sod, which produces no plant in such abundance as the *ranunculus flammula*, or spear-wort; the stratum of clay is generally about twenty-one feet in thickness, but varies in different places from six to forty-two; it is mixed with fragments of different stones, among which those of the *green rock* are most numerous, and those of rolled limestone the most remarkable. It sometimes

sometimes contains beds of grey marle; beneath the clay lies what is called the *green rock*, which is hard, compact, of a greyish or a greenish grey colour, with a somewhat earthy fracture, hard enough to scratch glass, and sometimes effervescing, though slowly, with marine acid; if this effervescence is to be considered the particular mark of distinction, it may in this case be termed a *siliciferous limestone*; and when it contains too little calcareous earth to be sensibly attacked by acids, it appears to be a *siliciferous argillite*. This bed seldom exceeds twenty-five feet in depth, but varies from four and an half to thirty-three; and is succeeded by what is called *grey rock* or *curled rock*, a stone nearly of the same nature, but that it never effervesces with acids. It seldom exceeds twenty-four feet in thickness, but varies from eight to forty-two; it is sometimes divided in two beds; and towards the lower part it is softer, often striated with blackish veins and contains more mica, these stones being in general more or less micaceous. Next to this is the *black slate*, as it is called, which is a ferruginous argillite, containing nodules of iron ore, usually varying from twenty-one to twenty-four feet in depth, but known occasionally to have extended from eighteen feet to forty-two; beneath it lies the *main top*, in a thin bed generally from four inches to six and an half. It is a dark grey heavy argillaceous stone, containing iron ore; between its fissures sometimes lie martial pyrites. Another bed of slate succeeds, about fifteen feet deep, rarely extending

from

from that to twenty-one, at the bottom of which is found the *small mine*, much resembling the main top, but thinner, its thickness being three inches or three and an half; though it has the smell of argill, it is hard enough to scratch glass, but not to strike fire with steel; it is heavy and dark coloured. Next appears the slate, which forms the roof of the coal, and which is about three feet deep; its nature has been before mentioned.

Strata in pits usually worked.

	Shallowest strata.		*Deepest strata.*		*Usual depths.*				
	Feet.	Inch.	Feet	Inch.	Feet	Inch.		Feet	Inch.
Clay	6	0	42	0	12	0	to	33	0
Green rock	4	6	33	0	25	0		25	0
Grey rock	8	0	42	0	9	0	to	24	0
Slate	18	0	42	0	21	0	to	24	0
Main top	0	4	3	0	0	6	to	0	6½
Slate	14	0	21	0	15	0		15	0
Small mine	0	1	0	3½	0	3	to	0	3½
Slate	2	6	5	0	3	0		3	0
Coal	2	0	3	1	2	6	to	3	1
					88	3	to	127	11

Thus the depths of the pits from the top of the clay to the bottom of the coal, usually vary from twenty-nine yards to forty-two; all the shallow and the deep strata never being found together.

No attempts have been made to seek for a second bed of coal beneath that which is at present worked; a few years ago, however, a trial was made by boring,

ing, under the direction of Finlan; the depth of the strata pierced were as follows:

	Feet.	Inches.
Coal-seat, or coal sill	3	6
Whitish hard rock, which he called a whinstone	21	0
Black slate	4	0
Thin bed of coal, or coal rod .	0	6
Whinstone	12	0
Slate	4	0
Coal	1	0
Whinstone	12	0, but

this bed was not penetrated. Judging from the recurrence of the strata, he conjectured, that at a depth of about sixty yards more, or somewhat less, another bed of good coal would be discovered.

Very thin beds are termed *coal-rods*, and small ones are often called *spars*. Coal less than two feet thick would be considered not worth working, and no two workable beds have ever yet been found above each other; but in some places the pits have appeared to pass through two beds, where the coal has been broken, and has *lapped* over. This has occurred only in some parts of the declivity of the hills: in Coolbawn, the coal thus broken was not only lapped over in one place, but contiguous, and seemed for some distance to be six feet thick, until the fractured edges shewed the cause of the novelty: this coal was worked about sixty years ago. An instance once occurred of a second lap, which gave the appearance of three beds, the intermediate

one

one being only an insulated fragment. Though workable beds have not been found above each other, yet coal spars are not uncommon in that state on the sides of the hills; in the colliery worked many years ago on the land Finsborough, three spars were passed through, the two first of about three inches, and the last of six inches. Spars are often found in Coolbawn from six to twelve inches thick. The coal in this part dips against the hill to the south east, and the bed having been worked in one place to its termination, a second bed to appearance, but in fact the displaced continuation of the former, was found immediately above it. On account of the badness of the roof, the latter was abandoned, but between the two, a thin bed not worth working intervened.

The principal pits now used are in Coolbawn and Moneenroe; a description of part of the former mines by a person used to the collieries, and accustomed to survey under ground, will explain the disposition of the strata, and shew how they are described by colliers.

"At the entrance of the colliery, there is only three yards bearing over the coal, being a stratum of earth; at a distance of 120 yards *on end* (that is due north and south), the coal is eight yards deep; 560 yards from thence in the same direction, the coal is twenty-five yards deep; we then meet what is termed a *leap*, which runs due east and west: the east end of which dips nine yards, and the west end one yard, with a thin coal running down from the

upper

upper to the lower coal, called a *leader;* south of the said leap, at the distance of a few feet, which varies, commences another coal, that dips according to the dip of the leap, running into the but of the hill 240 yards, causing the pit there to be forty-nine yards deep. In sinking this pit was discovered a coal of nine inches thick, at the depth of four and an half yards, and under that, at the distance of two and an half yards was discovered another coal twelve inches thick at the north side, and sixteen inches thick at the south, each coal running in under the hill, and supposed to lead to a body not discovered. On the top of the hill, a coal was formerly worked, the pits being ten yards deep, but this had no connexion with the two coals above mentioned. South of the forty-nine yard deep pit, a solid rock interrupts the bed, and the coal goeth no farther in that direction. It is the opinion of the colliers, that there is another coal in the same direction, deeper than the present, running in under the hill, but useless, as it would not defray the expence of sinking and landing, the hill being too high over it.

The beds above the main pit described.

1. A stratum of earth 6½ yards deep.
2. Parting quarry, a common stone, 2 yards deep.
3. Grey stone, streaky and solid, from 8 to 14 yards deep.
4. Curled rock, varying from 1 to 2½ yards deep.
5. First top, iron mine, 2½ yards.

6. A kind

6. A kind strong slate 2 yards.
7. Main top iron mine, 1 yard.
8. A natural kind slate 3½ yards.
9. Small iron mine 1½ inches.
10. Soft kind slate 4 feet.
11. Coal 3 feet.
12. Seat from 2½ to 3 feet.
13. Seat rock, being a hard grey stone of a depth unknown.

"There are hard white streaks running through the coal, as meridians, due north and south, at the distance of between three and four feet asunder, called *backs*; the colliers clearing the coal over it until they meet the said back, then cut it downwards at a proper distance. The water pumped out from the lower coal, is raised above the leap, to the level of the upper coal, from whence it runs out along the level of that coal to the surface, being a distance of about 700 yards."

The bed of coal here mentioned is horizontal; in other parts of Coolbawn, it dips in a direction contrary to the surface of the hill: but in other places it usually takes the inclination of the hills, or nearly so. In the plain, it is often horizontal, or approaches to that direction; its most usual dip is to the east, or to the south east; and where it dips to the south, it generally runs out to the north: the greatest dip is about thirty degrees. As it dips against the hill in Coolbawn to the south east, it is supposed to rise again on the other side of those hills in a corresponding direction, and the smut which appears

near the angle of the county of Carlow and Queen's county, is conjectured to be connected with that bed.

Where leaps occur, a *lisson*, or *leader*, a mark of smut, runs from the edge of the lower bed to the upper, and sometimes higher; and this happens whether the lower edge is perpendicular to the other, or whether it is distant six yards or more, as sometimes happens: the broken edges, as is well-known in other collieries, invariably correspond; the *fault*, or intervening space, is filled up with solid rock, often with the green rock, or others similar to the upper beds. Three principal *breaks*, or *leaps*, appear to extend through the greatest part of the colliery, running nearly parallel for more than a mile, in a direction generally south west and north east: they vary, however, in their course, with many curves and turnings.

Two steam engines have been erected in the colliery; they are both double or compound engines, the largest has a cylinder of twenty-two inches diameter, and a stroke of five feet. It gives thirty strokes in a minute, and discharges from 800 to 1000 gallons of water, drawn from a depth of forty yards: it consumes about two ton of coals a day. The expence of erecting and setting this engine, called the Pollough engine, to work, was £.1100. Its expences for one year were,

Coals

	£.	s.	d.
Coals consumed at the said engine, 30 barrels a week for 52 weeks, or 1560 barrels, at 9*s.* 9*d.* per barrel,	762	0	0
Two engine men at £.1 8*s.* per week .	72	16	0
Two men at 17*s.* 4*d* per ditto . . .	45	1	4
Hemp rope yarn, oil, lard, candles, iron, and different repairs	100	0	0
Carriage of coals to the engine from the pits.	32	1	3
Mr. Finlan's salary	100	0	0
Total annual expence .	£.1,111	18	7

The smaller engine, called the Curragh engine, cost for its erection above £.900. It discharges 500 gallons in a minute, from a depth of thirty-six yards; its cylinder is seventeen inches diameter; the piston rises four feet six inches, and it gives from thirty to thirty-two strokes in a minute.

Both these engines were erected by the late Mr. Finlan, who had the superintendance of them: in the course of last year, the proprietors sustained a singular loss in the death of that ingenious man; without education, he had acquired superior knowledge in mining and mechanics; his natural discernment seemed to raise him above prejudice, his spirit of enterprize was directed by judgment, and his success was not blemished by vanity. Having observed, when a boy, and attended, in an occasional and inferior capacity, upon the engine at the Donane colliery, he made himself master of its prin-

ciples and structure, so as not only to be able to erect similar ones at Castlecomer, but to improve upon the machinery. His early intelligence and clear understanding had been noticed at Donane, and he refused, when very young, some offers of employment in England; he had lately engaged on his own account, in a colliery in the county of Tipperary, where he was about to establish a steam engine, when some illness, supposed to be caused by his attention to that work, carried him off prematurely, leaving behind him a family in indifferent circumstances.

At the time of his death the Castlecomer engines had been stoped for some repairs, and there was no person in the colliery, who could set them to work afterwards. Happily the drought of the summer, and the local advantages of most of the pits then in use, superseded the necessity. The pits on the lands of Moneenroe were drained by pumps, under ground, which threw the water into the old excavations below them.

Besides the engines, six gins, or machines, worked by horses, are employed for raising water; two men and six horses are necessary for the use of each, one horse only working at a time; the men receive 13*d.* a day; 2*s.* 2*d.* a day is paid for each horse, including the driver. Two buckets are alternately raised by each machine, discharging every time, when full, a barrel of forty-two gallons; but these gins are not constantly at work.

No

No mode has been thought of for raising the coals themselves from the pits, except by the labour of men; it is said that steam engines could not be applied to this purpose, as their sites must be changed as often as the pits are worked out. A pit is exhausted always within the year, sometimes in nine, or even six months; and where pits are too much troubled with water, they are even now abandoned; or where the working becomes very expensive, or as it is called, "too heavy," by reason of the depth of the mine, they proceed to what is more easy; and the coal that goes in too far under the side of the hill is left behind. The extent of grounds occupied by the collieries, or beneath which the coal has for the most part been excavated, is about three miles in length, and two in breadth. A good tract to the west of the colliery, and beyond the river, which it is expected will turn out extremely well, has not yet been touched. When the proprietors shall extend their works to this part, it will be well worth their while to consider whether water-wheels could not be used with advantage, both in draining the pits and raising the coals; wherever simple machinery, worked by water, can be used, it is inestimable, demanding neither the consumption of fuel, nor the expence of horses; and below a certain level, it should seem that the collieries are well adapted to water-wheels; they have been lately used in some English mines with great effect.

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The expence of machinery is the principal one to the proprietors, after that of sinking pits: besides these expences, two overseers are employed above ground at 50*l.* a year each, and four underground overseers at 15*l.* a year, with two inspectors at 18*l.* each. Watchmen are paid 12*l.* a year, the number must depend on the quantity of coal for sale. Two carpenters and six smiths are kept in constant employment at 12*l.* a year each, clerks attend at the scales for the delivery of the coal; from eight to ten are usually kept, and each receives 18*l.* a year.

The cost to the proprietors for sinking materials, and repairs of machinery is uncertain. But the expence of the colliers in working is more easily calculated. That every necessary may be at hand, a store is kept by the agents in the colliery for iron, ropes and candles, which are retailed at the current price. From 12 to 15lb. of candles at 1*s.* per lb. are consumed daily in a pit, allowing the usual compliment of five candles to each person. Ropes will last five, six or seven months in dry pits, but in wet ones, a shorter time; 20*s.* worth of iron for shafts, and repairs will serve a pit for a month.

An expence which falls on the proprietors is that of timber, of which it is necessary to have what are called *spaces* at the mouths of the pits, each space about 6 feet high. A space is composed of frames of timber 6 inches square, filled up by two dozen of stakes which go round the pit; the

number

number of spaces required, vary according to the nature and depth of the subsoil, from 2 to 25. The timber is oak, and is for the most part purchased at Durrow, the same will often serve for three or four pits, being removed as soon as the coal is worked out; the price is rather high, and encreased by the land carriage.

The payments to the colliers, are made in notes at present; which are generally passed at a depreciated value: colliery notes have on some particular occasions borne a premium, but 1*s.* discount is sometimes demanded for 9*s.* 9*d.* In consequence of these notes, the huxters impose in their charges for articles of necessity; and the collier is obliged to pay a half penny more in the price of a pottle of meal, when he pays in *tickets* as they are called.

Wheaten bread is the principal food of the colliers; this they take down with them into the pits, and a twopenny loaf serves for a meal, bread is baked in the colliery and the flour brought from Ballyragget or Ballinakill. Their earnings are generally consumed in the purchase of spirits; this ruinous habit, to which their mode of labour in some degree leads them, is the cause that though their pay is higher than that of any other workmen, yet in appearance, they are the most wretched persons in the county. Their houses are ruinous, generally built as well as covered with sods, upon which heavy stones are sometimes laid, to prevent their being blown off: chimnies and windows are

luxuries

luxuries deemed unnecessary. The children are numerous, but usually quite naked, the parents dirty and ill-clad, and what is worse, the colliers are, independent of accidents, unhealthy and short-lived; they seldom arrive at fifty years of age. A consumption of the lungs is the disorder of which they usually die; for a year or two before which event, they often throw up continually a black spittle: those who work in wet pits live longest, as they do not swallow so much of the volatile dust of the coal. The leaning posture in which they work, is unfavourable to health, as the muscular action is constrained and partial, and the play of the lungs impeded: many do not survive it for ten years, though there are peculiar instances of workmen that have been in the collieries for forty.

The excellent qualities of the Kilkenny coal for particular uses, are well known in Ireland; for these purposes it is sent to the north and the south, to Londonderry, to Cork, to Waterford, as well as to Dublin. No fuel dries malt so well, and this without any preparation; it is excellent for the forge, and for most works in iron; in every manufacture where steady heat is required devoid of smoke, it cannot be excelled; nor does it dirty the flues where it is used.

By Mr. Kirwan's analysis, it approaches nearly to pure carbon, without any bituminous matter whatever; he considers it as containing 97.3 per cent of pure carbon, the remainder being uninflammable ashes; see II. Kirwan 520, and 528. It

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has been said that this coal will not answer for smelting iron, but Finlan did actually smelt the iron ore of Castlecomer with it, in a small furnace before mentioned, and said that the quality of the iron was good. If the coal always answers to Mr. Kirwan's analysis, the iron could not be injured by it, except where it contained any martial pyrites, which should be carefully separated. But it is objected to this coal, that igniting slowly, and consuming without flame, it does not bear the operation of a blast furnace, nor can its heat be rapidly encreased; and to remove this difficulty Finlan suggested the expedient of mixing it with charred or dried turf, or any other fuel that would open and separate its parts. For the purposes of cementing steel, it seems peculiarly calculated, as it does also for potteries, and almost every other manufacturing purpose; and that it should not be applied to these purposes at Castlecomer, where materials for earthen ware are to be found, and where iron mines of the best quality lie as it were above ground, seems a national loss.

We have already seen, that the slate covering the collieries contains nodules of iron ore, and this ore is very heavy and rich; but some of the best iron mines lie open to the surface, and form the upper strata of entire hills. Hills of this kind run in a north east direction from Lady Ormonde's demesne, towards the colliery. On the lands of Aghamucky is a hollow road cut to a great depth through a rich mine of iron: from this place the

ore

ore was formerly carried to be smelted at Mountrath in the Queen's county, as long as timber lasted in that neighbourhood for the purpose of the forge, which has been discontinued about 50 years. The slate is in beds nearly horizontal, with some perpendicular fissures, and closely interspersed with hard heavy and flattened nodules of iron ore: the coal has been found under this mine, but it was only from 13 to 15 inches in thickness. In the glen beyond, some pits were made many years ago, for the purpose, it is said, of seeking for copper ore, but without success. These hills do not appear to have any indications of copper: much sparry iron ore is found mixed with quartz sandstone on the lands of Crutt, and has been suspected to contain copper, without any reason, by ignorant persons.

As long as timber lasted near Castlecomer, iron ore was also smelted there; the remains of an old forge for that purpose, may still be seen on the banks of the small stream Clohogue, in a valley north west of the town. It is above 70 years since it has been used; the ore was brought hither from the lands of Moyhura about two miles distant. Another forge stood in the town of Castlecomer, almost opposite the wall of the demesne, but no vestige of it now remains.

Of those ancient iron works, Boate, who wrote when they were in full activity, gives an interesting account. The species of iron ore which this district affords, is that which he terms *shell-mine*, or *white*

mine

mine, (p. 71.) being soft and slaty, easily raised in large lumps, and containing *kernels*, which are sometimes called *honey combs*, from their internal resemblance: this may be often observed in the broken nodules, where white calcareous spar, inclosing pieces of brown ore, give the honey combed appearance. He says that upon the lands of Idough, Mr. Christopher Wandesford, Master of the Rolls, and Lord Deputy under the Earl of Strafford, had iron works, where the metal "was cast into ordnance, pots, small round furnaces and other things."

The iron coming from this ore, he says "is not brittle as that of the rock mine, but tough, and in many places as good as any Spanish iron." Of the iron works of Sir Charles Coote at Mountrath, he gives a particular account. "Sir Charles mixed one part of *rock-mine* with two parts of *white-mine*, which yielded one third part of good iron, such as is called, merchants iron, which is of the second melting and hammered into bars. This iron he sent down the Oure or Nure to Rosse and Waterford, in that kind of Irish boats called cots, being made of one piece of timber." The iron was sold in London from £.16 to £.17 : 10*s*., and produced a clear profit of from £.6 to £.7 per ton. See p. 75. It is probable they sent for ore to Castlecomer, when the white-mine failed in the neighbourhood of Mountrath. Boate says, that when the ore was rich, a ton of iron was produced by two tons and a half of ore; but in common, one ton for three was expected,

pected, either from the white-mine or the rock-mine.

Mr. Kirwan observes that "these argillaceous ores give the most tractable iron for all purposes." The ore used in the celebrated founderies of Carron, in Scotland, is of a similar kind, varying in colour from bluish grey to dark ochre yellow, "and found in masses apparently thick slaty, and in nodules, in an adjacent coal mine, of which it sometimes forms the roof." See II. Kirwan, 174. All the description agrees most perfectly with our ore; but the Carron mine affords but 30 per cent. of cast iron, and we may suppose from former experience, that the Castlecomer ore would give something more.

In the town of Castlecomer, in the yard of the old barrack, there is very good tenacious brown potters clay; and different clays that would answer for potters use, are found in the neighbourhood. An attempt was once made, many years ago, to establish a pottery here, but probably from want of capital it failed: few places are better situated for manufactures than Castlecomer, hands being numerous, and labour cheap: provisions are reasonable, and water abounds for every purpose of machinery. Every encouragement too, is held out by a resident and liberal proprietor. Lady Ormonde is empowered, by settlement, to let any ground, not exceeding one acre together, for building, on leases renewable for ever, for half a mile round the town: the usual term for other leases is for three lives. Though numerous proposals have been received, in consequence

of

of the encouragement advertised, yet none have been finally received. Two circumstances alone are wanting to bring effectual capital, and improving industry to this place; first, water-carriage, which may be obtained by the canals projected from hence towards Maryborough and Dublin, and towards Kilkenny, and the navigable part of the Nore; and secondly, the reduction of the price of coal at the pits, which may be done by better management, improved methods of working, and machinery well contrived and understood. There is an idea at present of constructing rail-roads for the carriage of the coal, which is one of the best improvements in modern modes of conveyance; with less expence than canals, they can be carried in various directions, and the elevation of the colliery district is peculiarly favourable to them; but they must meet navigations at their termination, or much of their utility will be lost. The present price of coal at the pits, would be an eternal bar to its use in most manufactories, particularly iron-works: while the Swansea coal is six shillings a ton, and some of the Welsh not above half that price at the mines; the Kilkenny coal costs twenty English shillings a ton in Castlecomer, and eighteen at the pits.

To counterbalance the difference of price, in some degree, it may be stated that this fuel is much more durable than any bituminous coal; an equal quantity, when once ignited, will remain with a strong heat for at least half as long again as Swansea,

sea, Whitehaven, or any sea-coal imported into this country.

The use of this coal in private houses, to persons not well accustomed to it, is disagreeable and often noxious. Where chimnies draw well, and in country houses, where there is a constant accession of fresh air, its effects are not so sensible; but in the town of Kilkenny, strangers are often affected by the very atmosphere. The vast quanty of carbonic acid gas evolved and formed during the ignition, not only diminishes the quantity of pure vital air, but being so much heavier than atmospheric air, subsides and mingles with the lower stratum of it, which must be breathed by the inhabitants. And it is observable, that in the lower part of the town, its effects are more sensible than in the higher. When breathed in any quantity, this air produces heaviness in the head, diminished circulation, torpor, and fainting; in close rooms it has the suffocating effects of charcoal; but its smell is not like that of charcoal, but of a heavier and more disagreeable kind. To asthmatic persons, it is peculiarly offensive and injurious, and indeed it has a tendency to induce asthma, which is far from being an uncommon disorder in the district where this fuel is used: and though persons bred up in the use of it are not sensibly affected by it, yet it gives a paleness of complexion very observable among the inhabitants of this district, arising from impeded circulation; nor is very old age common among them. Asthmatic persons who have been early habituated to this coal,

sometimes

sometimes prefer it to any other, as was the case with the late Earl of Ormonde. Cold bathing seems to be the stimulus most peculiarly calculated to counteract the bad effects of it, and cure asthmatic affections brought on by this means, for which reason, Dr. Ryan of Kilkenny, whose patients had probably suffered from the use of this fuel, found the good effects of bathing, which he has recommended in the asthma; the use of this coal is said to produce the croup in children, particularly in those brought out of the country to Kilkenny.

The common people burn the coal in small grates of four bars, and not quite a foot wide, and generally without a chimney: they sleep with their heads close to the fire place; but the houses being very accessible to fresh air, open all the day, and the fire small, they are not effected by it. Having asked a woman at Castlecomer, why she had no chimney in her house, she seemed perfectly surprized that such a thing should be thought necessary.

On the lands of Clough, north west of Castlecomer and part of the estate of Mr. Brien, a colliery was formerly worked; it was drained by a fire-engine, the building belonging to which still remains in a state of ruin; though the coal raised here was of the best quality, the mine was abandoned near 30 years ago, not only on account of the quantity of water, but because the roof was very bad, consisting of a sandy stone which it was necessary to prop by boards.

A colliery

A colliery was opened four years ago on the lands of Feroda, lying a mile and a half west of Castlecomer, and three miles from Ballyragget. It has not been conducted with any degree of spirit. In 1800, six pits were at work, and in 1801 but three. The proprietors of the land are the Earl of Carrick, and Sir John Freke, who receive one fifth of the profit; but the profit made has been inconsiderable indeed. Mr. Billing of Donane, rents the colliery; what is usually raised is only culm: a small quantity of hard coal has only been landed out of one of the pits, but as they ascend the hill, they have reason to expect more coal. The culm is of a fine black glossy colour, and may be distinguished at sight from that of Castlecomer; when it adheres, it has a smooth and shining surface: it is principally used by the country people, made up into balls called *bombs* with water, and gives a strong and durable heat. The coal seems to burn with some, though a small degree of flame: it is much more tinged with iron than that of Castlecomer, by the decomposition of which its surface is often pavonated; that of Castlecomer is more rarely so.

The culm is sold by the kish from 2*s.* to 2*s.* 8½*d.* and even 3*s.* for a good kish full; a kish holds about three common barrels, and some four or five. 140 grains of this culm burned in a crucible, left behind forty-three grains of reddish ashes; burned perhaps with stronger heat and greater exposure to the air, these ashes might have been farther reduced; but

used

used as common fuel, they would at least have left as much. It is in good demand for fuel, as well as for limekilns, and is usually prepared with water when used to burn lime.

The mine is worked with greater facility than that of Castlecomer, the stratum of coal or culm is found at a depth of from seven to twenty yards: the water is carried off by a level opening into the stream at the bottom of the hill. At first a gin was used, but it is now useless. But seven, eight or ten men are required to a pit; the master of the crew has one third of the profit; the wages paid are, to colliers 2*s*. 2*d*. a day, to hurriers 1*s*. 7½*d*., to pullers 1*s*. 1*d*. and to watchmen 6*s*. 6*d*. a week. The proprietors keep an overseer on the spot. The coal is landed in *skips*, that is, a box attached to a sledge, and drawn by a ring beneath, it carries three cwt. and saves the trouble of shifting a bucket. The men work sitting on small hassocks of straw, but the work is much easier than at Castlecomer, and the roof is very good, so that the whole of the mineral may be excavated with impunity: but when worked out the roof gradually sinks in some degree: in some places stone pillars are raised, by piling the pieces of rock taken out of the pit.

From the surface to the coal itself, nothing but rock occurs in the pits first opened; it is called green rock, but resembles the grey rock of Castlecomer; it is divided into beds, and varies but little. Near the coal, however, it becomes somewhat slaty and

more micaceous; little slate lies above the coal in these pits, and in it are sometimes found impressions apparently vegetable. In the rock near the coal, there is often a large quantity of pyrites, more than at Castlecomer, and some in the coal itself. In the pits last opened, and higher on the hill, there is a large quantity of slaty iron mine, as in the other colliery. The bed of coal dips to the south east; and where the colliery commenced, it ran out to the west, which was the cause of the undertaking. The bed is from two to three feet thick, and is divided by backs similar to those of Castlecomer, and in the same direction; the coal seat resembles the other also, in its impressions and appearance, except that it is rather softer to the touch, and of a lighter colour: it might perhaps be found to answer different purposes. The coal follows the inclination of the hills both towards the north east and north west; the stratum is supposed to rise again near the surface towards the south west between Castlecomer, and Ballyragget.

Another expence avoided in this colliery is that of timber; where the mouth of the pit requires it, the walls are lined with loose stones, which breaking very square, answer the purpose perfectly. With all these advantages, little has been done at Feroda, where probably the sole impediment, is one too common in this country, want of capital.

The coal running from Feroda seems to extend towards Castlecomer, and is probably connected with that mine. It appears also to extend in other directions;

directions; there are indications of coal on Mr. Butler's estate and on that of Lord Callan towards the north west, where there is much black slate.

Coal lies beneath the town of Castlecomer, and was found in sinking a well at the new barrack; on the south of the town, unopened mines are known to extend through the lands of Ballyhimmen and Ballycomie, into which the latter part of the projected canal is to run: on Damerstown good coal is said to have been found, and there is much smut apparent in the ditches. On Conahy there is some indication of coal, but it is said to have been looked for in vain; the coal-covers and iron mine extend to the lands of Jenkinstown, where coal is said to have been raised in making a well; the same strata pass the Dinan, and end not far from the ruins of the church of Mothell.

In another direction, the appearance of coal extends to the borders of the county of Carlow; and again towards Lowhill and Ballinakill. Coal is said to have been found on the lands of Lowhill; and in the hills between that and Castlecomer, extending towards Crutt, it has been dug out in small quantities by the common people; but the mountain coal as it is called and even the culm is said to be of a bad quality; and the inhabitants say that its fumes are particularly disagreeable. Sand-stone covers the black slate and green rock at Crutt; the coal found is full of pyrites: towards Cowen the strata are slaty.

In the streams near Castlecomer are found various impressions of vegetables, principally on iron stone, or on ferruginous slate; in some, the joints and striated stems of a plant similar to a very large *Equisetum* are strongly marked; in others waved and parallel lines are impressed. In these streams are numerous nodules of iron ore. Some when broken exhibit in their centre siderocalcite, sparry iron ore or calcareous earth, others contain small quantities of brown blende, martial pyrites, and different coloured ochres. In the banks often lie large pieces of fine shelly limestone, some of which are so large as to require blasting; in the bottom of the streams and banks, marle, usually mixed with pebbles of limestone, is found, and sometimes, though rarely used. Bits of coal and smut, and large decayed trees deeply buried, may be seen in other places.

But to the south of Castlecomer, in the small mountain river called the Dubh-glas *(dark stream or torrent)*, the most remarkable vegetable impressions have been found; they are also seen in the small streams that communicate with it. Several of these stones were obligingly communicated by Mr. Henry Ellis, a gentleman to whose remarks and information I am much indebted, and who is perfectly acquainted with this part of the county, having formerly resided at Wildfield in the parish of Mucullee, where his father improved in a high degree, a large tract of ground from the rudest state. Specimens of these minerals with many

many others belonging to this county will be deposited with the Dublin Society*. The stones which bear these impressions, are hard compact pieces of a siliceous rock, apparently a siliceous shistus, but always found detached: they exhibit the figure of the stems of plants, and the joints, and often of the interior pith; they bear no resemblance whatever to any productions of these climates, but many of them are very similar to some of the succulent tropical plants, particularly the Euphorbias. In one specimen are seen two such pieces, crossing each other, imbedded in a stone of the same nature: some impressions similar to these, but more flat, are found in the slate over the Feroda colliery.

Vegetable impressions of this kind, often attend the neighbourhood of collieries, and are well known in

* Mr. Ellis added the following ingenious remarks, "they are indubitably the impressions of exotics produced in southern climates; they appear to have been lodged when soft in the bowels of the earth, at the time of some violent convulsion, probably the universal deluge, when these parts of broken plants floated on the waters and were transported to this country, and this seems the more evident as the places they have been found in, are the extremities of vallies, where eddy waters were formed between hills, the gradual subsiding of which left these plants behind, in strata of sand and earth, where marine substances are generally found under them: they have been discovered in deep ruts or cuts made by rapid streams in these vallies, and never have been found on or near the tops of hills, but usually about a certain height above the sea, though unwearied search, was made for them in other situations during a space of 30 years. The prickles or thorns (or the bases of them) appear very plain on the surface of some of these stones and the pith or sap also is evidently seen."

in Derbyshire, in the east of England and in Flanders. The hills lying immediately north of the Dubh-glas, and forming the middle of the parish of Mucullee, are composed of fragments of siliceous shistus in loose quarries, in consequence of which, the surface of the ground is in general perfectly dry, the water having so ready a passage. In cavities near the stream have been found detached crystals of quartz in groups, and some of what are called smoaky topaz.

An attempt was lately made to discover coal, about two miles from Waterford on the road to Ross, near the chapel of Sliegh-ruah; the appearance of smut and of a little bad culm near the surface induced the undertaking. Persons of capital were interested in it, and some expence was incurred; two shafts were sunk, one to the depth of 56, and the other to that of 66 feet; they were in this state in summer 1801, and the water was found an impediment to any farther progress then, or since that time: the superficial strata were bog, earth, yellow clay, and yellowish slaty argillite: at first the slaty strata were perpendicular, but became more horizontal as they descended. At about the depth of 20 feet, a bed of bad culm was found about 3 feet thick, covered by blackish slate; lime is said to have been burned with it. Beneath the culm was a black slate resembling the roof of a coal mine, which contained a good deal of pyrites; with some of the slate, quartz in very thin lamellæ, was variously and curiously intermixed.

In

In a kind of quarry at a little distance, another pit was commenced by a different person, but not continued. In the upper strata are grey and yellow argillite, with stripes of quartz, and beneath, some black slate with pyrites.

The ground where these pits are situated has a gradual and gentle slope to the Suir on one side, and on the north and east, it approaches close to hills of siliceous breccia; on the west lie hills of the same kind and siliceous shistus. In the lower grounds and lower parts of the hills which extend from hence to the north towards Inistioge and the banks of the Nore, the substratum consists of a similar yellowish or greyish, or reddish argillite in thin brittle lamellæ, irregularly stratified, often curved, and often perpendicular; sometimes attended by ocre and iron ore. Persons acquainted with collieries will easily see what expectations are to be formed in this district; and though every trial may be of use and advantage, and ought to be encouraged, yet they will not give sanguine hopes of extensive collieries.

Good yellow ocre is found in different parts; some raised at Curraghlahy in the parish of Powerstown has been used, and some of a softer quality appears near Wildfield in the parish of Mucullee, nor is it uncommon. Near Aghaviller there is said to be pipe-clay of a good quality; and good potters clay lies in the southern part of the county, as at Pill-town and other places, as well as in the northern.

Manganese

Manganese is a mineral pretty much dispersed and seen in various places; it is not uncommon near the banks of the Barrow; and appears sometimes in limestone quarries, particularly near Freshford. Iron ore is not confined to the neighbourhood of the collieries; a workable ore has been raised, as it is said, at Ballitarsney in the parish of Kilneddy, where there is a chalybeate spa, from the sides of which may be taken tubes of stalactic iron ore: stalactic iron ore and sandy ore with shelly impressions, are occasionally found in other places; some of the latter kind near Thomastown.

Of copper, no certain indications have been found; but the rocks on the banks of the Nore and Barrow, have been suspected with some appearance of probability of containing metallic veins. Lead ore in a small quantity has been found near the right bank of the Nore, between Inistioge and Ross; but it has been raised in much greater quantity in different places in the calcareous district, and particularly near Knocktopher, where large pieces of fine grained galena are not unfrequently taken up, imbedded in limestone quarries; galena has been also found near John's Well on the Nore, near Danesfort and other places; but the only mine of lead ever worked, was in the park of Floodhall; it was continued for some time with considerable profit by Mr. Wyse of Waterford; the ore was rich, and contained a large proportion of silver.

Limestone.—It remains now to speak of the calcareous strata which occupy so large a portion of this

this county; and are the basis of its central part, and of its north-west and south west extremities. The southern boundary of that mass of limestone which runs through the centre, beginning to the south of Callan, takes a winding course through the parish of Ballaghtobin, and having passed near Rosanarrow, and before the castle of Clone, approaches Knocktopher, from whence it turns towards the north west, and follows the stream of Jerpoint to the Nore; on the opposite bank, it comes near to Thomastown, and passing through the parishes of Columkill, Killfane, and Dungarvan, runs to the lower part of the hills of Powerstown, and is divided from the granite by the stream of Brookhill, near Barrow-mount: from hence to the bounds of the county, northward, the banks of the Barrow are composed of limestone, which extends afterwards to the foot of the hills of Shankill: its northern boundary then passes beneath Kellymount, skirting the foot of the hills through Tascoffin and Claragh, and turning to the north through the lower part of the parish of Rathcool, continues into the parish of Mothill, where taking a western course for a little way, it approaches the Dinan; on the other side of which it includes most of the parish of Mayne, and taking a northerly course, runs near, and parallel to the hills of Fassadinan, as far as the bounds of the county, near Russelstown. Limestone attends the opposite bank of the Nore, and occupies the western parts of Galmoy, together with the northern and western parts of Crannagh, filling

all

all the space between the slaty and more elevated hills before mentioned. On the southern side of these hills, it forms the great plain between Callan and Kilkenny; having its northern limits in the upper part of the parishes of Kilmanagh and Ballycallan.

The southern part of the barony of Iverk, has a limestone basis, extending from two to four miles in width from the Suir, ending near the castle of Granny, but spreading from the river into the parishes of Gaulskill, and Dunkit in Idagh, towards the foot of the hills.

In the map annexed to this work, the spaces occupied by the different species of stone, are marked out and coloured: the boundaries of each are delineated, not with that accuracy which a technical or tedious survey might have done, but in a manner sufficient for the objects of this enquiry; a general idea is given of the relative situations and proportions of the more obvious minerals forming the immediate basis of the country; but slight deviations could not be attended to or marked on a small scale, and in a map including many other objects; neither could the varieties of argillite or shistus be separately coloured or traced, as they vary by gradations, in the northern part of the county, from the softest argillite, to the most compact siliceous shistus. The latter shistus, which may be considered as secondary, differs entirely from that coloured separately in the map, which adjoins the granite, and may be called primitive siliceous shistus: the boundaries of the ferruginous argillite, which attends

tends the coal, could not be drawn, as it only comes to the surface partially, but is generally covered by its concomitant stone, a siliciferous argillite, which, however, contains more silex than argill, and is sometimes, though perhaps improperly, called a siliceous grit: this stone, with its variations, occupies some of the district south of the collieries, as in Mucullee, without any appearance of the ferruginous argillite.

As to the calcareous district, it varies much in the quality of the stone; which variations could not well have been noticed in this map. Some stone to the north of Gowran, which to the eye appears good limestone, cannot be burned into lime, on account of its hardness, or the quantity of siliceous sand it contains: near Callan, a kind of white limestone, splitting in lamina, is little esteemed; near Durrow, the stone is full of what is called *flint*. The best stone is that of a blackish colour, with shining marks and impressions of shells; some of the best is near Thomastown and Kilkenny; a reddish stone also makes good lime, some of it is found in the same quarries with the black near Thomastown, and near the cave of Dunmore. The blacker the stone, the whiter it is said the lime will be, and the harder the stone, provided it is purely calcareous, or nearly so, the better the lime.

A large mass of *siderocalcite* occupies part of the calcareous country; it forms the hill called Freestone-hill, on the turnpike road to Dublin, about six miles from Kilkenny; from thence it extends

westerly

westerly towards the river; and a quarry of it is open not far from the Marble Mills; the adjoining road has been mended by it; but though easily broken, it is not a lasting stone for that purpose. Several walls are built of it between that place and Bennet's bridge, as at Dunbell; but for that purpose it is not well calculated, as it is brittle and full of interstices. What has been used resists the effects of the weather by which it is very liable to be injured, tolerably well; it is hard and rather heavy. It has been employed even in building the walls of lime kilns, and cannot be burnt into lime, which has been in vain attempted, and therefore by the masons it is called a *free-stone;* it effervesces strongly with marine acid.

Siderocalcite is not peculiar to this spot: it is usually found upon sinking to a certain depth beneath the limestone, in the barony of Galmoy and northern part of Crannagh; its cavities are filled with crystals either of its own or of spary iron ore, into which mineral it often varies. In sinking a well at Balief, in the parish of Cloghmanta, in 1801, the following strata occurred:

Surface soil, light brownish loam, mixed with stones	1 foot,
Clay	1 ditto,
White binding limestone gravel . . .	14 ditto,
Fine shelly limestone, with veins of calcareous spar and crystals, and some basanite	14 ditto,
Siderocalcite and hard white limestone .	16 ditto,

the

the former occupying one side, and the latter the other, of the well, and not penetrated.

From the iron and the manganese which is contained in siderocalcite, it might form a useful ingredient in mortar intended for building in water; both those metals having so great an affinity to oxygen, with which they are supposed to be far from saturated while in the stone, would by the decomposition of water, have all the effects of terras, in proportion to the quantity of them contained in the stone, which is very variable. To make a fair trial, some of the heaviest specimens should be chosen; they should be taken fresh from the quarry, finely powdered and not long exposed to the air: it will require a large proportion of fine silicious sand, which can easily be procured from the bed of the Nore, to make it resemble pouzzolana, which last substance, as well as terras, contains, however, a larger quantity of iron than is usually found in siderocalcite.

All the limestone of this country contains impressions of shells or corallines; it is stratified more horizontally than the other stones usually are, except, perhaps, the siliceous breccia; it appears to fill all the lower part of the country between the hills; no other stone ever lies above it, and it is generally so deep that scarce any other has been found beneath it; in a quarry of fine blackish limestone, near the spa of Ballyspellan, the workmen said they found the same black slate which forms the adjoining hill, at the depth of twenty-two feet. In most places

the

the limestone district is terminated by a broad bed of gravel, composed chiefly of rolled calcareous pebbles; this, however, is not the case in the barony of Galmoy, where it is more closely confined between two rows of hills, and where the limestone hills rest immediately against those of argillite; the limestone on the summit of some of those hills, assumes the appearance of perpendicular strata, which is merely owing to its decomposition, and the widening of the fissures; for its beds are really nearly horizontal. At Conahy, the rocks of limestone came close to the argillaceous hill above them; they rise abruptly above the surface, and their beds dip to the north and east. Beneath the rest of the contiguous hills, and often along the banks of the Nore, the limestone is bordered by gravel: at Ballyragget, a quarry of black limestone above the town, comes to the river, it is hard, and might be polished for marble; in one quarry the beds are about three feet thick, nearly horizontal; not above three or four are laid open, and the blocks may be raised of a very great size. The quarry passes under the river diagonally, between beds of gravel; the price of quarrying at this place is 3*d*. a load for stone to burn; 3½*d*. or 4*d*. for building stone; the work is usually paid in that manner, but when engaged by the day, the quarrymen receive 13*d*. and their diet. In a quarry of fine blackish limestone near Ballyspellan, the slabs are raised in thin beds for tomb-stones, and sold at 1*s*. per foot. Six feet of earth lies above the rock.

The

The price of sinking a well in the calcareous strata of Galmoy, is *7s. 7d.* a foot, through the stone, and *13d.* a yard through the clay.

A space filled by gravel mostly calcareous, separates the limestone from the hills, from Powerstown to the Nore; and from Knocktopher towards Callan. The same occurs in Crannagh, from the hills near Kilkenny, by Mountgale to Kilmanagh.

But the northern boundary of this stone in the barony of Iverk is peculiar, it consists of a continued border of decomposed limestone, varying in breadth, and runs from Kilmacow to Whitechurch: it varies from a whitish to a brownish yellow; the upper beds are often like mere sand, the lower rather more firm, but friable and easily broken; it is constantly used for manure, being raised in various places, particularly at Kilmacow, at Sand-pits near Bessborough, and at Graigue near Castletown: its effects as a manure will be considered hereafter: at present it may be allowed to hazard a conjecture as to its origin. It bears all the marks of having been solid stone, now decomposed; its beds vary and dip in the same manner as the neighbouring limestone, it contains the same petrifactions, and at Kilmacow it contains a large quantity of basanite (as great part of our limestone does), which also contains petrifactions: the ground where it is found, is rather higher than that on either side, a hollow of a good breadth lies between it and the hills to the north, and it slopes gently towards the Suir, joining closely the fine beds of compact and hard stone,

that

that skirt that river and which also generally dip to the south. Its decomposition therefore did not probably take place from the mere filtration of water; nor could the small quantity of iron ore which it contains, have been the cause, at least to so great a depth. It does not contain by analysis above two and an half per cent of iron, and its depth is known to extend to from twenty to thirty feet, if not further. I subjoin a description of this mineral as it appears at Sand-pits, by the Rev. Mr. Shaw who lives on the spot. "The sand lies in different pits, in strata which are distinguished by different colours; and though a deep yellowish and deep bluish brown sand lie close to each other, yet their properties do not seem to differ, though the strata are perfectly defined and do not intermix; they are sometimes divided by solid rock, which burns in a kiln and makes very good building lime: all the rock is of a greyish colour, and in the insterstices you find different coloured marles of the consistence of cheese: some of them when exposed to the air, pulverize. Where the rock lies next to the clay surface of the pits, it heats to that degree from rain, that it has burned three or four inches of the clay to a caput mortuum." The district where this decomposed stone appears, is known by tradition to have been covered by a great and ancient forest; its very name *Fedh-dubhn* now Fiddown signifies *black or dark groves;* and its soil is still peculiarly favourable to the growth of trees. The ancient forest at some very distant period may have been destroyed by fire, which would have

spread

spread easily through the connected wood from west to east, aided by those winds most common and most violent from the west. The conflagration of a great and old mass of timber, must have lasted a considerable time, and produced an intense heat near the surface of the earth, sufficient to have calcined partially, the limestone beneath, for a good depth. The burned rock slacked slowly by the showers of many years, exhibits in its friable and shattered texture, the effects of such a change: the original fissures penetrated by the roots of oak, and the iron ore contained in the stone itself, might contribute to the decomposition, and the filtration of water, having extended to a certain depth, would by its own operation extend still further. Each bed in the pits is decomposed according to its hardness, none remains unaffected; the hardest is brittle and of a dull fracture.

This hypothesis is confirmed by several stones exteriorly vitrified having been found in sinking a ditch at Besborough; they are of different sizes, one or two larger than common bricks, and consist of detached pieces of the quartzy sand-stone of the hill, which, by coming into contact with earth containing much calcareous matter, was vitrified on the outside in the place where it was found; one of these stones is tinged on its glassy surface, by the peculiar colour given by manganese. Besides this some of the wood found in the boggy or lower ground towards the hills is charred. The lower ground between the hills and the limestone has some

gravel and some boggy soil; nor does the calcareous rock come always to the surface in Iverk. At Belline the seat of Mr. Walsh, a large space, the principal part of his demesne, is filled with stiff clay, and some clayey marle, surrounded by limestone, which probably lies beneath: this clay contains pieces of decomposed basanite, with impressions of shells; in sinking a watercourse here, some red tenacious bole was found, soft and fit for coarse paint: various old Irish implements have been here found imbedded in the clay, and a very perfect pair of large horns which deserve notice. They were discovered in November 1781, buried eight feet deep, in soft clayey marle, containing small marine shells, and are now preserved in the corridore leading to the great staircase at Bessborough. This sort of horns, which are by some supposed to have belonged to the mouse deer, *cervus alces* Linn; and by others, to no animal that now exists, has been seldom found so perfect, and so large; their peculiar characteristic seems to be, the palms that hang over and protect the eyes: they answer to Brisson's description "cornibus ab imo ad summum palmatis." Dr. Turton makes our mouse deer a variety, no longer in existence. These horns remain still attached to the skull; a great part of the skeleton was found also, but could not be taken out on account of the water.

Length

	Feet	Inches.
Length of each horn from the root to the tip.	6	1
Circumference of the beam at the juncture with the skull,	1	2
Circumference in the smallest part,	0	9½
Length of each palm,	4	1
Breadth of ditto in the broadest part,	1	4
Extent from the extremity of one branch issuing from the palm, to the opposite branch of the same,	4	4

The greatest span of the horns above exceeds eight feet. A smaller pair was found sometime before in a neighbouring pit.

The most important quarry in the limestone district, is that which produces the Kilkenny marble. It is called the black quarry, and lies half a mile south of the town, near the right bank of the river; one side of it is rented by Mr. Darley of Dublin; but the principal part is held by Mr. Colles; the strata here dip rather more than they generally do in the limestone quarries of this county; some of the best beds in Mr. Colles's portion incline so rapidly as to be difficult of access on the other side, or not to be approached at all, without removing the water. On the other hand the high road intercepts the quarry, and some of the lower strata on one side of it, rise near the surface on the other. Each bed varies from the other in shades and in quality, but neither the thickness of the strata nor goodness of the stone depend upon their relative situation; the

last bed indeed now opened is very difficult to be worked, on account of the quantity of siliceous stone it contains; the workmen call it *flint*; it is in general a hard and blackish basanite intimately connected with the marble, often containing impressions of entrochites and other small shells similar to those in the calcareous stone, and occurring in various proportions, from a small point to a large mass: it seems to be the general concomitant of the harder limestone, and the gradation from it into that mineral, is in some specimens almost imperceptible.

Over the black quarry, there is in most places about twenty-three feet of clay and gravel between the vegetable mould and the first bed; the strata of marble, each of which is known by its particular appellation, succeed in this order,

	Feet	Inches thick
Rock bed about	4	0
Thin bed, ...	1	4
Silver bed, from	1	6 to 2 f.
Bad bed, ...	2	0
Half moon bed, ...	2	6
Bottom bed, ...	3	0
Lower thin bed, ...	1	6
Black bed, ...	1	8
Griddle bed, ...	2	0

The half moon and the bottom bed are reckoned among the best: the former is so called from the number of impressions of bivalve shells which it contains: the sections of the spaces they occupied, now filled with white spar, being more or less lu-

nated

nated: the black bed and the silver bed are both esteemed. The marble which approaches nearest to black is most valued at Kilkenny. It is well known that this stone when polished has a black ground more or less varied with white marks; it is said these white marks appear more strongly, or encrease by long exposure to the air; the colouring matter which is carbon, may be affected, on the surface, by the oxygen of the atmosphere.

This marble contains a great variety of impressions, of madrepores, of bivalve, and of turbinate shells. Mytilites, turbinites, pectenites, tellinites, tubiporites, nautilites and ammonites, may be distinguished and perhaps most of the testaccous marks usually found in such stones. The spar which occupies the place of the shells, sometimes assumes a greenish yellow colour; in some places there are spots, though rarely, that reflect iridescent colours: and sometimes martial pyrites is imbedded in the marble; very perfect and large crystals of which have been found in limestone quarries. A small specimen of pink fluor was found in the black quarry by Dr. Blake, and is in his collection of minerals; it is a very rare occurrence. A kind of flaw sometimes appears in the stone, which from its irregularly indented figure, is styled by the workmen a *skull*, as it resembles the sutures of the Cranium.

By analysis, a specimen of that kind most usual in chimney pieces, with marks of bivalve shells, contained 98 per cent. soluble in marine acid, and left two per cent. of a black powder, which appeared

peared to be carbon, and burned without leaving any ashes. A second trial gave the same result, and the two per cent. of carbon, was deflagrated with nitre, without leaving any residuum. The solution in marine acid gave a small precipitation with volatile alkali, shewing the presence of a minute quantity of magnesia; and a slight precipitation with prussiate of potash: the iron and magnesia do not probably amount to one per cent.; and Kilkenny marble may be considered as consisting of 97 per cent. mild calx, two per cent. carbon, and one per cent. magnesia and iron, of which the former is in the largest proportion.

The price in the black quarry for raising and squaring is 9*s.* 9*d.* per week: the wages to common labourers are 13*d.* a day: the number of men employed in the marble business is from forty to fifty, and the wages vary from 8*s.* to 20*s.* per week. The quantity of marble exported is about fifty tons annually: the disadvantage of land carriage is very great to so heavy an article; the marble sent to Dublin, is taken upon cars as far as Leighlin-bridge, where it is embarked on the Barrow; that which is exported is usually sent to Waterford, and goes by land at least as far as Thomastown; Mr. Collis says, that a canal to the tide water would save above 6*s.* a ton in the carriage to Waterford: it might save more; but in addition to that, it would very much increase the demand.

The blocks exported are principally consigned to Liverpool and Glasgow: in return, Mr. Colles sometimes

times takes white Carrara marble at the former place, which he works up at Kilkenny into handsome and high priced chimney pieces, generally inlaid with coloured stones, and adorned with sculptures in relief.

Some coarse work is finished at the quarry; a few of the blocks are split in the town by handsaws; where a little of the polished work is also done; and tomb-stones are cut, which are raised from a different quarry. But the principal work is done at the marble mill, which is on the left bank of the river, near two miles from Kilkenny, to arrive at which the blocks must be drawn across the bridge.

This mill is admirable for the simplicity of its structure, and for the powers it exerts. One wheel, ten feet diameter, with twelve floats or ladles, gives motion by a crank at one end of its axis, to a frame containing twelve saws, which do the work of about twenty men. By a crank at the other end, it moves a frame of five polishers, which do the work of about ten men: at this end Mr. Colles has lately fitted a frame beneath the polishers, with eight saws, to the motion of which he has found the power of the machine fully equal. The strength of the stream has some effect upon the working of the wheel, but not much, and the mill may fairly be said to do the constant work of forty-two men daily; water is never wanting, and from the goodness of its structure, it is scarce ever stopped, or only for a very short time, on account of repairs. During the night, the mill is stopped, as constant attention is

required

required to supply the saws with sand, and to attend the polishers. Mr. Colles is extremely attentive to the business, which seems in a very thriving state, and wants nothing but the passage of a canal through Kilkenny, to encrease it. By means of the mill, the marble is so easily worked, as to be sold at a very moderate price; a middle sized chimney-piece costs about two or three guineas, and the price of the common ones, usually made, varies from twenty-five shillings to four guineas.

The saws are made of soft iron, and last about a week; they are constantly supplied with water and sand, the latter is taken out of the bed of the Nore, well washed and riddled until nothing remains but very fine and pure siliceous particles. A saw cuts ten inches in the day, and twelve when the water is strong; it would require two men to do the same with a hand-saw. The marble taken from the mill is first polished by boys, with what is called a *cove-stone;* this is a brown sand-stone, or grit, imported from Chester, which takes its name from being used in chimney coves. It is afterwards polished by a *hone-stone*; this is a piece of a smooth nodule of the argillaceous iron ore, found in the hills between Kilkenny and Freshford; it receives the last polish in the mill with rags and putty.

But its importation in a finished state into England and Scotland, has been hitherto prevented, by a duty of two shillings the cubic foot; what is exported therefore, is in the rude block: it is hoped this war of duties will no longer exist.

The

The machinery of the mill was the invention of Alderman Colles, grand-father of the present proprietor. He first tried a model in a small stream, and finding it succeed, took a perpetual lease of the marble quarry: he was, to use the words of an ingenious communication, "a man of great mechanical abilities, and abounding in a variety of those eccentric schemes which mark original genius, though success only, in the eyes of the world can stamp them with rationality; one of which was an attempt to make dogs weave linen by turning wheels; another, the supplying the corporation of Dublin with bored marble tubes, as pipes for distributing water through the city, was defeated only by a combination of pump-borers and other mechanics, who rose in a mob and destroyed them on their arrival. Such was the impression that his abilities made on the common people, that to this day his feats are proverbial among them, and they speak of him as a necromancer." While he amused the populace by various devises, such as that of a musical instrument which played by itself, as it floated down the stream of the river, and many others, he applied himself to the construction of useful machinery for different purposes; and invented a water mill and an engine for dressing flax, simple and efficacious, but now no longer used.

In the time of Alderman Colles, the mill bored as well as sawed and polished: and he applied his marble

ble to the construction of a vast variety of articles. There is still a room in Kilkenny lined with it by him, in imitation of wainscot; and he used it instead of leaden pipes in one or two houses. In *A Tour in Ireland*, published in London in 1748, by two Englishmen, it is said, "near the mill are apartments called warehouses, where you may see such a diversity of chimney-pieces, cisterns, buffets, vases, punch-bowls, mugs of different dimensions, frames for looking glasses, pictures, &c. that they would employ the eye the longest day, and yet find something to admire."—P. 191. The working of these smaller articles is now abandoned, as well as many of the contrivances of the inventor. The English traveller observes justly, that the marble "is full as durable, and bears as fine a polish as any brought from Italy;" and he continues; "though the stones in the quarry sometimes might weigh several ton, yet the method the contriver has used to lift them, draw them out, and convey them to the mill, without any other than manual operation, adds still more to the surprize; I am informed that this ingenious gentleman sends yearly several ship loads to England, which gives me a particular satisfaction, that they may find a native of Ireland has out-done all they have hitherto seen." "I cannot hear that any one has attempted to imitate the machinery. It is perpetually at work, by night as well as by day, and requires little attendance."—P. 192. It may be interesting to hear the state of this manufacture about sixty years ago, when the

preceding

preceding account was written. In the time of Boate, the marble quarry seems to have had no exclusive proprietor, but lay open to all the townsmen. —P. 82.

Calcareous countries have in general caverns, formed probably by the subsidence of their strata, in consequence of the action of subterranean water: harder siliceous rocks could not be affected by the same means; and softer ones, if undermined, would entirely fall in and leave no vacuity. The cave of Dunmore is one of the most remarkable in this country; it has been often visited and described by travellers. See *Tour in Ireland* before mentioned, page 192. See *Trip to Kilkenny*, page 139, and *London Magazine*.

This cave is situated not far from the edge of the calcareous district, a little south of the church of Mothill, in the neighbourhood of quarries, and in a cultivated field, on the slope of a gentle hill. A large oval pit, about fifty yards by forty wide, first appears, which seems to have been formed by the sinking in of the surface, where it had least to support it; in the eastern end is the mouth of the cave, to which the rubbish of stone and clay forms a deep descent of above seventy feet from the opposite quarter: the other sides of the pit are almost perpendicular; the strata nearly horizontal and thin, with cavities containing spars and crystals. Rabbits often burrow near the entrance, and wild pigeons live within the first cavity. Some of the plants within the

pit,

pit, and before the arch at the entrance, are the *glecoma hederacea*, ground ivy, Ir. *Athain luss*, a plant considered holy by the common people, and carried as a charm against fairies, particularly on St. John's night; *asplenium scolopendrium*, hart's-tongue spleenwort, Ir. *lugh na much y fian*, or *plant of the wild boar; sambucus nigra*, elder, Ir. *trom*. The first cavern is irregularly shaped; of a large circumference; the roof near fifty feet high, and the floor sloping downwards; towards the left, a narrow passage leads by a slippery ascent to the interior, where a vast variety of stalactic forms, assisted by the inequality of the rock, amuse the spectator; the cave grows narrow, and again widens into a large apartment: beyond are winding passages and other cavities, in one of which the cave is said to run out towards the other side of the hill, and that the light can be seen through a chink; it certainly goes in that direction, and might be opened at the other end. The bottom is always slippery; stalactites are continually formed by the dripping water, and calcareous sinter is deposited in various shapes, on the sides and bottom. In one part of the inner cavern, imagination supposes it to take the form of an organ, in another that of a cross, or of an altar: pieces of the transparent alabaster taken out of this cave, have been occasionally polished, and worked into tables and vases; and it is surprising that they are not an object of manufacture in an extensive manner. The quantity is great; it can be detached in large masses,

masses, and an easier entrance might be opened to the other end of the cavern. A stream of water passes through the cave, at a great distance from its mouth, and many sculls and bones have been found, not a great way from this stream, and in other parts far within the cavity; some of the sculls were enveloped in calcareous spar. In or near this cave, some clay coloured by carbon, and called black chalk, has been taken up.

About two years ago, a small cavern was opened in a quarry of limestone near Patrick's gate Kilkenny: in the entrance was a large quantity of siderocalcite and sparry iron ore: a little way from the entrance, which is a kind of arch, is a fine spring of water of great use to the neighbourhood, and perhaps the cause of the excavation; the bottom slopes rapidly and the cave continues but a little way. There is a cave in the limestone rock at Paulstown, in the parish of Shankill, and smaller ones in other places.

A stream which flows through the glen of Ballyragget forms calcareous incrustations on moss and roots in great quantity, and with rapidity: this deposition is very fine manure, and has been used as such by Mr. T. Kavanagh.

A great variety of marles deposited beyond the bounds of the calcareous district, appear in many places; though often raised for manure, yet they are not sought for, or used to the extent they might be: these marles seem to have been deposited in

hollows,

hollows, aloug the sides, or at the feet of most of the hills, as well near Brandon, as through the whole barony of Knocktopher and part of Idagh; they are always accompanied by rounded pieces of limestone of various qualities and often mixed with other stones. These beds are more common on the northern than the southern side of the hills; and marle of this kind is found in the banks of most streams in the northern as well as southern districts; the marle varies into limestone gravel, and of the latter some beds accompany the banks of the Nore between Thomastown and Ross; they contain all the varieties of limestone and a great many other stones.

The field stones of the limestone district consist of pieces of all those that form the shistose and other hills; limestone pebbles are not common on the surface; but pieces of decomposed or whitened basanite, containing impressions of entrochites and small shells, and sometimes hornstone, with the same impressions are found. Calcareous petrifactions are occasionally seen dispersed, as pectunculites, echinites, cochlites, and some cornua ammonis; some of the latter, formed of calcareous spar have been found in quarries; tubiporites both flatted and round, are not unfrequent, particularly in the barony of Galmoy, where they may be often seen in the fields and dry stone walls. A very large mass was taken out of the Barrow by Sir Edward Loftus near Mount-Loftus, and is now in the cabinet of the Dublin Society: it consists apparently

apparently of tubiporites, similar to those found in quarries and fields in Galmoy and near Kilkenny; the stone is above two feet in one direction, and eighteen inches in another. The original cavities are filled with white spar; the impressions are striated on the outside and jointed; within they are radiated from the centre; they seem to have belonged to the *tubipora fascicularis* or some similar zoophyte.

The proportions of each mineral district may be considered thus, in a rough statement:

	Acres.
Granite, ...	11,000
Primitive siliceous shistus, ...	15,000
Siliceous breccia and red argillite, .	50,000
Slaty argillite, ...	32,000
Ferruginous argillite and secondary shistus,	80,000
Limestone and *calcareous strata*, (including gravel.)	120,000
Inundated or wet ground, *(occupying hollows or banks of rivers.)*	10,000
Total	318,000

Sect. 6. *Waters.*

The mineral water best known in this county is the spa of Ballyspellin, in the parish of Fartagh; the spring rises out of a rock of brittle slate consisting

sisting of ferruginous argillite; the hill immediately above is formed of the same materials, accompanied to the north as usual by siliceous shistus; but the hills of Cloghmanta and Killishulan which immediately adjoin to the south east are composed of limestone, and they are the highest limestone hills in the neighbourhood; the water collected first on these calcareous heights, and filtrating through their upper beds, passes afterwards into the ferruginous slate, at the farther end of which it forms the spa of Ballyspellin. From the limestone it receives its carbonic acid gas, or fixed air, which enables it to dissolve a small portion of iron in its passage: and hence we find it exhibits evident signs of these two substances, and very little of any other. To the taste, as well as by the common tests, it appears slightly acidulous, and changes the colour of infusion of galls to a light claret: when first taken up and held to the light, it appears full of a number of minute bubbles, which soon rise, and vanish. It is light and agreeable to drink; its temperature changes but little, and the spring never fails, which shew that it runs for a good distance beneath the ground. The taste of iron is hardly sensible in it, though the water is received through the old barrel of a gun: it gives very slowly a light blue colour, with prussiate of potash: the stones beneath the spring are tinged with an ochrey sediment. Its principal quality seems to reside in the quantity of carbonic acid gas which it contains, but which it soon loses when exposed

exposed to the air; for this reason it should be drunk upon the spot. Dr. Munro states that it contains fixed air, iron and probably fossile alkali. Dr. Rutty says that it passes towards its exit through a rock of lapis Hibernicus or Irish slate; that is to say *aluminous* shistus; the slate may contain a small quantity of sulphuric acid; there is an open spring near the spa from the sides of which the common people take it, as it is soft and brittle, and eat it for complaints in the bowels, and even give it to their horses. Rutty says, that the particles of iron which it contains become magnetic by calcination; that the water of the spa exhibits no change with alkalies, and that it "becomes weak after a long drought, but on rain succeeding as he observed after a plentiful shower, it presently becomes stronger and strikes a deeper tincture with logwood," p. 170. I saw it in dry weather, and after two very dry summers. It is said that being bottled at the spring, it at first loses its sparkling appearance, which after sometime it regains; and Rutty observes, that it recovers after being kept a year in bottle: the solid contents in a gallon were, he says, four grains; it appears to contain no calcareous earth; and being kept deposits hardly any sediment.

Rutty says that it is corroborative and good in obstructions of the viscera, drank from *two to three pints* in the morning, and similar to the chalybeate of Balimore in Worcestershire. In its contents it appears to resemble the spa of Kirby in Westmore-

land, and of Cawthorp in Lincolnshire, and in its effects, the waters of Pyrmont and the Groisbeek spring at Spaw: it deserves however a minute and attentive analysis from modern chemistry. Its effects have been made known by different authors; by Dr. Taafe who published a work in 1724 which is now scarce, entitled "the Irish Spaw," in which he discusses its virtues at great length; and by Dr. John Burgess, who published "an Essay on the Waters and Air of Ballyspellin" in 1725, as well as by Rutty on mineral waters*. The latter states,

* The reader too recollects the rhymes of Dr. Sheridan, when he attended a lady hither who received benefit from these waters; his account of their effects agree with those of the other Doctors.

"All you that would refine your blood,
As pure as famed Llewellyn,
By waters clear, come every year
To drink at Ballyspellin;

Though pox or itch your skins enrich,
With rubies past the telling;
T'will clear your skin, before you've been
A month at Ballyspellin.

If Lady's cheek be green as leek,
When she comes from her dwelling,
The kindling rose, within it grows
When she's at Ballyspellin.

The sooty brown, who comes from town,
Grows here as fair as Helen;
Then back she goes to kill the beaux,
By dint of Ballyspellin, &c.

The

states, that it cures a variety of diseases which proceed from debilitated habits in the stomach, in the intestines, and in the lungs. He observes its efficacy in recent dropsies, in eruptions and blotches of the skin, in a case of leprosy, and another of inveterate relaxation; where it had most effect it was used both externally and internally, and six pints a day was drank in the latter case: in obstructions of the liver, and jaundice, he says it has done wonders. Dr. Burgess recommends it from "ten year's experience and observation," in most disorders proceeding from obstruction or relaxation; he remarks its lightness, and its "easy lathering beyond any mineral water he ever saw or heard of;" he thinks that the pure and expansive air of Ballyspellin, with moderate and regular exercise, and a use of these waters, contributes to conquer many inveterate complaints which he enumerates; and he mentions with complacency, "the dry rising grounds and pleasant hills of the vicinity."

The troubled mind, the puffed with wind,
Do all come here pell mell in,
And they are sure to work their cure
By drinking Ballyspellin.

Though dropsy fills you to the gills,
From chin to toe though swelling,
Pour in, pour out, you cannot doubt
A cure at Ballyspellin."

Strangers who visit this spa, generally reside at the village of Johnstown, which is about a mile distant; and the ride from thence, which is up hill, may contribute not a little to the salubrity of the water. Johnstown has in summer usually as many visiters as it can well contain; and the water is supplied during the season generally to more than forty families, besides those that reside constantly in the neighbourhood. An attempt was made to build lodging houses near the spa, in a bleak situation, but they were never completed; a sort of pump-room, however, in which the drinkers, and particularly invalids might be protected from the weather, seems much wanted, and would answer well. It may seem surprising that no such thing has been attempted, as the estates of three opulent proprietors join close to the spring: the spout has only been lately covered by a little arched shed; a kind of ruin affording no shelter stands near it. The man who attends must make near forty pounds a year; in 1801 he supplied in summer thirty-seven families, who paid from *5s. 5d.* to 11*s.* 4½*d.* each. Nor has any encouragement been given to building in Johnstown, which is well situated for the purpose, on one of the principal routes from Dublin to the south, surrounded by good roads, in a dry, airy, and healthy country. The houses are at present thatched, damp, ill-built, mostly of one story, and not well calculated for delicate persons: the principal part of the village consists of a dozen houses, forming the sides of an octagon, in the middle of which four roads meet; some trees which ornament

nament these avenues, and a neat church seen from a good point in the centre of the village, set off the appearance of the place.

Dr. Rutty mentions a chalybeate at Kilkenny in these terms, " in the College meadow on the bank of the river Nore, and on a marble quarry on which is a blue clay, which on being exposed to the air stinks, is lately discovered a spring, yielding a plentiful supply of water, which by all experiments appearing to be a chalybeate, Dr. Thomas Hewetson sunk a pump on it in the year 1734, and secured it from any inundation from the river, except in great floods." One of these great floods, however, carried away the pump, destroyed the spa, and no vestige remains of it now, except some water tinged with ochre, which oozes out of the bank at the edge of the meadow. Rutty observes, that " it had a ferruginous taste and somewhat sulphureous flavour, and struck a dilute purple with astringents;" that it was not so light as the Ballyspellin water; that in standing three days a greenish colour appeared in the upper part of the glass, which did not happen in the other; that both waters struck a pearl colour, which became afterwards red, with solution of silver; that Ballyspellin was the softer, lathering immediately with soap, while the other curdled; that the Kilkenny water gave a deeper green with syrup of violets, and a larger precipitation with sugar of lead; that this water, therefore, was not so pure a chalybeate as Ballyspellin, but contained a portion of calcareous earth, and a stronger acid; that benefit was found

from

from it in similar disorders as those relieved by the other; and he mentions its good effects in a case of erysipelas. This abridgement of his account was thought requisite, as the spa may easily be recovered by opening a well near the angle of the field where the old pump stood, if judged necessary.

A spa now exists and is resorted to, on the eastern side of the Nore, a little below Kilkenny, about half a mile from John's-bridge; it rises out of an artificial bank, between the river and the old canal, formed by the stuff taken out of the latter: the spring was originally in the edge of the canal: a little arched stone building is raised over it, and it runs out of a small spout: but little water comes from it, though it runs constantly: it is situated about nine yards from the river side, and as far from the canal. A little ochrey sediment appears about the spout and in the stream. The water tasted of iron, and gave a purplish tinge with infusion of galls at the spring: bottled at the source, and examined in Dublin, it appeared to contain a very small quantity of carbonate of iron, and muriate of lime; it deposited a little brownish sediment, which appeared to be argill.

On the opposite bank of the Nore near the marble mill, is a spa, over which a pump has been placed: it has a strong hepatic smell and taste: it changes the colour of silver, and becomes blackish by any astringent: the strength of this water, however, is greatly injured by a large reservoir for the use of a mill, which stands close to it, and above it, the water of which makes its way into the spring. It probably resembles

resembles the spa that was once in the College meadow.

A weak spa, somewhat resembling this in quality, is said to be near the abbey of Jerpoint; but it has not been examined, nor is it in repute, or much known by the people living there.

In the colliery, and near to it, there are several weak chalybeates; one of the best is in the demesne of Lady Ormonde; it has a ferruginous taste, and a scum on the surface: it seems to have a little more iron, though it has less fixed air than the water of Ballyspellin. The spas in the colliery are similar, and deposit ochrey sediment on the roots and stones beneath, though otherwise clear: it was customary to take up the surface of one of the strongest in the morning, when there was a scum on it, and carry it in a bottle to Castlecomer for those who drank it; and it is said to have been of use. The good effects of a chalybeate strongly resembling these, and near the borders of this county, are mentioned by Rutty, page 63; like them it gives a claret colour with galls, and comes from the neighbourhood of a coal mine; the soil partly yellow clay, partly slaty, with iron mine. It was efficacious in weakness of digestion, and removed an obstruction of the liver; it is at Killeshin, in the county of Carlow; it appears to have been stronger than those near Castlecomer.

There is another chalybeate near the church of Coolcullen in Mucullee, and many similar ones in the county, and all weak, as at Ballytarsney, at Kilcullen near Inistioge, at Listerlin, and other places.

But

But if chalybeates are frequent, springs of very pure water are much more so: some of these rise up with great force in wells, forming good streams from the commencement, and capable like the spring of Tubbrid in Galmoy, and of Columkill near Thomastown, of turning mills near the very source. The water of one of these, that of Luke's well near Mullinavat, appeared by tests to contain neither calcareous earth, nor sulphuric nor muriatic acid; the trial was not made at the spring, but a good while after it had been taken up; kept in a close bottle it deposited no sediment. Some of these wells are considered as possessing medicinal virtues by the common people; but they are more commonly considered as holy; they are frequented as places of devotion, under the patronage of some saint, from whom their virtue is supposed to proceed; and a *patron* is held at the well on the saint's day. In the morning of the saint's day, pilgrims collect at the holy spring to perform their penance, going on their bare knees through the stream, and round the well a certain number of times, while they count over their beads and sprinkle themselves with the water; this office performed, they celebrate the afternoon with a different libation. *Patrons* collecting only drunken and idle persons, and producing riots, have in some degree been checked; that at Luke's well has been suppressed for three or four years past. In Kilkenny is a holy well, under the protection of St. Francis; there are two under that of St. John in the county, two under that of St. Columb, one near Thomastown,

one

one at Inistioge, a holy well at Mullinakill, and several others. One formerly esteemed holy at Tybrachny in Iverk, and mentioned as sacred to St. Modimnoc, or Dominic, is no longer so. This idle superstition of well-worship, derived from Scythian idolatry, and forbidden in England by Saxon laws, may at last perhaps wear out in this country.

This district, well watered by streams and rivers, contains no lake, unless a piece of water of about one hundred acres at Gaulstown, in the parish of Gaulskill, deserves that name. This lough contains no fish but pike; from particular situations it is sometimes seen, and sometimes hid, according to the varying density of the atmosphere.

Adjoining the demesne of Sir Richard St. George at Woodsgift, in the parish of Cloghmanta, are temporary loughs called *The Loghans;* which are dry in summer. In November, but sooner or later according to the wetness of the season, the water usually springs up out of two or three holes near the back of the house, and covers about eighty acres: it rises also in the sandy bottom of an old fort near Marymount, and in one or two other places, and in spring retires. During summer the surface is principally covered by *potentilla anserina*, white tansey: in moist places grows the *alisma ranunculoides*, and other aquatics, but no useful plant. By a cut from hence to the lower ground, for which there is a sufficient fall, and by means of a sluice, the water might be let off at pleasure; in which case, this place now a very bad pasture, might in summer be converted into

good

good meadow; as soon as the water rose to a certain height, it should be discharged, and not suffered to lie on the ground, which would then answer all the purposes of flooded lands. The water is probably of a very manuring quality, for being collected on the limestone hills above, where it forms no spring, it passes through their strata, and rises here where it finds least resistance, carrying with it of course many calcareous particles. Boate gives an account of similar lakes, which he calls *turloughs*, in Connaught.—Page 111.

The rivers of this district are too important not to be treated of separately, and too much connected with the subject of navigations to be disjoined.

Sect. 7. *Rivers and Navigations.*

" And there the three renown'd brethren were,
Which that great giant Blomius begot
Of the fair nymph Rheüsa wand'ring there,
One day as she to shun the season hot,
Under Slewbloome in shady grove was got,
This giant found her, and by force deflower'd;
Whereof conceiving, she in time forth brought
These three fair sons, which being thenceforth pour'd
In three great rivers ran, and many countries scowr'd.

The first the gentle Shure, that making way
By sweet Clonmell, adorns rich Waterford;
The next the stubborn Newre, whose waters grey
By fair Kilkenny and Rosse-ponte board;

The

The third, the goodly Barrow, which doth hoard
Great heaps of salmon in his deep bosom:
All which long sundred, do at last accord
To join in one, ere to the sea they come,
So flowing all from one, all one at last become."

This poetic survey, divested of its animated imagery, presents an account sufficiently accurate, but more concise and clear of the origin, the termination, and the qualities of the three rivers that adorn and enrich this district, than could be given by an inferior pen.

The Suir, in a winding and majestic course of about sixteen miles, conveys along the southern border of this county, the trade that passes between Waterford, Carrick, and Clonmell. Vessels of 120 ton navigate it to the bridge of Carrick, and of 300 ton and upwards to the bridge of Waterford: it is said the river could be rendered navigable for boats as far as Thurles. On one side, it might be made to communicate by canals with the Blackwater and the Shannon, and on the other hand with the proposed navigations in the county of Kilkenny, and with the Grand Canal. The public money expended on this river has been trifling, when compared with others. In 1755, there was granted by parliament £.1500; in 1765, and in 1767, there were granted equal sums, for the improvement of the navigation of the Suir and the trade of Waterford; the chief object in view was the removal of a shoal or sand bank. The principal streams which the Suir receives from one side, are the Lingan, a mountain torrent separating the

provinces;

provinces; the Sharah, a rivulet which flows through the demesne of Bessborough, and the stream of Kilmacow, which forms the eastern boundary of Iverk, and rises in the district styled the Welsh mountains. The tide, which forms small creeks at their mouths, renders them in some degree useful to the improvement and internal trade of the county, while it affords situations fit for building boats, which is particularly done at Kilmacow and Pill-town. Opposite the quay of Waterford there is fifty-three feet of water at low ebb in the deepest part; at the bridge, the difference between high and low water is seventeen feet.

When King William in his march to Carrick, gained the summit of the hills that overlook Iverk, and beheld the noble course of this river flowing through a district emphatically called *The golden Vale*, winding beneath the towers of two ancient towns, and emptying itself at last into a capacious harbour, where it meets its brother streams; when he beheld on its opposite bank steep hills presenting masses of foliage backed by the rocky summits of a chain of mountain; when he beheld beneath him a country which nature had partly clothed with wood, which art had embellished with cultivation and crowned with castles; he is reported by tradition, as soon as he recovered the first emotions of surprise, to have exclaimed, "this, indeed, is a country worth fighting for."

The Barrow, anciently called the Birga, skirts our eastern borders for about twenty miles, at first in a

course

course more direct, while its banks are rather level, but afterwards interrupted by numerous bends, exhibiting a variety of scenery, picturesque, romantic, little improved by art, but sufficiently variegated with woods and ruins. Among these scenes, the most striking is the view of the town, bridge, towers and monastery of Graigue, relieved by some adjoining groves, and backed by the lofty and steep side of Brandon.

This river has deep water at its mouth, and might receive any vessel that could lie at Ross; to the Scars, a reef of rocks near a mile below St. Mullin's, vessels could always come in the lowest neap tides. The first lock of the navigation is at St. Mullin's, and common low water, when the tide has no land flood, is about three feet six inches on the lower sill of this lock. "The bottom of the river for a considerable distance below the canal at the tail of the lock, is from one to two feet deep above the sill, and there are also several small rocks skirting the part that has been deepened. The low neap tides rise above three feet over the point of commencement, and equinoctial spring tides about seven feet six inches, flowing into the level above St. Mullin's weir and lock, which in a low state of the river penns it up to about six feet six inches above the commencement." See Chapman's report, page 5. The boats which use this navigation are generally from twenty to forty tons, and some larger; the new locks are calculated to admit boats of eighty ton. "From the upper end of St. Mullin's canal to the tail of Carriglaid lock, the

distance

distance is about one mile and sixteen perches, and the rise of the river three feet and one inch;" the total rise of the river from low water below the Scars at St. Mullin's to the bridge of Athy, is 171 feet nine and a half inches perpendicular: 147 feet eight inches of the navigation was to be formed by locks, according to Chapman's plan, the rest by the river. The trackway was made, and several locks built under the direction of the Navigation board, before the present company was formed. Chapman proposed to them to have twenty-seven locks in all; nineteen of which were to be new. He estimated in 1789, the total expence of completing the navigation to Athy, at £.39,400, but that it would certainly fall within £.45,000, including a very high value for the land. There were many rocks of great size lying under the water, so as to endanger boats, particularly in the lower part of the river; several of which have been removed by the Company, and the trackway repaired. The river forms the course of the navigation, excepting in a few instances, where inlaid cuts are connected with it; the average breadth of these is forty-two feet at the top, and twenty-seven at the bottom, and the levels very short, the whole extent not being five miles. There are now ten new locks built by the Company, sixteen feet by eighty; the old ones are somewhat smaller, the least is fourteen feet by sixty-nine. All the locks have five feet water over their sills. Eleven thousand five hundred pounds were expended on the navigation by parliamentary grant previous to the formation of the company: they

they have expended £.62,881 and require £.30,000 and twelve more locks to complete it, according to their statement to the Irish parliament in the last session, in all £.104,381 the distance is 33¼ miles. They proposed in that statement, which I have followed in most of the above facts, to sell to the public a third of their tolls for an annuity of £.3000 a year. They calculate, that the amount of money expended in buildings for store-houses, mills and manufacturies on the Barrow, within the last ten or twelve years, with the capitals employed in them, is equal to £.150,000

The tolls on the Barrow now charged are,

	s.	*d.*	
For all goods and merchandize, . .	0	1	per mile,
For corn, meal, malt and flour going to Dublin, ...	0	1	ditto
In every lock, for loaded boats, .	1	1	each,
——— for empty ditto, .	0	6½	ditto,
Passengers each, ...	0	1	per mile,
Empty boats per ton	0	½	ditto,

By their charter they were allowed to charge 3*d.* per mile for goods and merchandize. The freight from Ross to Carlow is from 8*s.* to 10*s.* a ton; the number of boats employed about 200 from eight to forty tons.

The

	£.	s.	d.
The produce of tolls in 1797 was . .	776	14	11½
in 1798 - - . .	742	16	7½
in 1799 - - . .	1,531	1	11½

The charge of the establishment is £.580 per annum.

The boats on the Barrow are drawn by horses: there were in 1790 sixty boats belonging to the town of Graigue, in 1800, only forty, but these latter were of a larger size, and their total tonnage was one fourth more than that of the former; each generally requires four men. Some boats are built on the Barrow; a boat of twenty-four tons, which was on the stocks at Newbridge in 1800, was valued when completely rigged, at 120 guineas; the timber work cost from 80 to 90 guineas.

The river Nore or Newre, more peculiarly belongs to this county, flowing nearly through its central part, in a winding course of not less than thirty-six miles from the neighbourhood of Durrow to its junction with the Barrow. It passes through a country of low varied hills to Ballyragget, but as it approaches Kilkenny the banks become higher: from an eminence called the Eagle-rock, nearly opposite the mouth of the Dinan, a grand and extensive prospect is presented; the river winds beneath; beyond is a cultivated and uneven plain with distant hills; part of the wooded demesne of Jenkinstown adds to the scene, which is interspersed with several country houses and plantations. From the eastern bank above Kilkenny the view of that city

is

is grand and striking; its ruined monasteries, some of its towers, its cathedral on one eminence and its commanding castle on the other are placed in their best attitudes. Below the town, the banks are often steep, and in a state of great neglect; but the soil though poor, is capable of improvement, either for pasture or plantation. One small wood at Kilfera, ornaments this part, and many mills and buildings convey the idea of trade, which seems to contend against the disadvantages of an unnavigable stream, and an expensive land carriage. Having joined the King's river, and passed some country seats and improvements, the Nore flows into the centre of the grand demesne of Mount Juliet, where a variety of rising grounds are judiciously covered by connected plantations; beneath, a green carpet spreads to the river, on whose opposite margin rises the mansion house, having the bank which it crowns, decked with young trees, and enriched with old scattered oaks. The whole of its course from hence to Ross by Thomastown and Inistioge, presents picturesque scenery, varied by ruined castles and abbeys, by rocks that turn the course of the river, by green meadows that skirt its banks, or by steep hills clothed in foliage. Of the ride from Thomastown to Ross, Mr. Young has given a description in his tour, which it is needless to repeat. Though the banks of our rivers may often be beautiful, yet the face of the country at a distance from them, possessing from nature every capability that variety

of surface can give, too often presents, from a mere defect of trees, only a cold outline or forms ragged and uninteresting.

After the junction of the Barrow, the united stream takes the name of the Ross river; it grows wider and is adorned by some handsome houses and plantations; and receiving the Suir, it is from that point called the harbour of Waterford; of this harbour on one side and of the city on the other, there is a fine view from the high hills that form the angle of junction.

The principal streams which fall into the Nore, during its progress through the county, are the King's river and the Dinan. The former called in Irish *Oon-righ*, and translated King's river, is so named from Nial Caille who was drowned in it by attempting to save one of his attendants; this monarch is said to be buried at Kilree,* which from thence takes it appellation. Uniting with the Munster river and some other small streams near Callan, it flows in a gentle course to meet the Nore about three miles above Thomastown. Its descent being small shews the facility of a water communication, in a direction somewhat parallel, which might join the former river, or the proposed canal from Kilkenny. The Dinan flows from the hills of Fassadinan, it has its source in Idrone and collects all the small streams of a high country: the Dian meets it about a mile and a half below Castlecomer, charged with the waters of many torrents from the Slewmargy

* Beneath a cross, made of a single block, handsomely sculptured, but without an inscription.

Slewmargy mountains, the Donane stream, the Brukagh and the Clohogue. About two miles lower it receives the Dubhglass, and rushes in a rapid current to the Nore. Swelled to a great height at particular times by the waters of so large a mountain district, it is the principal cause of the sudden and violent floods in that river. In its bed and banks is much rolled limestone, and many large blocks, but the ferruginous slate attends it almost to its junction with the Nore; the angle near the two rivers only is calcareous rock.

Near the bounds of the county, the Nore is encreased by the Erkin from Durrow, and afterwards by the stream of Freshford. Between Thomastown and Inistioge it receives the Argula, a mountain torrent flowing from the hills that bound Knocktopher and Idagh; and among other small streams the Clodagh, a rivulet from Brandon, remarkable for a singular fall at its mouth, in a rocky and wooded recess.

The Nore like all mountain rivers is subject to great floods. The bridge of Kilkenny was carried away in 1447, and in 1564, by remarkable inundations; and in 1763 on the 2d of October, both the bridges were destroyed and the damage done by the flood estimated at £.11,381, 14*s*. 4*d*.; several lives were lost, as it rose in the night, Bennet's bridge and that of Thomastown were thrown down, and two arches of Inistioge bridge were split; the parliament granted £.5,417, for rebuilding John's and Green's bridges, and the rest of the damage was repaired at the expence of the county, in aid of which

the Lord Lieutenant Earl of Northumberland, gave £.200. The bridge of Castlecomer was carried away at the same time, and a handsome one built in its place, partly at the expence of Lord Wandesford. The next flood which did much damage was in 1788; it began in the afternoon of the 12th of November; at Inistioge it swelled about fifteen feet above the usual level, and it rose five feet in seventy minutes after the bridge of Thomastown fell. The last formidable flood was in 1797; it began early on the morning of the first of September, and continued encreasing for above twelve hours; at Inistioge the water rose about sixteen feet. Bennet's bridge and that of Thomastown were again nearly destroyed, and great damage was done by the small streams in other places. Lesser and partial inundations often occur, very injurious to the ground near the river, bearing away whatever cannot resist their force, and leaving behind them a deposition of siliceous sand. Some damage was done by them in 1799 and in 1800. It may be observed that no great flood ever occurs in this river except when the wind has blown for sometime from the north-west accompanied by rain; the clouds thus driven on the hills to the north of the county, and quickly succeeding each other, fill all the sources and convert into torrents the streams that feed the Nore. The coincidence of a spring tide will keep up the water, and add to the deluge: although in very great floods the tide is scarcely perceptible at Ross. Crops of hay are liable to be surprized,

surprized, on the banks of the Nore, and an expedient mentioned in the Survey of Perthshire, might be worth attending to by extensive farmers, "wherever," says the author, "embankments are deemed too arduous an undertaking, and where the hay or corn is in danger of being carried away by floods in the autumn, hurdles may be made round the links and along the banks of the river, somewhat open below, to afford an easy passage to the stream, and close wound above, to stop the floating crop." A violent current would little affect such hurdles, if well staked and sufficiently open beneath, while they would catch the hay or corn above: but against the great risings of the Nore they might not avail, though they might be highly useful against its lesser and sudden swellings, as well as against those of smaller streams; they would not be expensive on large farms, where they might be applied to many other purposes when not required as a barrier against the effect of floods.

To establish a navigation from Kilkenny to the sea, has been long considered as an object of importance. Much money was once expended in the attempt; and many plans have been since proposed, but none adopted: all information therefore on this head may be useful, as the subject is still in contemplation. Vessels of three hundred ton can come up to Ross, and the tide flows as high as Inistioge; a quarter of a mile below Inistioge there are twelve feet neap tides, and fifteen feet spring tides, and the same depth of water continues to Ross, except in

one

one spot, where the gravel deposited by the Clodagh makes a small shoal, which can be passed, however, by large vessls when the tide is in, and might be easily removed, and prevented by a little bank to turn the mouth of the stream obliquely, so that vessels requiring that depth of water might come up into the interior of the county, and bring the sea, as it were, or at least its advantages, to within fourteen miles of Kilkenny.

In 1755, a petition of several gentlemen, merchants, farmers, and inhabitants of the county, was presented to parliament, in consequence of which the following sums were afterwards granted for completing this navigation:

	£.
In 1755	10,000
1759	4,000
1761	4,000
1763	1,500
1765	3,000
1767	2,750
	£.25,250

The progress made, and the manner in which the money was expended, is clearly and briefly stated in the report of a committee in 1768.

"Your committee find that a petition was presented to the House of Commons in the year 1755, setting forth that the land in the county of Kilkenny abounded

abounded with manures, was divided into small farms proper for the production of grains of all kinds; but that the expence of land carriage to the city of Dublin, and other markets, was attended with such great expence, that they were disabled from carrying on tillage, and that the coal-mines and marble quarries are situated convenient to be carried coast ways. That the river Nore, if made navigable, would answer many good purposes, and that by order of the Navigation Board, the same had been viewed, surveyed and estimated, and that the same might be finished for flat bottomed vessels of one hundred tons burthen for the sum of ten thousand pounds.

"It appears to your committee, by the report made in 1759, that the £.10,000 which was granted in the year 1755 had been expended. That Mr. William Ockenden was director of those works. That Mr. Omer had made the first estimate of £.10,000, which he said would have compleated the work in the bed of the river. That if he was to have done it at his own private expence, he would have pursued that method. Mr. Ockenden's scheme was estimated at £.22,600, for which he offered to finish the work by making a new canal. Mr. Omer acknowledged, that as the public was to be at the expence, he would recommend Mr. Ockenden's scheme, as the navigation would be safer, and the work more durable. By the examination of Alderman William Colles, it appears,

pears, that the navigation has been carried from Kilkenny four miles, or thereabouts, under the direction of Mr. Ockenden; that there is at the entrance of the canal a lock with one pair of gates, and at Archer's Grove a double lock, and another double lock at Archer's-town, where the canal falls into the Nore, and a single gate lock where the canal goes out of the river, and at Kilfera, a lock with three pair of gates, as the fall there is near ten feet, and goes into the river, and crosses it into a canal on the other side of the river, on the lands of Dunbell, where there is a single lock of one pair of gates, and a canal near a mile long, at the end of which there is a double pair of gates and falls into the Nore; and the navigation is continued in the river for about half a mile, and then crosses the river; and upon the lands of Killree a lock is built, at the entrance of the canal leading to Bennet's-bridge, which several works have been finished by Mr. Ockenden, and on his plan. The work, on the death of Mr. Ockenden, was conducted by Mr. George Smith, and the canal is cut from thence to Maidenhall, near where it is to fall into the Nore.

" Mr. Colles has informed the committee, that he has contracted for carrying on the navigation from Maidenhall to Thomastown, by widening, clearing, and deepening the bed of the river, and that he has built a double lock at Thomastown rape mill; for the finishing of the navigation and lock he is to have £.1200, and Mr. Hayden and Mr. Dyer of Inistioge, have contracted for carrying on the navigation

navigation from the place Mr. Colles's works end at Thomastown, to Inistioge; and for carrying on the navigation and building a lock at the tide-water; they are to have £.1,000, and it will cost £.300 to deepen the shallows. Which several sums have been provided for; but as there are several breaches in the work executed by Mr. Ockenden, occasioned by violent floods and settlements in the works, and to prevent further damages, it will be necessary to make a large gate at the entrance of the canal from Kilkenny, with several plat-forms of cut stone work, as over-falls to carry off the waste water; and it will be necessary to scour and clean the whole canal; and several weirs are necessary to be raised, to turn the water into the canal; and two double locks will be necessary between Killree and Maidenhall, and a trackway for sixteen miles; all which works have been estimated at £.5,500, half of which sum has been granted, and that the remaining half will complete the whole navigation."

In 1775, £.3,000 more was granted; but when a committee was appointed in 1778, to enquire into the expenditure, and state of the navigation, they found it in every respect incomplete, and as useless as if it had never been begun. The house agreed to their resolutions in the following terms:

"A committee to whom it was referred to enquire into the expenditure of the money granted to render the river Nore navigable, having come to the following resolutions, the same were, on being reported

ported to the house of commons, agreed to the 5th of March 1778.

" That of the sum of £.3,000 gross, granted in the session of parliament 1775, towards carrying on the navigation of the Nore, there remained in hand the sum of £.786 : 18s.,—£.558 : 15s. of which, is stated to be due to contractors.

" That no part of the sum of £.2,750, granted in the session of 1767, to the commissioners for carrying on the inland navigation of this kingdom, to be by them applied towards carrying on the navigation of the river Nore, hath been expended, but the whole of said sum remains to be applied, or accounted for.

" That a contract was entered into, having date 1st June 1767, by William Colles, since deceased, with the commissioners of the Navigation Board, whereby the said William Colles contracted to carry on the navigation of the Nore from Maidenhall to Thomastown, in manner therein mentioned, for the sum of £1,200, and that it appears by the book containing the proceedings of the said navigation, and by the testimony of Mr. William Waters, attorney, secretary to said navigation, that the said William Colles received the whole of said sum.

" That the work was not compleated in any part, agreeable to the said contract.

" That a contract was entered into by Henry Hayden and Patrick Dyer, with the commissioners, whereby the said Henry Hayden and Patrick Dyer, in consideration of the sum of £.1,000, agreed to finish

finish and compleat a lock and weirs from the town of Inistioge to the town of Thomastown, in the county of Kilkenny.

" That the sum of £.814 has been paid to the contractors, on account of the said last mentioned contract, and that said work has not been completed, but that the contractors are ready to complete it.

" That a contract was entered into by Michael Roth, with the commissioners, for deepening the river from Inistioge to Thomastown, three feet, in consideration of the sum of £.180, which was paid to the said Roth, but that the work is not completed.

" That all the sums granted for the navigation of the Nore, since the death of William Ockenden, Esq. director of said navigation, which happened in or about the year 1761, were received by Sir Wm. Evans Morres, Bart. since deceased, and that the whole sum remains applicable to the completion of the said navigation, which came into the hands of the late Sir William Evans Morres, and that his representatives are answerable to the public for the same.

" That the contracts herein before mentioned, ought to be forthwith carried into execution and enforced, and that the said unexpended sum remaining in the hands of the representatives of Sir William Evans Morres, ought to be forthwith called in by the local commissioners for carrying on said navigation,

navigation, and laid out by them towards completing the said navigation.

" That it appears to this committee, that the said navigation will be highly useful, and ought to be completed."

The plan of this old canal, was in every way ill conceived. It crossed the Nore three times between Kilkenny and Thomastown, and made use of a dead part of the river for a good length, below Sheestown mill: the inconvenience of a navigation interfering with a rapid river, is too obvious; and it is obvious too, that as it began at Kilkenny, no part of it could be of use, until the whole was completed. The navigation, ill projected, was abandoned, the money not accounted for, and the works fell into decay.

In 1786 the idea of effecting this navigation was taken up by private persons; £.16,800 was subscribed by seventy three individuals, the principal of whom was the late Lord Ormonde. Mr. William Chapman, whose merits are well known as an engineer, was employed to make a plan, estimate and level; which he executed in March 1787. His plan was, to use part of the old canal, to cross the river once, 100 perches above the King's river, and to descend to Thomastown 93 feet by fourteen locks. This was to be executed for £.19,729; the river below was to be rendered navigable to the tide-water, and the whole completed for less than £.30,000. Mr. Chapman's report contains interesting information as to the state,

and

and internal trade of this district; and it was thought better to give it entire in an appendix, than mutilate it by an abstract. See Appendix No. 1.

The objections to Chapman's line of navigation, are, that it is not elevated above the level of floods; that it crosses the Nore, and must communicate with it; and that it makes use of the river from Thomastown to Inistioge: to improve this latter part, has been in vain attempted by weirs; "the stubborn Newre" will not bear restraint. An accurate survey of this portion of the river is given, that its value as a navigable stream, may be fairly compared with an independent canal.

The boats that now navigate from Inistioge to Thomastown carry 13 or 14 ton down the river when it is full, and can sometimes bring up 10 ton, but only 3 or 4 when the water is low. They are drawn by eight men and require two more to conduct the boat, and are helped occasionally by a square sail; the men are paid 13*d.* a day, with three penny worth of bread, or 3*d.* in lieu of it. Boats are now scarcely ever built on the Nore: about 60 years ago, a vessel of 80 tons was built in the fields above Inistioge, and a larger vessel was once built about a mile and a half lower down, the dock for which still remains. The freight from Waterford to Thomastown was 10*s.* a ton in 1790, from Ross to Thomastown 8*s.*, from Waterford to Inistioge in in 1790 it was 4*s.* 4*d.* in 1800 it was 5*s.* 6*d.*; from Ross to Inistioge in 1790 it was 3*s.* 3*d.* and in 1800 it was 4*s.* 4*d.*

In

In consequence of Chapman's report a petition was presented to parliament by the subscribers, praying for incorporation and aid; and at that time they would have prosecuted the work, had they been permitted, without parliamentary assistance which they did not expect. Mr. Chapman had moreover stated, that a reduction nearly equal to a third of the estimate might be made, by saving the expence of cut stone in the locks, and adopting a mere economic plan. The prayer to Parliament however fell to the ground, partly through the inattention of the conductors, and the neglect of the proper formalities. But what may seem surprizing is, that some landed proprietors, who would have been peculiarly benefited by it, discountenanced the undertaking from partial or private motives.

Other plans were soon after suggested, which distracted the attention or withdrew the confidence of the subscribers; a canal to Thomastown on the right bank of the Nore by Jerpoint; a canal from Kilkenny to the Barrow, with a branch to Freshford and Ballyragget, and an aqueduct over the river were vaguely talked of. See Appendix No. 2.

Chapman in the meantime estimated the rendering the river navigable from Thomastown to Inistioge at £.14,344 10*s*.

A section of the ideal canal from Kilkenny to the Barrow was made in 1796 by Mr. James Oates engineer; the course of this canal is marked on the map, the length of it was eight miles five furlongs thirteen

thirteen perches, from Bettyville on the Barrow to about a quarter of a mile from the Nore, between Sion and Kilkenny. The height of the summit level was 126 feet, the ascent was to be by fourteen locks, twelve of which were placed within a mile and a half of the Barrow, the descent by three locks, the last at Templemartin. It appeared, however, that independent of the expence of so many locks, in so short a space, the summit level could not be supplied with water; as the only stream near it, between Levitstown and Highrath, was twenty-two feet lower; and nothing but an aqueduct from the Dinan, or some source in the northern hills could be discovered to supply the defect.

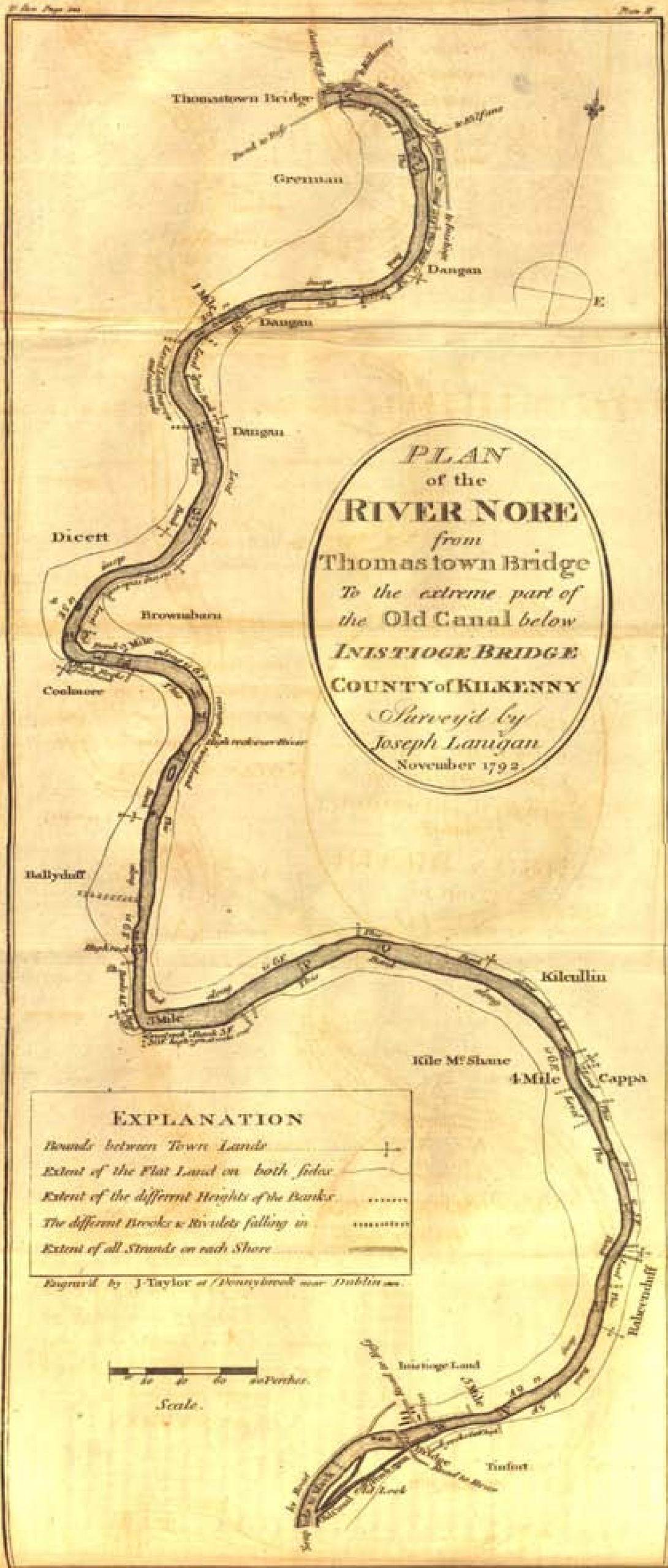
By this plan it appeared that the surface of water four feet six inches under the top plinth course of John's-bridge, is higher than the river Barrow at Bettyville forty-two feet six inches.

In the year 1800, the more reasonable idea of a navigation from Kilkenny to the tide-water was revived. A plan and estimate was made by Mr. George Joyce, for a complete navigation from Escar, five miles and a quarter beyond Kilkenny, where it was to have joined the projected Colliery-canal, to the tide-water below Inistioge, passing by Kilkenny and Thomastown. Mr. Joyce's plan will speak best for itself. See Appendix, No. III.

This plan carries the canal judiciously at a distance from the river, elevated above all danger from floods, and through a well-cultivated district, where the soil and the navigation would each contribute to

the

the advantage of the other. The estimate is £.99,748 12*s.* including an aqueduct over the Dinan. Mr. Joyce estimated, but did not recommend, a cut from the nearest point to the Barrow at £.24,622 11*s.* It appears right to give the canal a surface water of thirty-three feet, the principal expence consisting in locks, and not in the width of water; the locks cannot be less than proposed, and the work ought to be made complete at once. By making the canal of a proper width, the navigation to the sea will be performed in the same boats, a very considerable advantage, which cannot be had by narrow canals running along the sides of hills, or assisted by inclined planes, or by Mr. Fulton's perpendicular lifts, or any other cheap contrivance. It is also necessary to carry it fairly into the deep tide-water below Inistioge. From the rapid fall of the river at that place, the tide is seldom sensible far above the town; a little below it the neap tides rise only from two to four feet high above low water mark, and do not come within twenty-five perches of the bridge: spring tides rise about 175 perches above it: the fall of the river, therefore, for two hundred perches, is equal to the difference between low water and spring tides: in common tides there is twelve inches high water at the bridge: half a mile below Inistioge, a little below the entrance of the intended canal (where there is from twelve to fifteen feet water at neap tides) the difference between high and low water is from four to six feet; in the next half mile from four and a half to six and a half, and about two miles from


Thomastown Bridge
Grenman
Dangan
Dangan
Daugan
Dicett
Brownsbarn
Coolmore
Ballyduff
Kileullin
Kile Mc Shane
4 Mile
Cappa
Inistiogue Land
Tinfort
E
PLAN
of the
RIVER NORE
from
Thomastown Bridge
To the extreme part of
the Old Canal below
INISTIOGE BRIDGE
COUNTY of KILKENNY
Surveyd by
Joseph Lanigan
November 1792
EXPLANATION
Bounds between Town Lands
Extent of the Flat Land on both sides
Extent of the different Heights of the Banks
The different Brooks & Rivulets falling in
Extent of all Stunds on each Shore
Engraved by J. Taylor at Donnybrook near Dublin
Scale.

REFERENCE TO THE PLAN,

Shewing the distance of each smooth pond, with shoals, and each rapid, with the depth of water in each distance, at the time of survey, also at dry seasons, and at highest floods.

Distance described by Letters.	Smooth Ponds, Shoals, Rapids, and Distances.	Depth at Time of Survey.	Depth in dry Seasons.	Depth in the highest Floods.
	Perches.	F. I.	F. I.	F. I.
From Bridge to A	Shoal water, 10	4 : 00	2 : 6	15 : 00
From A to B .	Smooth water, 75	9 : 00	7 : 00	15 : 00
From B to C .	Rapid water, 26	4 : 6	2 : 6	12 : 00
From C to D .	Shoal water, 115	3 : 6	2 : 00	10 : 00
From D to E .	Smooth water, 90	4 : 6	2 : 6	10 : 00
From E to F .	Shoal water, 91	4 : 00	2 : 00	10 : 00
From F to G .	Smooth water, 81	4 : 6	2 : 6	10 : 00
From G to H .	Rapid shoals, 124	4 : 00	2 : 00	10 : 00
From H to I .	Smooth ponds, 22	10 : 00	8 : 00	15 : 00
From I to K .	Shoal water, 6	4 : 6	2 : 6	12 : 00
From K to L .	Smooth water, 66	6 : 00	4 : 00	12 : 00
From L to M .	Shoal water, 24	4 : 6	2 : 6	10 : 00
From M to N .	Smooth water, 34	8 : 00	6 : 00	15 : 00
From N to O .	Rapid shoals, 140	4 : 6	3 : 00	12 : 00
From O to P .	Smooth ponds, 149	10 : 00	8 : 00	15 : 00
From P to Q .	Shoal water, 58	4 : 00	2 : 00	10 : 00
From Q to R .	Smooth water, 154	9 : 00	7 : 00	15 : 00
From R to S .	Rapid shoals, 84	4 : 6	2 : 6	10 : 00
From S to T .	Smooth water, 44	6 : 00	4 : 00	12 : 00
From T to U .	Rapid shoals, 74	4 : 6	2 : 6	10 : 00
From U to V .	Shoal water, 100	4 : 6	2 : 6	10 : 00
From V to W .	Smooth pond, 54	10 : 00	8 : 00	15 : 00
From W to Y .	Rapid shoals, 100	4 : 00	2 : 6	20 : 00
Total distance, ...	1721	M. QR. P. Equal to 5 : 1 : 41		

Spring tides rise at the entrance of the old canal, seven feet above the level of the river, and flow up the river, to the letter U, and cause six feet depth of water, at Inistioge bridge, in winter; but in dry seasons, rise only four feet, at Inistioge bridge.

from Inistioge, or rather less, the difference is from six and a half to eight and a half feet: these are average measurements taken in natural and medium tides, but winds and floods increase the high and diminish the low. It has been observed that the highest tide in the Nore is always the first spring tide in the beginning of August.

The descent of the Dinan and of the Nore, is as follows; the bed of the Dinan is below the surface of the ground where the Colliery canal is to run at Escar 173 feet; the bed of the Nore at John's-bridge is below the ground at Escar 248 feet: the bed of the Nore at Thomastown bridge is ninety-two feet lower, and the bed of the river below Inistioge, opposite the mouth of the canal, is sixty-two feet below the latter; total descent from Escar 204 feet.

This canal, which is still in contemplation, is so intimately connected with the proposed Colliery canal from Maryborough to Castlecomer, that it was necessary to subjoin the scheme of that work. See Appendix, No. IV. No. V. and No. VI.

The summit level, great part of which is in this county, running for twenty miles without a lock into the town of Castlecomer, and winding round the hills east of Ballyragget, would be of inestimable advantage to the lands it passes through. From the limestone which it skirts, it would carry the most suitable manure into the hills of Fassadinan, and take back fuel to the kilns of the calcareous district, both at a trifling cost: this is but a part of the numerous advantages it would confer on some of the least improved

proved portion of the country, where the rise upon lands, now let much lower in proportion than any other, would exceed probably any ideas the proprietors themselves can at present form: nor can a circuitous course be deemed an objection to a canal, where a greater extent of country is benefited and more persons interested in its success; where Mr. Brindley's great principle is judiciously adhered to, of preserving at any rate a great length of level; while it circles through a district of various soil and various product; and must double the value of land to the landlord and quadruple it to the tenant. The estimate of the part from Maryborough to Castlecomer is £.44,032: 4*s.* including two aqueducts, one over the Iron mills river, and another over the small river that runs by Lisnefunchin, which it is to be observed Mr. Sparks calls the Douglas river in his report; including also quay walls for harbours at four places, besides Castlecomer; the distance by trackway from Maryborough is 7427 perches.

Since the original scheme, some alterations have taken place, on account of difficulties in the agreement with the Grand canal company. They required that the navigation should be made of the same width as their own, at least as far as Maryborough: they also proposed to complete it themselves as far as Mountmellick, if they received aid from Government, and on condition that the Queen's county company should contribute £.3000 towards building an aqueduct over the Barrow at Monasterevan, £.3000 more to be contributed by themselves, and

£.6000

£.6000 by Government. The agreement with the Grand canal company, who have come to no conclusion with the commissioners as to the price of lowering their tolls, which is a necessary step, is not yet settled, and that is the only thing which delays the undertaking.

If it is thought that the subject of canals takes up too large a share of this work, it should be considered that it might be judged unfair to have given only a partial statement, relative to works as yet in contemplation: besides it was thought right to lay before the public all the different plans, as well as estimates, in one view, that their relative merits might be seen at once and considered together. It will probably appear, that the direct communication with the sea is the object to be desired, either for the city of Kilkenny, or the collieries, as well as for the corn trade of the county; and it must be obvious to every one acquainted with Kilkenny, that nothing else can raise, or rather create the spirit of industry in that town; while if the present opportunity is lost, when the Government have money to apply for these purposes, the advantage of receiving such liberal public aid as is offered to the Colliery canal (amounting to one-half of their estimate), and which certainly would not be refused to one of such importance as that of Kilkenny, may never occur again.

The committee appointed during the last session of the Irish parliament, to inquire into the state of inland navigation, took no notice whatever of that from Kilkenny to the sea, or any other through this

county, though the plans of Mr. Chapman and Mr. Oates were both in their possession for a long time: in their report, however, is included a statement of the Barrow navigation, in which the company, who ask for an aid of £.20,000, propose as one of the conditions to make a complete road from Kilkenny to the Barrow, which will cost £.1500, receiving two-thirds, and free of all turnpikes, &c. "as the company deem a navigation by the Nore, or inland, not worth the cost of doing either." The Barrow navigation, now very imperfect, will have cost by their own statement, before it can be completed, £.104,381, for a length of thirty-three miles, and a descent by locks of 147 feet eight inches; and this only for improving the navigation of a river for the descent of 171 feet nine inches, as stated before: this is at the rate of above £.3000 per mile, or about £.610 per foot of descent. The Kilkenny navigation is to cost £.99,748 for a length of twenty-one and a half miles, including twenty-four locks, thirteen of which are double, and a descent of about 380 feet, or at the rate of about £.262 per foot of descent; but a canal has such a superiority over a river navigation, that it may be considered almost twice as valuable to the public; perhaps more so; when the advantages it has, in security from floods, in the easier draught to horses, in the absence of impeding currents, in the choice of ground for locks, in the little damage suffered by its bank, or trackways, in the direction of its course, in the shortness of its line, in prevention of delay and consequently of pilfering, and in all

expence

expence of repairs, are fairly calculated. But the proposed canal through the centre of this county would open the internal parts beyond it to the ocean, and by various branches would extend industry and wealth through a district, which is in a daily state of improvement. Scarce had this navigation been mentioned, when a communicating branch was suggested and warmly espoused from Cashel, which would have passed near Urlingford: another was thought of from Callan, and the Sleighvardagh collieries. Few canals, perhaps, of the same cost or extent, could ever contribute so much to augment productive labour, or could so efficaciously spread their extensive communications through the heart of a populous country. It would be a work of a superior kind, giving a constant and easy supply of grain to the increasing demands of the British market, converting heaths into fields of corn, changing decayed villages into rich and populous towns, and revolutionizing indeed the spirit and habits of the subject, not by placing him in a descending, but an ascending scale of society.

SECT. 8. *Fish, and aquatic Products.*

THE rivers of this district have been celebrated for their salmon; the fishing of which was some years ago of greater importance than it is at present: much of it was sent to Dublin, and in a fresh state: the mode of keeping it was by a slight boiling, called

setting,

setting, as soon as caught; by which management it would bear a long land carriage without injury, and appear at the end of the journey as firm as when taken. The heat applied at first, perhaps stopped the incipient tendency to putrefaction; cold is applied for the same purpose to the salmon taken in the Tweed, which are sent in ice to London: without some such precaution the salmon will not answer to the eulogium of Ausonius:

——— dubiæ facturus fercula cænæ,
Tempora longarum fers, incorrupte, morarum.

The fishing of these rivers is free by custom to the inhabitants of the shores: in other respects the charter of Waterford grants to that corporation the jurisdiction with certain rights over the Suir and the Ross river, but so as not to interfere with the privileges of Ross. By injunctions from Chancery in the time of Henry VIII. and Queen Elizabeth, the claims of the corporation of Inistioge to an exclusive fishery beyond their own bounds were disallowed, and the Bishop of Ossory, and Fitzgerald, baron of Brownsford, were directed to use that part of the river which meared their own lands.

The country people catch salmon with a snap net, suspended between two cots, which are small boats, flat-bottomed, narrow, equal at both ends, and governed by paddles: two men are in each boat, one of whom conducts it; when the fishers feel the net drawn, the boats are closed immediately. The fish

thus

thus taken are mostly sold at Ross and Waterford, and jolters find it worth their while to go from Kilkenny to Ross to purchase salmon in the latter, at three pence per pound, and retail it in Kilkenny for four pence, which are the usual prices; they generally take upon a little car about three hundred weight, in two small square baskets.

On the Nore, as far as the tide-water extends, there are several weirs for taking salmon; most of them are ebb weirs, open to the descending currents, and are fished only during the latter half of the ebb; the wings which are staked and wattled, extend through that part of the river where there is least current, so as not to impede the navigation, and are only as high as half the flood water: where they meet in an angle, the fisherman has a seat elevated upon four framed posts, where he holds the net. Flood weirs are more injurious, as they catch the fish in their ascent; of these there are a few in the Nore, and also in the Suir. In the Barrow there are no weirs, but the navigation and the mills have much diminished the quantity of fish; as the river is slower and more weedy, the salmon are less esteemed than those of the other weirs, though formerly perhaps more numerous.

Above the tide-water they are taken in different ways, of which cross-fishing is the most destructive. The quantity of salmon has, particularly in the Nore, very much decreased within the last forty years; probably from various causes: one of the principal is, the number of mills, into whose dams

the

the young fry pass and are there destroyed; they have it is said been taken up in these pools in such quantities, as to be given to pigs; a great abuse of the indulgence millers enjoy of being permitted to convert the public stream to their private use: another great cause of injury to the fishery is taking them out of season, at illegal times, and in illegal ways: although there are numerous acts of parliament against offenders, yet they are not much enforced: destroying salmon or eel fry, and particularly at mill-tails, is forbidden under penalties by the second of George I. cap. 21, and by the seventeenth and eighteenth of George III. cap. 19, and also by the tenth of Charles I. sess. 3, cap. 14, and by the twelfth of George I. cap. 7; and by the thirty-first of George II. cap. 13, no person is to fish in any river between the twelfth of August and the first of February, nor even to carry on the bank any instrument for taking salmon under penalties of fine and imprisonment; and setting nets or engines for salmon fry, between the first of March and the first of June, is punishable with a double penalty. The time is extended on the Nore, a its is said by custom, to the twenty-ninth of September, instead of the twelfth of August; but cots often go out to fish beyond that time, or whenever they please.

Barony constables and sub-constables are enjoined to inspect mill-dams, basons, and sluices, to prevent the destruction of salmon fry, and are to receive for doing so the whole of the penalty, and five pounds besides by presentment, by the twenty-sixth of George

George III. cap. 50. In spite of these laws, little is done to prevent the fishery from rapidly declining. Weirs are no farther illegal in these rivers than when they are so constructed as to prevent "any kind of boat from conveniently passing and repassing," in which case only, the sheriff has by the 28 Hen. VIII. cap. 22. authority to prostrate them; otherwise they may be made, out of the channel of the river, by persons that are qualified and entitled to erect them. The 5 Geo. II. cap. 11. provides against their reconstruction when legally prostrated.

The same act of Henry VIII. allows trackways of seven feet or more, if necessary, on the banks of these rivers, for the use of navigation; but in this point it seems obsolete, or the Barrow company would have availed themselves of it.

Some old English acts which are of force in this country, provide also for the protection of river fisheries. By the 11 Eliz. sess. 3. cap. 4. the inhabitants of towns adjoining rivers that ebb and flow, are forbidden under penalties from suffering their swine to feed upon the strands of such rivers, "where they destroy a great quantity of salmon and eel-fry, and spawn of divers other good fishes." Eel-fry, in spring, is taken in great quantities by the common people, and forms a nutritious food; and as the destruction of eels is not so important to the fishery, there seems not the same cause for preventing it. Otters are common, and destroy some fish, but few in proportion to men.

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The protection of salmon and salmon-fry, includes that of salmon-peal, which by some has been considered as a young salmon. So Ray thought also, and Willughby. Hist. pisc. 191. By naturalists they have not been distinguished. Willughby indeed found its teeth more in number than those of the salmon; but the number of teeth vary in both at different times: a salmon taken on the 3d of July had but two teeth on his tongue, a peal taken on the same day had four. In another there were more, and two seldom have the same number. Fishermen always assert the salmon and the peal to be distinct species; they say they can distinguish the fry of the one from that of the other, and a salmon and a peal of the same size, can never be mistaken by them: the fry of the peal are said to come down the river later than those of the salmon; the peal itself mounts the river at a different season. They are not usually taken in any number until June; the peal seldom exceeds fourteen or fifteen pound; the salmon sometimes arrives to forty pound, but twenty-four pound is esteemed a good weight. The peal has a head finer and narrower in proportion than the salmon, and has usually but one black spot on each cheek, which is itself more rounded at the lower part, while that of the salmon is more square and his tail less forked.

The salmon peal seems to be the Fario of Ausonius, though naturalists have supposed otherwise, (see Pennant and Willughby), and is well described

scribed as of an intermediate size between the trout and salmon.

> Tuque, inter species geminas neutrumque et utrumque,
> Qui nec dum Salmo, nec jam Salar, ambiguusque
> Amborum medio, Fario, intercepte ſub œvo.

He doubts whether these are not the same fish at different periods of growth.

There are different species of trouts taken in these rivers, the salmon trout, *Salmo Trutta, Linn.* is not uncommon: its usual length from eighteen to twenty inches. Of the common trout, *Salmo Fario, Linn.* which are very numerous, there seem to be varieties, if they are not distinct species: this fish is usually nine or ten inches long, and has two rows of red spots: another trout, rather smaller, is often taken, which differs in having fewer red spots and all in one line, and its adipose fin not being tinged with red like the common trout. In England this fish is called the samlet, and here the *guillioge;* it seems not to be described by Linnæus, but by Ray is called *salmulus.* All fishermen say that this fish is never found with pea, but always with melt, in which case it may be the male of the trout: Willughby notices this as a singular circumstance, but Pennant says it is a vulgar error. It is usually taken by angling in the small streams that run into the Nore.

The shad, *clupea alosa, Linn.* comes up the river in the end of April, and returns to the sea about the end of May, not remaining above a month in the fresh

fresh water, though a good fish when dressed like a herring, it is not much esteemed on account of its bones.

The fluke, *pleuronectes flesus*, the perch, *perca fluviatilis*, the pike, *Esox Lucius*, inhabit these rivers; the tench, *Cyprinus tinca*, is found in the Barrow, together with the *Cyprinus carpio* or carp; it is said they first came there upon the breaking down of some ponds at Low-Grange by a flood. The tench is more commonly taken than the carp, which is a shyer fish. The crawfish, *cancer astacus*, also lives in the Barrow and in some streams. The gudgeon *Cyprinus gobio* is taken in the Dinan and in some rivulets. The sturgeon *acipenser sturio*, appears, though rarely. The porpuss *delphinus phocæna*, sometimes follows the salmon up the Suir, and used to go beyond the town of Waterford, but since the bridge has been built, it has not ventured to pass it. Besides the common eel, the *muræna conger* or conger eel, is sometimes caught, and of a great size, but never eaten. Lampreys which are often taken, and justly esteemed as a delicacy in many other places, are constantly thrown away by the fishermen, and not even kept for bait.

Aquatic birds. The wild duck, *anas boschas* breeds in the sedgy islands and banks; *anas querquedula*, a bird which goes by various English names, as Garganey, Easterling, Lady fowl, and on the Nore is sometimes very improperly called diver and even widgeon, appears in winter sometimes in small flocks, sometimes alone; the female, which is near-

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ly brown, without any of the beautiful plumage of the male, is described by Ray under the name of *Phascas*: *anas crecca* or the teal, comes in very hard weather; and severe frost drives hither sometimes, when they have no other waters, the *anas penelope* or widgeon, the coot, *fulica atra*, and the wild goose; who never remain long, but pass from the bogs to the coast: the red shank, *scolopax calidris*, is forced up, though rarely, by stress of weather; the *tringa hypoleucos* or sand piper, is found on the banks: the *charadrius œdicnemus* frequents the lower part of Waterford harbour; this bird sometimes called the Norfolk plover, and sometimes stone curlew, is rather scarce; the *fulica chloropus*, or black water hen; the *rallus aquaticus*, or water-rail; the *ardea major*, or heron; and the *pelicanus carbo*, are common.

The *larus canus*, or common gull, follows the course of the rivers to a great distance into the country, destroys in ploughed lands many insects injurious to agriculture, and returns to the sea at night; by the common people it is called *white crow*, which perhaps caused a mistake in Giraldus Cambrensis.

The Kingfisher *alcedo ispida*, and the water ousel *sturnus cinclus* are not very uncommon near our streams and rivers.

In the demesne of Lord Desart, is a decoy for taking wild fowl, well constructed and attended to; the water is encompassed by a thick grove, and has a spring that is never frozen: it is surrounded with

with hurdles perfectly closed with sedge, and has four netted pipes: 200 pair may be easily taken in a season.

Aquatic plants. The Barrow being a more tranquil stream has the greatest number of these: most of the following are common.

Potamogeton crispum.

——— *lucens.*

——— *perfoliatum.*

——— *natans*,—in stagnant waters.

Nymphæa lutea,—Ir. *duillerg bhaite.*

——— *alba*,—in a marsh near Kilkenny and at Foulkscourt plentifully, where it was encreased by culture.

Myriophyllum spicatum,—in the Barrow.

Chara vulgaris,—Ir. *throim luigh*, on stones in the Nore.

Hippuris vulgaris,—most luxuriantly in the Erkin.

Scirpus lacustris,—Ir. *buignin.*

——— *fluitans*,—in streams.

Montia fontana.

Fontinalis alpina,—on stones in streams.

On the banks of the rivers are found

Oenanthe crocata,—plentifully near the Nore.

Sium nodiflorum.

Angelica sylvestris.

Phellandrium aquaticum,—streams near the Nore.

Lycopus Europeus,—Ir. *feoran curraigh.*

Apium graveolens,—Ir. *chaughn buddogh.*

Valeriana officinalis.

Scirpus palustris.

Chrysosplenium

Chrysosplenium oppositifolium,—Ir. *corlus*.
Lythrum salicaria,—Ir. *lushair leana*.
Phalaris arundinacea,—Ir. *seisg*.
Typha latifolia.
Arundo phragmites.
Polygonum amphibium.
Orchis latifolia,—var. 3 With. near Ross.
Scrophularia aquatica,—Ir. *betaony na mona*.
Stachys palustris,—Ir. *dealoig na saighr*.
Aira aquatica.
Festuca (Poa) fluitans.
Alopecurus geniculatus.
Dipsacus sylvestris,—Ir. *rambird*,
Lysimachia vulgaris.
Parnassia palustris.
Campanula trachelium.
Colchicum autumnale,—ornaments the meadows on the banks of the Nore, common near Kilkenny.
Epilobium hirsutum,—Ir. *cluas liath*.
Spergula nodosa.
Ranunculus flammula.
——— *sceleratus*.
Thalictrum flavum,—banks of the Barrow.
Caltha palustris.
Scutellaria minor,—near Graigue.
Antirrhinum majus,—walls Kilkenny, over the river.
Cardamine pratensis.
Cochlearia officinalis,—Ir. *biolar*.
——— *coronopus*,—below Ross.

Statice

Statice armeria.
Arenaria marina. } below Ross.

Bidens cernua,—banks of the Barrow.

Tussilago petasites,—Ir. *spunc.*

Inula dysenterica.

Menyanthes trifoliata,—Ir. *Poarigh chopuil.*

Equisetum sylvaticum.

Sedum acre,—Ir. *garavan na gloch* } on rocks.
——— *anglicum.*

Carex acuta.

—— *gracilis.*

Fontinalis antipyretica.

Asplenium adiantum nigrum,—on rocks, and varying much in growth and appearance; with many other plants.

Sect. 9. *Bog, Mountain.*

The quantity of real bog belonging to this county is inconsiderable: that which skirts the parishes of Erke and Urlingford is by far the largest, and may contain 1500 acres, of which about 800 belong to Erke. The next in size is that of Coulagh or Monagurteen, south of Callan, forming the boundary of Munster. Several small ones exist from 30 to 50 acres scattered over the country, and the whole extent may be about 3500 acres, not including such mountain ground as cannot properly be termed bog, though the surface is often stripped for the purpose of

of fuel to the great detriment of the land and injury of the proprietor.

In the bog of Urlingford has been found a bed of marle lying between two strata of black turf mould; and in another part, three strata of bog separated by alternate beds of indifferent marle. Some of the lesser bogs may be cut to a depth of 20 feet, though their extent is very small, as that of Monaruah south of Knocktopher, in which are found oak and fir well preserved: the small bog of Brownstown to the west of this, is cut down to 30 feet, part with a slane, but part for the purpose of making hand turf, which, when formed, will dry in about a fortnight of good weather: hand turf is also made in Iverk; in other places, as at Glanpipe, where there is a large tract partly mountain and partly bog, resting on a hill of siliceous breccia, five or six feet is the utmost depth; and in it are found oak, fir, sallow, and birch. Nothing peculiar occurs in the small bogs of Gaulstown, Glanmore, Coolcullen, and others.

The small quantity of turf which is brought to Kilkenny generally comes from the neighbourhood of Callan. Liberty of cutting is often purchased by the neighbouring farmers from those in whose land a bog lies: for a guinea or 30*s.* the permission to cut as much as will serve a family may be procured, that is from fifty to one hundred kishes: afterwards it must be made and drawn home, and in this lies the principal expence. This license however of

selling turf off their lands, is often prohibited by landlords.

That bog may sometimes exist beneath other strata, and at a good depth below the surface appears from the following fact, which was stated by the proprietor Mr. John Prim, who in sinking a pump lately near his house at Kilree, eight miles from Kilkenny, discovered a bog having timber under it at the depth of thirty-three feet from the surface; he found the following strata,

1. Vegetable earth, . .	3 feet	
2. Marle with black stones,	15 ——	
3. Yellow clay & hard gravel,	15 ——	33 feet
4. Bog, ...	10 ——	43 ——

Beneath was a mixture of gravel with clay, exceedingly hard, in which the well was made; and immediately under the bog lay a large block of wood, a piece of which was sent to the Dublin Society, and appeared to be oak; it was in contact with the bog earth or bed of black moory mould, evidently composed of rotten vegetable matter, and was well preserved. It is not in the neighbourhood of any stream that could have deposited the soil above it.

Much of the low land near Urlingford might be improved into good meadow: some ground at the edge of the bog has been reclaimed, and laid down with judgment by Mr. Neville, of Marymount, who found the marle from the bog did not answer well, as manure.

Small

Small bogs merely formed by the spreading of water from streams whose currents are choaked up, may be speedily reclaimed by opening a drain to the head of the spring and a little above it. The surface should be slightly burned, and sown with grass seeds or with rape, after which it should be ploughed again, and laid down for meadow land with lime: the mountain ground should be laid down for pasture.

The following hints for reclaiming bog, were communicated by Mr. Robert St. George, "to cut a main drain into the gravel underneath to interrupt the springs, carrying off the water down the fall, wherever it appears by the eye, or by levelling if necessary: to cut a carrying drain about ten feet wide sloping to the bottom, taking care to keep it clean for the passage of water, by looking to it every summer, and clearing it with a drag made for the purpose. This drag should have four large iron prongs bent in the middle, and have the fore part of the prongs curved; it should be drawn along the bottom to remove any weeds or crumbling turf that may have fallen in. As soon as the bog loses its spungy consistence, as it will by the head drain interrupting the springs in course of time, I would turn in cattle to feed on the produce, and would not look to any other profit for some years, 'till the bog should be consolidated, when I would pare and burn, sowing rape and turnips for stock, laying on as much gravel as would cover the surface an inch deep at least, harrowing it to mix it with the sur-

face, and sowing two barrels of the meadow fox-tail, *alopecurus pratensis*, to the acre. I could, with many others who have tried the experiment, enlarge on the improvement of bogs by different manures, such as the best putrefied dung, lime and compost; but I would not advise the improvement to be made so expensive as not to pay the farmer. I have seen bog reclaimed in many parts of the kingdom by men of fortune, and, adjoining towns, by people who had the power of getting manure of different kinds, such as dung, soapers waste, &c. &c. which produced very good potatoes by laying it in the usual way on the surface, covering the potatoes by trenching, then gravelling with limestone gravel, or laying on a quantity of old ditches &c. on the surface before the second crop; following that with a crop of oats and grass seeds; all good crops, paying well for the improvement; but it is necessary to know that effectual draining was the first step taken. This is a course by which a small quantity of bog in a particular situation may be reclaimed; but I think in most places, the farmers time and manure would have been far better laid out on the improvement of upland, as it would have cost him less by far to have made a much more permanent profit there; and therefore I advise the draining bog for the purpose of pasture to farmers who have a good lease of them, and patience until they consolidate, before they attempt a farther improvement; ever recollecting the benefit of keeping a free passage for the water to go off. By spirited exertions, and

attention

attention to the principles of draining detailed by Mr. Elkington, no doubt many thousand acres in the kingdom might in a short time be converted at least into pasture for store cattle, which at present return nothing. A cheap and easy process of improving bog is to plough and burn it, spread the ashes, then plough and harrow it, sowing grass seeds; this on a tolerably dry bog will give very good meadow, or fatten sheep for two or three years, when it should be preserved kind and fertile by gravelling on the surface, which by this time has become firm, and will keep the gravel from sinking: this is preferable to ploughing in the gravel or other manures."

Mountain.—There is a great extent of mountain-land in this county, and most of it unimproved: indeed all the hills when they rise a little above the calcareous districts incline to this description of land, and revert easily into heath when neglected. A great extent of ground bordering the county of Carlow, in the upper part of Gowran and eastern side of Fassadinan, has hardly any fence: some of it is dry and requires but little improvement to make it excellent sheep pasture. In the northern parts it is often wet, having a clayey substratum, the sourness of which is evinced by the plants it produces in abundance, as *Rumex acutus*, sharp dock, Ir. *capog. ygiar*, *Rumex acetosa*, Ir. *Sealagan*, sorrel, *Rumex acetosella*, sheep's sorrel, *Galium uliginosum*, Ir. *Fuinfullugh*, *ranunculus flammula*, besides rushes and heath. Most of these plants require a soil containing

taining a large portion of acidity, and it is known that boggy land has a proportion of different acids, particularly the gallic, besides an astringent principle, which upon the application of any calcareous matter are immediately neutralized or changed. These plants then perish for want of proper pabulum, and give place to sweet grasses, which they manure by their destruction.

Nature has not left this district without the means of improvement, for marle and pits of limetone gravel are found in it. Marle may be seen in the banks of the Dinan, the Dian, the Donane river and most of the streams in this part, and might be found if songht for in many places. The tract in the lower part of the county called the Welsh mountains, exhibits a similar want of improvement, but with a soil in general somewhat better.

Mr. Robert St. George to whom I am much indebted for many communications and much information, and who has improved in the most admirable manner some mountain ground, was so obliging as to communicate the process he took to convert it into a beautiful sheep pasture, which I am happy to give in his own words. "In answer to the quere, I will give an account of the improvement made by me and by Mr. Carroll on the lands of Knocknamuck, 330 acres of which, when I purchased them in the year 1792, were inhabited by different families who were not able to pay the stipulated rent of 7*s.* per acre. This farm stood me in 12*s.* 9*d.* per acre, and having had it under improvement for

three

three years, I let it to Mr. Carroll for the rent of 28*s.* 9*d.* per acre, for 300 acres, to finish the improvement. A part of this land was in very poor worn out oat-stubbles, part in poor *cosheers*, as termed, land which had been burned and tilled for as many crops as it would bear, then left to nature; by which means it was covered with a mat of couch-grass, and was very barren, having been some years out of tillage, but the greater and more valuable part of all was in heath, and had never been in tillage; had a black peat of from four to eight inches deep over a stiff clay called *lac leagh* from two to four inches deep, and that in some places over a black slaty rock*; in others a limestone gravel. This heathy land was retentive of the rains from its matted roots, and the *lac leagh* underneath the peat, and was not considered worth above half rent for cattle, or 6*s.* per acre. The stubble land was of a clayey nature over slaty stone, and in part over limestone gravel. This I fallowed for a whole year by four ploughings and as many harrowings to clean it of all weeds, and prepare it for laying down in spring; which I did, after laying on 200 barrels of roach lime, ploughing it in lightly, then harrowing it when slacked in the earth, by which means it was most completely mixed with the soil: then sowing two barrels of clean rye grass to the acre with ten pound of white clover-seed mixed with it, being the seed most natural to this kind of land, where lime has its greatest effect. I pared with the plough, and burned a large tract of the heathy

* Called in Irish *Sligga*.

heathy part, then laid on a coat of limestone gravel from a pit sunk for the purpose on the hill, spread the ashes and gravel, ploughed it in, sowing rape on it, which stood for a crop and turned out tolerably well. The next winter it was limed, about 160 barrels to the acre, ploughed in, and a crop of oats sown, which had a great return of straw, but little grain, being too rank, and the land on too exposed a hill, for it to ripen well. I pursued the same course with it in ploughing and liming, but let out to grass with rye grass-seed, sowing the land with rape, which I found to afford shelter and shade to the young grass; then turned in my sheep to eat it down. This mode I prefer to letting the rape stand for seed, or to sowing corn, as the crops do not pay in an exposed situation near as much as the rape in feeding from five to ten sheep to the acre all the summer, and the grass-seeds doing much better by the manure of the sheep, instead of the land being exhausted by a crop. Mr. Carroll has had this land five years on his hands, draws limestone up the mountain a quarter of a mile to two lime-kilns, which I built a-breast, to turn out about fifty barrels in twenty-four hours. They have been always kept burning since the year 1792, except about four of the winter months. I am happy to say Mr. Carroll has almost completed the improvements, and I hope it will, with other hills of the same nature which he has improved in the county of Tipperary, remain an advantage to his posterity and a monument of his meritorious industry."

One

One hundred and fifty acres of this land supported in the dry summer of 1801, 200 sheep, besides some horses and cattle; it was supposed capable of keeping 400 sheep half the year, and 250 the other half, besides twenty cattle and twenty horses. Mr. St. George is now improving 300 acres more of the same ground, which he lays down with rape and grass-seeds; and no mode answers better for the improvement of all light lands, which should never if possible, be laid down with a crop of corn. This ground has in general a boggy surface, with a thin stratum of clay beneath, resting on a shingly bottom: after a few ditches have been made, it appears to become quite dry by mere ploughing, and its colour and quality change to that of a brown loam, which bears thick and fine herbage. The roller is a very necessary instrument in laying down these grounds, and was in use by Mr. Carroll. The lands of Knocknamuck or Adamstown, are the northern extremity of the parish of Tullaroan and barony of Crannagh. Some improvements have been made by a few other persons upon mountainy land, but none so effectual. The Rev. Mr. Meara Rector of Freshford has made some green pasture upon a hill near his house, at the edge of the limestone district. On these grounds lime and limestone gravel have a very great effect, and some farmers draw both from a great distance; but when they take crops of corn, as is usual, instead of laying down the ground with grass seeds, as soon as it is fit to receive them, they destroy the benefit of the manure, and unwisely

wisely prefer a little present profit, to a perpetual improvement.

It is constantly observed of this sort of ground, that wherever a little calcareous manure of any kind is laid on the surface, even without tillage, it throws up a crop of white clover; perhaps the minute seeds of this plant, of which there is such plenty in the dry pastures, may have been preserved a little way beneath the surface, and rendered incapable of vegetation, by means of the astringent principle found to exist in all heathy soil; but as this principle is destroyed by an alkaline earth, the seeds not only vegetate, but find a suitable manure. As they are too heavy to be affected by the wind, they must have been in the soil previously, which perhaps the parent plants occupied at some former period, before they were destroyed by the heath: the soil and produce of countries, and particularly of this, may have suffered some revolutions; arable land has been changed into bog, woods into bare hills, and the summits of heights that bear the mark of the plough, are now under heath. When the lower grounds were occupied by wood, the hills alone were tilled; and the alteration of climate proceeding from these changes are to be taken into account.

Heath, the present produce of such hills, is applied to few other uses, besides that of forming a bad covering for the cabins of some of the inhabitants: it is, however, sold for fuel in Kilkenny, at a penny

a penny a bundle, sixty or seventy bundles making a car-load; and is brought from the high lands that lie to the north-west of the town: but I have seen heath brooms brought into the market of Kilkenny from part of the county of Wexford, above twenty-four miles distant, and sold there for seven pence a dozen, about thirty dozen making a load; a single one sells for one penny, and two for three half-pence. This is a trait of industry in the people of that county worth remarking. Heath in Kilkenny is also used for litter, after which it is found to make excellent hot beds. Fresh heath will answer in the pit of a hot-house as well as tan; it must be well trod down, and may be covered with a little bark or leaves. Oak leaves have also been used for this purpose with success at Woodstock, where furze however have been found to answer better than any thing else. The furze fresh cut are well rammed down and mixed with leaves, those of oak are to be preferred, but any sort will answer; leaves, or old tan, may be spread on the top to receive the pots; the heat thus procured is stronger and more lasting than that of tan; the leaves should remain in a large heap for a week or ten days before they are put in: the small Irish furze, *ulex nanus*, was made use of.

When heath is used for thatch, it is sometimes mixed with alternate rows of straw; but it is a bad covering, for not lying close it suffers the water to lodge, and rots the roof, while it decays itself at

the

the same time. *Erica tetralix* is mixed on the moister parts of hills with the common heath, *erica vulgaris*, Ir. *fraoch dearrug*, male or red heath, and *erica cinerea*, Ir. *fraoch bouning*, or female heath, and all vary occasionally with white flowers. *Vaccinium oxycoccus* grows on the hills west of Castlecomer; and on the lands of Aghamucky I found *ophrys spiralis*. On the lower part of Glanpipe hill, I found *agrostis pumila* of Lightfoot. The following plants are common on these grounds, besides those before mentioned. *Salix repens* and *fusca; veronica scutellata;* and *V. officinalis*, in Irish, *theamer cre*, and *lugh na kiagh; aira flexuosa; melica cærulea; galium montanum; juncus campestris; carex cæspitosa, distans*, and *flava; tormentilla officinalis*, Ir. *feughragn; euphrasia odontites*, Ir. *russ cré;* also common in moist pastures and stubbles. *Polygala vulgaris*, Ir. *lus baine*, varying with white flowers; *orobus tuberosus*, which grows also in woods; *hypericum humifusum* on dry hills; *poa decumbens*, not unfrequent on mountainy pasture; *nardus stricta*, and *aira præcox*, plentiful; *gentiana campestris*, on moist mountain; *epilobium parviflorum*, (Smith) boggy hills; *gnaphalium dioicum*, Ir. *lugh na sought; polypodium cristatum*, rocky hills; *polytrichum subrotundum*, and *p. piliferum*, Schreber; *lichen rangiferinus, uncialis, ericetorum, icmadophila*, or boggy ground; *lichen gracilis*, among moss; *lichen globiferus, fimbriatus*, on mossy rocks; *lichen pyxidatus*, and *cornutus; peziza cochleata*,

Linn.

Linn. hilly pasture; *lichen tartareus* is common on granite rocks, and on some other stones; with volatile alkali it immediately gave a fine colour, and with the same alkali and lime water it dyed white silk of a purplish red. Powdered and treated with potash and a little volatile alkali, it made a substance that could hardly be distinguished from the cudbear of the shops. (See Nicholson's Journal, No. XX. page 311, for the Dutch process of making turnsol with some lichens.) Another lichen much used for dying in France is common on our stones, *lichen parellus;* I tried *lichen caninus, physodes, uncialis,* and *farinaceus,* and a few others, but they gave no colours with volatile alkali, except perhaps a straw colour at first.

In moist boggy ground are found, *pinguicula vulgaris,* and also *pinguicula lusitanica;* both grow together in the bog of Glanpipe, and the latter in wet skirts of the wood of Woodstock: *hypericum elodes; narthecium ossifragum; juncus uliginosus,* and other junci; *triglochin palustre; drosera rotundifolia,* Ir. *duracdin mona;* generally growing in a tuft of *sphagnum palustre,* Ir. *ceamugh na mona; mentha aquatica; viola palustris; serapias longifolia (palustris* E. bot.), wet pastures; *sparganium erectum; scirpus setaceus,* often in company with *anagallis tenella; eriophorum angustifolium,* Ir. *sioda mona; comarum palustre;* besides many more: the first plant which grows on boggy ground that has been stripped, is *rumex acetosella.*

When

When I happened to meet the Irish name in use in this county I have added it, but for want of a sufficient knowledge of the language, it was difficult to retain the common appellations: I mention no plant by its botanic term, which was not satisfactorily and clearly ascertained, always by description, and generally by a figure also. In the names I believe there can be no ambiguity.

PART II.

AGRICULTURE.

"Nos connoissances dependent de l' experience, et se bornent à des inductions." BUFFON.

SECTION I.

Mode of Culture.

THE vicinity of markets, the quality of soil, and the difference of exposure, determine farmers in the choice of such a mode of culture as appears to them best adapted to their situation: but applying their minds solely to one branch of rural economy, they are apt to neglect every other, which ought to accompany it and be made subservient: the cultivator, whose object is to pay his rent by corn, disregards the management of stock, and consequently neither prepares his ground in the best manner for wheat and barley, by intermediate crops of green food, nor adds to his exhausted fields new sources of fertility by the manure of his yards: even when one species of

of corn appears to him most profitable, all other products of the soil are despised; if wheat can be raised by any means, no matter whether the spring corn be productive or not; and where the situation seems to suit better, the more lazy occupation of such dairies as are never supplied with artificial grasses, or even with winter provender, where cattle have neither straw nor shelter, the plough is laid aside, as an instrument almost useless, and not likely in any respect to encrease the quantity of butter or of pork.

These reflections are strongly exemplified in this county, whose surface is principally occupied in three different ways: in one part, the farmer calculates upon paying his rent by wheat alone, in another by oats, and in a third by the produce of a dairy. The best ground, the greatest part of which has a limestone bottom, is dedicated to wheat; this culture is the predominant object in the central and western parts of Gowran, in many farms near Kilkenny, in the southern portion of Crannagh, the whole of Shillelogher, in the greatest part of Kells, including the liberties of Callan, and in the northern side of Knocktopher; it is more partially cultivated, in the western part of Fassadinan, in the lower grounds of Galmoy and in the adjoining part of Crannagh; as well as in the south of Iverk and part of Idagh. The culture of wheat has latterly extended up some of the hills of Idagh and Knocktopher, and other high grounds, where a few years ago oats were the only grain sown: still however the more mountainy tracts of Iverk, Idagh, and Gowran, together

with

with some of Crannagh, and of the northern part of the county, are, as far as they are tilled, devoted to the culture of no crop but oats.

There are two districts peculiarly given up to the dairy; one includes that portion of the county usually called the Welsh mountains, forming the eastern and southern part of Knocktopher, and running into the barony of Idagh, covering a space of about eight or nine miles in length, and from four to five in breadth; the other comprehends the principal part of the extensive parishes of Comer and Muculllee, with some lands to the south of them, comprising about 30,000 acres.

Much of this connty having been from time immemorial subjected to tillage, the farmers have derived their practices from a period when none of the modern improvements were yet suggested; and finding themselves in general still able not only to pay their rent, and to subsist without difficulty, but by the increasing value of corn to acquire additional profits, they have little thought of making any alteration in the old Irish husbandry, though the cultivators of some of the neighbouring districts in Tipperary and Wexford, where tillage did not extend to so great a degree, until it was accompanied by a system somewhat improved and a little better understood, have in several points set them a laudable example: agriculture is therefore, upon the whole, in a worse state here than in some of the adjoining counties; and little information can be expected from the recital of practices long condemned by the intelligent farmers

of the modern school: that mode of cultivation is indeed too well known in Ireland, by which a soil naturally fertile, but exhausted by repeated crops of corn, is abandoned to noxious weeds for several succeeding years; is again broken up, slightly manured, exhausted, and again abandoned; where culture instead of improving, deteriorates; where no effort is made for permanent utility; where every operation of the farmer, and every work of the farm, is just calculated to meet the present necessity, and no more; where the different branches of rural economy, so far from assisting each other, remain unconnected and distinct, in a state of unnatural repulsion.

This description, however, admits of much alleviation: many gentlemen and some intelligent farmers have adopted practices founded on better principles; and have applied their minds to the improvement both of tillage and of stock, in a manner which while it contributes to their own advantage, will confer an essential service on their country: this survey then ought to sketch the common modes of agriculture, and to notice wherever they occur, the improvements that have taken place.

Wheat.—This grain is almost always sown either after fallow, or after potatoes; but as scarce any more potatoes are cultivated than are necessary for the consumption of the inhabitants, by far the greater part is sown in the former way, either with or without lime; and the produce after a good fallowing is reckoned to be at least one-fourth more than after potatoes.

potatoes. When wheat is to be raised upon potatoe ground, the field is ploughed and harrowed as soon as the crop has been dug out, and the grain sown most usually under the plough: one disadvantage attending this practice is, that it is often sown too late; and that is a principal cause of the superiority observed after a fallow; this name, however, is often given to potatoes by farmers, being the only fallow crop they are acquainted with.

Fallows are not always treated in the same manner; a stubble is usually grazed during the winter, and often not ploughed up before May, or as soon as all the business of the spring tillage is over; in this first ploughing, the crowns of the ridges are turned into the former furrows or interfurrows; thus they lie until midsummer and often much longer, when they are ploughed for the second time, and this ploughing is generally preceded by a harrowing with a heavy or loaded harrow; another harrowing is given previous to the third or seed ploughing, which takes place about Michaelmas: the mode of sowing is by dropping the seed along the ridge, and is often done by women, which is tedious in comparison with the proper manner of casting it.

It generally happens that the ridges of the second crops are reversed, the furrow occupying the place of the crown of the ridge; but this is not an object with the farmers from system; no more than is the direction in which the ridges lie, nor even an attention to make them straight and parallel: if they ran from north to south the corn would probably ripen

better together, from receiving a more equal distribution of the rays of the sun.

Some stubbles near Gowran do not get their first ploughing until June, and that is often a very partial one, merely opening the tops of the ridges, and turning them down towards the furrows, the greater part of the ground remaining unstirred; in this state they lie for three or four weeks, until it may suit the farmer's convenience to go over them again; after which it is well if they receive a cross-ploughing before autumn, or previous to seed time; the two first ploughings are sometimes reckoned sufficient: this can hardly be called fallowing; the summer weeds are left growing very partially covered in the furrows, where they often shed their seeds before the second ploughing. Some stubbles in the neighbourhood of Kilkenny had not got their second ploughing until the end of August, previous to which most of the weeds whose seeds were brought near the surface by the first ploughing, had vegetated and gone to seed.

The best farmers graze their stubbles only until Christmas, and give them a first ploughing before the end of January, they cross plough in spring, and never sow wheat but after three earths.

When ley ground is intended for wheat, the practice of the best farmers is to break up the sod about Michaelmas, or as soon after as they can; at which time it is thrown into broad sets of about twenty yards wide; in April it is cross-ploughed and harrowed, whenever

whenever the ground is dry; and after midsummer, it receives the third ploughing, but when manure is to be put out, either lime or sea sand, it is spread on the surface previous to this ploughing, and thus mixed with the soil before seed time: the corn is sown in the latter end of September, or beginning of October, in ridges of five or six sods: the most common size of the ridges is five sods; the turned sod is about a foot or rather less in breadth: the drier the ground, the broader the ridges are often made; so that they occasionally vary from four sods to seven or eight.

Ley ground is sometimes not broken up until March, cross-ploughed in June and July, harrowed in October, or as soon as it is convenient after harvest, then ploughed, and with another harrowing and ploughing the seed is sown.

Good ley ground however has often been ploughed up at midsummer, cross-ploughed and harrowed at Michaelmas, immediately ploughed again, and the seed sown as usual; one of the finest crops near Kilkenny in 1801, was upon ground that had been mown the year before, the grain sown on the back of the sod and trenched.

When ground receives a regular fallowing, the farmer ought to have a great crop, to indemnify him for two years rent, and the expence of such a tillage, which, except the last ploughing at seed time, is almost always performed with four horses, who can seldom turn more than half an acre in a day, and that with great labour; for the soil, which is generally a

clayey

clayey loam, becomes too hard from being baked in the sun, to be easily divided by an ill-constructed plough; if rain has preceded the ploughing, the land remains in clods like unburnt bricks, which are sometimes broken with mallets, or with hurling sticks, which have a large crooked head. In a few instances three horses have been used in breaking fallows, but sometimes even six: less than four bullocks are never seen in the lightest ground on any occasion.

Sixteen stone of wheat is reckoned a very moderate allowance of seed for an acre; more is almost always sown, often a barrel, sometimes twenty-four stone: the poorer the ground, the greater is the quantity sown. Many persons suppose that the contrary ought to be the practice, as rich ground will be able to nourish more grains than poor: but if the common notion is considered candidly, perhaps it may not be found unreasonable, that is to say, when it is not carried to excess; for in poor ground corn will not tiller or stool so much as in rich, and therefore more grains are requisite to fill up the spaces, supposing however, that only a moderate quantity of grain is sown in either case: Tull, the father of drill husbandry, gives the same opinion, with another reason, "poor land," says he, "should have more seed than rich land, because a less number of plants will survive the winter in poor land." He farther observes, that "when wheat is planted early, less seed is required than when late, because less of it will die in the winter than of that planted

planted late, and it has more time to tiller." Tull's Husb. 117. This shews one of the advantages of early sowing, the saving of seed. Many modern experiments have been published to shew that wheat has been productive in proportion as it has been sown early in the season, and the best time, in England, has been found to be the *beginning* of September. *See Bath papers.* Though fallows may be sown at any time, advantage is not always taken of this circumstance; the seed is seldom in the ground as early as it might be, and farmers to excuse their indolence, sometimes say that they have had good crops though they were sown in December, without considering how much better they might have been. If wheat is not sown in time to vegetate strongly before winter, it had better not be sown until the end of February, and this has been found to answer in some instances in this county. Fine crops, and tolerably clean, may often be seen here when sown immediately after Michaelmas, upon a good fallow: but the general produce is very inferior to what an improved system of tillage might give. There is so much wheat raised in exhausted ground, so much after imperfect fallows and late in the season, that the average produce per acre does not much exceed six barrels; seven or eight are reckoned a good crop, ten a great one; some of the best grounds have produced thirteen barrels, with common tillage.

In moist ground wheat is often trenched; which is done either by running a plough between the ridges to loosen the earth, or digging it with a spade,

spade, and afterwards throwing it up with a shovel. The smaller farmers often sow in light ground entirely with a spade and shovel, the ground having been before prepared by the plough; and after potatoes it has even been sown without any ploughing at all, and has been found to answer pretty well if the ground is fine and the seed properly covered.

Wheat has been sown by some persons broadcast, in ground laid smooth without any apparent ridges; by this they have proposed to save the spaces of the furrows, which if corn is sown in ridges of four sods, are almost equal to one third of the field, the furrows occupying the breadth nearly of two sods: this method, however, was not found to answer as well as the common one: by means of the ridges in which wheat is usually placed, a greater surface of corn is exposed to the influence of the atmosphere, the ears are not so sheltered by each other from the air, nor so shaded from the light as they would be if the field was even: that the air should circulate freely about the ears, is known to be an essential point with regard to wheat; a contrary situation encourages blights and mildews; a full access of light is of great importance to the fructification of plants; and though corn might not grow in the furrows between the ridges, yet the roots receive nourishment from them: the current of air between the rows, and the additional room acquired for the lateral roots are among the great advantages of drill husbandry: besides, when wheat is sown in a broadcast manner, and covered by a light harrow, as must be the case, the

the greatest part of it will not be buried at a sufficient depth. The farmers of this county seem perfectly right in thinking that this grain ought to be deep in the ground; and therefore they always cover it either by the plough or the shovel; independent of the injuries it may receive near the surface, if a grain is slightly covered with earth, it will not stool or tiller; the *plumula* will rise directly above the ground from the seed, and there will be no room for the *coronal roots* to be formed from the intermediate caudex; but it is from the *coronal roots* only that new stems arise, and this is called planting, stooling, or tillering. If, moreover, when the corn is above the ground, the first joint of the stem should be covered with earth, as may be the case in drill husbandry, new roots will again strike from that joint, and new stems will arise, and this may be considered as another advantage of drill husbandry. Some persons have advanced an opinion, in which few farmers will concur, that it is not advantageous for corn to tiller; it is supposed that stems formed later than the original shoot would be weaker and later in ripening: they may perhaps be weaker, but experience, as well as a knowledge of the process of vegetation, shew that they will not be later in consequence of weakness, for it is well known, that debilitated plants will come to their perfection sooner and ripen their fruit earlier. Gardeners diminish the vigour of plants and seeds for this purpose, and most farmers must have seen that strong and luxuriant corn will ripen later than weaker plants,

plants, which were sown at the same time: the younger stems, therefore, though weak, will keep pace as to ripening with their elder brethren.

Any person by sowing a few grains of wheat in a pot, and covering them very slightly with earth, may easily see that they will form no coronal roots, but rise above the surface with individual stems; whereas a grain sown two inches deep or more, will form its coronal roots, from whence will arise new buds and stems. Though deep sowing is a fault on the right side, it should not be carried to excess, the proper depth may lie between two and four inches; the kind of soil may require some difference; the best depth in any soil is that which allows it to tiller sufficiently and no more, and this might be ascertained by experiment; for burying the corn too deep is supposed to be dangerous by exposing a caudex unnecessarily long to be gnawed by the red worm; hence appears another advantage in drill husbandry, by which grain can be sown at an equal and certain depth: the apprehension of the red worm, however, may perhaps be banished by good tillage: wheat sown as early as it might be, will be too forward to have its roots attacked by this insect, who will confine his depredations to later and more sickly plants, whose roots are still tender and succulent.

Wheat is almost always steeped the day or the night before it is sown: brine of salt or of rock salt is sometimes used, but the steep of the common farmers is generally urine, after which the grain is dried

dried in lime. Some farmers use a steep made up of various herbs, thickened with salt. Experience seems to shew that brine is a preservative against smut; instances are related in this county of unsteeped corn being affected with it, while that steeped from the same parcel was not so. Tull records a fact of the same nature, which being from his own knowledge, is worth repeating, he says, "I knew two farmers whose farms lay intermixed; they bought the same seed together from a very good change of land, and parted every load betwixt them in the field: the oldest farmer believed brineing to be but a fancy and sowed his seed unbrined; the other brined all his part of seed, and there was not a smutty ear in the crop, but the old farmer's crop was very smutty." Tull, 144. This could not have arisen from difference of soil or exposure, as the ground was intermixed: the smut appears to originate from minute insects coming out at the time the plant arises above ground, adhering to its stem, and mounting along with the new ears, into which they make their way; they generally spread through all the ears of an infected plant; but sometimes a lucky stem from the same root escapes them: the extremely small eggs whence these insects proceed are said to have been first lodged in the down at the bottom of the grain: these eggs, or the young insects are supposed to be so injured by the brine, that few of them escape: a good washing in cold water, as well as a very slight drying on a kiln, just sufficient to destroy the animal, but not the vege-

table

plants, which were sown at the same time: the younger stems, therefore, though weak, will keep pace as to ripening with their elder brethren.

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Kirby. See III. vol. 242. IV. vol. 224. and V. vol. 96.: the worms are the larvæ of a small fly, *tipula tritici*, who lays her eggs within the flower during the month of June: wheat sown early appeared to escape better: a variety therefore that flowered early would have an advantage in this case: the small fly, during the day, attaches itself to the stem; and comes out in the evening about sun-set: wet seasons, though otherwise injurious, diminish greatly the number of the flies and prevent most of the survivors from laying their eggs: the worms therefore are never numerous, but when fine weather attends the florescence of the wheat; and the evil is less regarded, as it is counterbalanced by many advantages. The larvæ have providentially a mortal enemy, the *ichneumon tipulæ* who pierces the worm and lays her eggs within the body, which becomes the nidus of a new benefactor, instead of a tipula so noxious to mankind. I have often seen the ichneumons busily piercing the worms, nor will they quit the ear if pulled and brought into a house, but suffer the operation to be closely examined; so intent are they on the great object of their life, the care of their offspring. The larvæ which escape, as well as those of the ichneumon, do not become flies until the succeeding spring. They are generally called yellow worms in the younger, and red worms in a more advanced state; from three or four to twenty or thirty of these little animals may be seen in one flower; they are usually in the upper part of the ear, sometimes but one grain, sometimes but

table life, have been found to have the same effects. This seems the most probable account of smut: some have supposed the minute insects which appear in the blackened ear to be the effect, and not the cause of the disorder: to farmers this is of little importance, provided they can prevent the evil by steeping; a strong brine of rock salt is the safest steep; urine is said to injure corn unless it is immediately sown.

There is another evil to which wheat is often exposed in this county, called the red or yellow worms, which generally attack it in a dry season. The first step towards curing a disorder, is to trace it to its source, and this has been done with regard to these worms, in a most diligent and satisfactory manner in the Linnæan Transactions. As wheat in a dry season is better in quality and more abundant in produce, upon the whole, this evil is not so greatly felt, and farmers on seeing these worms in summer, sometimes, say "it is a good sign." Their depredations are often partial; in the year 1800, they caused great damage in this district, though it was not universal; many farmers when they came to thresh their corn, found the quantity in a moderate stack to fall several barrels below their calculation; the grain indeed which remained was of a superior quality, but one-third of it had been probably destroyed. Having observed these insects with attention, I found that nothing could be more accurate than the representation and account given in the Linnæan Transactions, by Mr. Marsham and Mr. Kirby.

evening when the flies are seen, would destroy or banish them: early sowing may be a preventative to this as well as other evils.

But if wheat suffers in dry seasons, wet ones are still more injurious, washing the pollen from the anthers and preventing it from exploding, causing the growth of *uredo frumenti* or blight, of the red gum and other parasitic plants. It is a happy circumstance that the food of the majority of the inhabitants of this country, consists of potatoes, which are more certain in produce and less liable to injuries, and that wheat is an article of commerce rather than of food. The grain varies greatly in different years, in the quantity of flour it produces; in a very fine season, a good barrel of wheat has given eighteen stone of flour, in other years its return is as low as fourteen and an half or fifteen stone.

The kind commonly sown is the red lammas; some white lammas is raised, but it is less esteemed and is said to give more straw in proportion to the grain: the red is supposed to afford a greater produce, and the meal is preferred by the bakers; for this reason the millers sometimes pay two or three shillings more for the latter: the red is reckoned a hardier grain, but the white has the appearance of a finer skin: a kind of bearded wheat, the same probably which is called rivets in England, was formerly sown here by some farmers, but it has been long given up; though productive and hardy, it was accounted a very coarse grain. The bearded wheats are in general thought to be not so fine as

the

but three or four are injured by them, sometimes a third part or even half the ear: their heads are always near the germ, and it is upon that they seem to prey and not upon the pollen; the germ injured by them does not grow; though when only one or two appear in the flower, the seed will grow partially, one lobe being of the usual size, while the other is very small, and the skin often blackened at top: by opening the vessels that supply the seed with nourishment, they probably exhaust the juices that would have fed the germ, without devouring the germ itself; as the wound once opened, and kept in that state continues to afford them the juices of the plant. It is remarkable that the stamina remain much longer in such flowers than in others, where they shrink and fall off as soon as they have discharged their pollen: here they remain, though somewhat shrivelled and seem to retain their pollen; probably the insects who deprive the interior parts of the flower of nourishment, by opening the vessels destined to convey it, at the foot of the germ, deprive them at the same time of their stimulus to action. In some grains appeared a mouldy substance amongst which the worms lay. Wheat suffers most from them when easterly winds prevail in May and June. The cause of the disorder being known, intelligent farmers, when they are sensible of the evil, will probably find a remedy. Mr. Kirby has suggested that fumigations made to the windward of the field might destroy the insects: perhaps the smoke of wet hay or damp weeds made with a fair wind, in the evening

Change of seed is a circumstance much attended to by the farmers, who procure grain not only from their neighbours but sometimes from England. Mr. J. Robertson of Kilkenny communicated these particulars. "We have sometimes imported English red and white lammas, at the desire of our friends for seed, a practice which they inform us is highly advantageous, though freight, duty, &c. render it very high when at home here, having always got the best samples at Bear Quay in London. A farmer Mr. James Bulger, living within the liberties of Kilkenny on the Callan road, for whom we imported English seed wheat, informs me that from an Irish acre of it sown the middle of January on potatoe ground in the best heart and covered with the spade, he has had a produce of twenty barrels; that in general it produces two barrels to an acre more than his own seed would and maintains its superiority eight or ten years at that height."

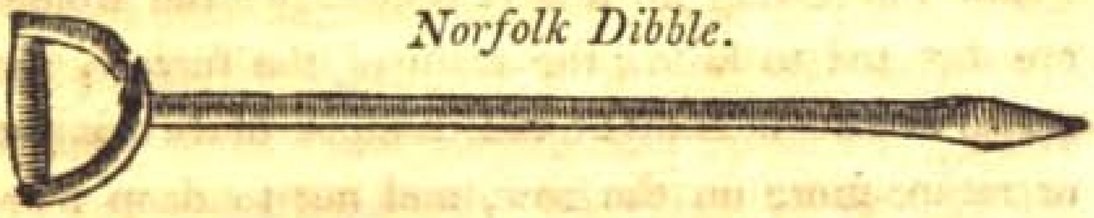
The Rev. Docter Butler of Kilkenny, transplanted some wheat two years ago upon his glebe at Mayne; the plants were placed in drills made by the plough, which as it covered one drill, opened a second; three boys take up the plants with a fork; the fork used ought to have three or four prongs: eight boys were employed to put down the plants which were at the same time cut with a view of making them stool: these boys could easily plant half an acre in a day; their wages were 4*d*.: had they been used to it fewer hands would have been required. Accidents prevented the produce of this

the smooth ones, over which however they appear to have an advantage, in being better protected from insects by their natural armour. One bearded variety called velvet wheat produces a grain very beautiful to all appearance. Sir Edward Loftus had this year a field partly sown with it, and partly with a remarkable kind of wheat, the seed of which came a few years ago from a southern climate: of the latter he had nearly three quarters of an acre, sown with three stone of seed; it is distinguished by the largeness of its husks and the great size of its grain, which is nearly double that of the common wheat; the heavy ears which often contain sixty of these grains, are supported by a straw proportionably strong and high: it appears rather to be a variety of the *Triticum compositum* than of the *Triticum turgidum* or cone wheat, for a tendency is observed in it to throw out small ears at the base of the others: a kind called Smyrna wheat is noticed by Tull, much resembling this in description, which he commends, but observes that it requires great nourishment. Tull 117. He thinks it the best adopted for the horse hoeing husbandry, and the sort he esteems next to it is the white cone; a very productive species. Having sown some of the cone wheat sold in Dublin, and some of the large wheat, of which Sir Edward Loftus was so obliging as to give me a specimen, in the same ground, the latter was much superior in produce, the plants and grain in every respect much larger; the grain however appears thick skinned.

Change

place is from three inches and an half to four inches.

Norfolk Dibble.



In this mode of agriculture, Dr. Glasse observes, not more than one bushel an English acre is required, whereas in sowing, more than two bushels must be used; the produce was more than forty bushels an acre; and in one instance forty-eight bushels; the average produce for ten years on a farm where many acres were set was thirty-two bushels or four quarters per acre; that is about thirteen barrels per Irish acre; and that without any extra manure or dressing, whereas in that district, where the rent of land is about 20*s*. an acre, the average produce does not exceed twenty-four bushels: the soil which was in good condition is described as a strong loam with a mixture of gravel, much resembling the wheat ground of this county, which is a clayey loam mixed with small stones: five women could set an English acre in a day: the ears were longer, the grain of the finest sample and best quality, the straw strong and of more value. Land in this culture may be cleaned with a small hoe, and the plants can be earthed easily, if the farmer wishes it: add to these advantages the saving in expence of tillage, the saving in the waste of seed, which is one half, the increase of the average produce being 320 bushels upon forty English acres, the encrease in the value of straw, which is firm and not liable to

crop from being ascertained: it is the only attempt of the kind that has been made: it might be attended with a very great advantage when the ground was not prepared in proper time, to sow the grain on some well manured beds, and to plant out the wheat in spring dividing it into as many sets as there were buds; covering these up a little higher than the first joint would make them stool again: cutting the plants down unless too tall or heavy might be injurious. To gain the utmost benefit by this method, the plants may be sown early, and transplanted first in autumn and again in spring: to small farmers the practice would be highly advantageous at all times; and it is the only way by which wheat can be got early enough into their potatoe ground. The extent to which a plant may be multiplied by division, is astonishing; Miller's experiment at Cambridge is well known, who from a grain of wheat sown in June, obtained the next year 21,109 ears by three divisions and transplantations. Philos. Trans. for 1768.

The practice of dibbling too, might be highly useful; its advantages are so well known in Norfolk and other parts of England, that it is not confined to small farmers, but many sow in this manner from 100 to 150 acres in a season. The Norfolk dibble is about two feet ten inches in length and has a cross handle of wood, all the rest being iron, towards the point the iron swells out to prevent its sinking too far, the length from the point to the thickest part is three inches, and the circumference in that

place

The saving of seed by the drill husbandry, is often as much, and may sometimes be more: every kind of corn has been sown in this county with Cooke's drill machine by Sir Richard St. George and Mr. Robert St. George and all have answered extremely well. The saving of seed by drill hnsbandry is computed by the Rev. Mr. Close, to be the difference between three pecks and three bushels, that is a saving of nine pecks to every English acre, or three fourths of the corn usually sown in England. The difference in Ireland would be much greater. Drill corn yielded by an accurate experiment of Mr. Exter, of Devonshire twenty-nine bushels three pecks of wheat, where one bushel was sown to the acre, when the broadcast yielded twenty bushels one peck, where double the quantity of seed was sown: three pecks is less than what is usually sown, but a bushel is an ample allowance. See Bath papers, Vol. IX. and also Vol. III. p. 365. The advantages stated to arise from drill husbandry should not be over looked; first, the saving two thirds of the seed usually sown; second, the certain growth of seed from its being all properly buried; third, its ripening all together from being equally covered; fourth, the additional growth of the crop from pulverizing the soil by the scarifier and horse hoes; fifth, destruction of weeds; sixth, the free admission of air and light to the rows; seventh, the earthing up the lower joints so as to encourage the plants to tiller; eighth, preventing the corn from lodging by the strength and vigour of the stems; ninth, the production of a larger and better crop; tenth, the

harvesting

be lodged, and lastly the useful and comfortable employment it affords to the poor.

For the setting no line is necessary: the women are directed to follow the seam of the furrow, and are to make the holes at the distance of two inches or rather more on the row, and not to drop more than two seeds in each hole; the rows may be six or seven inches asunder: a single plant often produces twenty stalks. "If this mode of cultivation was adopted in every kind of land, to which it is suited, it would save many hundred thousand bushels of seed a year, it would make an encrease of one fourth upon such average crops, and give healthful and satisfactory occupation and means of subsistence to thousands of women and children, at the dead season of the year, when there is a general want of employment. Where the soil is proper for it, oats, pease or beans and any seed may be set by the hand with greater advantage than in any other way, particularly where old grass land is broken up." Dr. Glasse. In a stiff clay dibbling would not be adviseable, as the sides of the holes might be so hard as to obstruct vegetation: where stones abound the holes cannot be made so regularly, but that is no great objection: in this country the saving of seed would be very great, as less than eight stone would completely sow an Irish acre. Some wheat was dibbled this year at Woodstock; there is no operation more speedily learned by women and boys, who soon perform it well: to the poorer farmers it would save the use of a plough at sowing time.

The

and is sometimes trenched: when grass seeds are sown with barley, the ridges are often very wide: from a barrel to a barrel and a half of seed is generally required for an acre; the produce varies from seven barrels to sixteen; not much being raised in bad ground, about ten barrels may be the average produce: in light ground it is sometimes sown after fallow; but when barley has been sown on potatoe ground, or on soil well manured, the return has often been very great; in a field adjoining Inistioge, where this crop succeeded potatoes in ground from whence an old oziery had been stubbed, Mr. Thomas Long threshed twenty two barrels from an acre in the year 1796, and from four stone five pound of seed; the corn was rolled when about nine inches high: this shews what produce might be expected from barley, if any fallow crop, as potatoes, turnips, vetches, rape, or any green food was to interfere between it and wheat: twenty barrels has in several places been reaped, when sown after potatoes or upon fallow.

For the sake of early grain, some barley was sown near Kilkenny in the autumn of 1800, the crops stood the winter well, and were very great in appearance, but an account of their exact produce could not be obtained: some oats sown in the same manner have given very great returns.

Mr. Robert St. George had barley on his farm at Balief, sown with Cooke's machine this year (1801), part was at nine, part at twelve inches asunder, part at eighteen and part at twenty-four; in July the latter

harvesting at less expense and with more certainty as the corn is not encumbered with weeds and grass; eleventh, the protection of clover and seeds, which have room to grow without injury; twelfth, and lastly, the improvement of the soil for a future crop by scarifying and horse hoeing, in a manner equal to any fallow, but much superior to those fallows so often seen, where it is said "there is a constant contest between the farmer and the weeds and the latter are generally victorious." The soil indeed ought to be in good tilth, but not better than is required for good husbandry in any other way: the only objection that can be made is the expence of the machine, which would in one year be amply repaid by the profit upon a moderate farm.

The distance of the drills must vary according to the soil; in the poorest nine inches is rather too near and a little more may be allowed; twenty-four inches is near enough in rank ground. Grass seeds with wheat must be sown after the horse hoes; with spring corn after the harrow.

Barley—is usually sown after wheat; the stubble is often not ploughed until February or March, and the grain sown some time in April, or occasionally in the beginning of May. Sometimes the wheat stubble gets a first ploughing in January and a second in March by the best farmers, who then sow their seed under the plough, as they think the method which is often practised of sowing under a light harrow, does not cover it deep enough: it is usually sown in narrow ridges of five or six sods

and

leaving a small rib between the two furrows; let the land horse go down now again in the same furrow and still continue to walk in the last furrow made by the plough, always turning to the left at the head lands, till the ridge of sixteen yards is finished, by which means the field will be all *in balk* and the furrows should be at twelve inches asunder for sowing seed in.

"This is a good mode of plouging fallow to lay it *dry* in the winter, and the easiest method of laying down land *even*, by sowing in broad cast and harrowing along the balk; when done, no furrows remain in the field: this leaves room for grass seeds to grow between the rows of corn, which are at twelve inches asunder, and the corn in rich land is not subject to lodge, to the injury of the crop and destruction of the young grass and clover: less seed answers and gives as good a return as in any other way of ploughing; I have found all kinds of grain to grow equally well in this method, particularly *wheat in light soil*, as it covers the seed deep: the grass seeds should be sown in April and the wheat harrowed with a very light harrow, the stones picked and the lands rolled." Mr. Robert St. George.

Not many years ago bere, *hordeum hexastichon* was the grain usually cultivated instead of barley and went by that name; the other was little known, and when first introduced went by the name of small barley, and bere is still called big barley by many farmers. But one variety of common barley, *hordeum distichon*, is cultivated; it varies however

latter was the best in appearance; six stone of seed was drilled to an acre; at harvest that at eighteen inches seemed most productive, the ears had generally fifteen to seventeen grains or more; the ground was rich and had been well prepared after drilled cabbages and potatoes; in poorer ground this year he sowed some acres at twelve inches, at the rate of four and a half stone to the acre.

Some gentlemen in Galmoy have a method of sowing particularly adapted to spring corn, and which is called sowing *in balk*: the land is not thrown into ridges, but the seed falls into the hollow of the furrow and comes up as if in drills about ten or twelve inches distant; this mode is reckoned to answer well when grass seeds are to be sown with the corn as they have room to grow between the rows, and are sheltered by the crop; it has some of the advantages of drilling: and can be done with a common or with a double plough; the ground when sown should be well rolled: it is also recommended for wheat; and in rich ground prevents corn from lodging, in the same way as drilling: but the practice will be better explained in the words of a person perfectly conversant in it: it probably takes its name from but half the land being ploughed.

Method of ploughing balk.—"Plough a straight furrow eight yards from the bounds of the field, and from one end to the other; at the end turn the horses to the left, and let the land horse come up the furrows made by the plough in going down, leaving

greater or less preparation; one ploughing is often reckoned sufficient, whereas barley never receives less than two, and wheat seldom less than three. When it is sown after wheat or barley, the stubble is ploughed when it may suit the convenience of the farmer, which is rarely before winter, and sometimes not till seed time, when the oats are ploughed in upon the stubble. The sowing begins about three weeks or a month before the barley; many farmers in the wheat district say, they cannot afford to sow oats, meaning that they prefer fallowing after wheat and barley to sowing a third exhausting crop, whose produce would be small, and would delay them another season from the favourite succession of fallow, wheat, barley.

Upon breaking up ley ground it is not uncommon, and perhaps it is with justice esteemed a good practice, to sow oats, after one ploughing, on the back of the sod; these are called *ley oats;* the crop upon old pasture ground generally turns out a great one, and is succeeded by potatoes; the sod perfectly rotted is in excellent tilth for wheat the second year. Ley oats are however often succeeded by wheat, the stubble being immediately ploughed after harvest; the wheat is again succeeded by oats; a severe and scourging course for any ground. In other cases though rarely, lime has been spread upon the surface in summer, previous to the sowing ley oats, where it has been left till spring, and the grain sown as before, which

will

ever in the size of the grain: the barley of this county is in estimation and reckoned of a good quality.

Bere—is not now in general cultivation: farmers do not think the greatness of its produce compensates for the expence of the tillage; as it requires nearly the same preparation as wheat: and there is a more certain price, and a surer market for the latter: and as barley bears a higher price with maltsters, is in constant demand and can be sown late in spring upon a wheat stubble, it appears more profitable though inferior in produce. When ground has been burnt for potatoes and the planting prevented by accident or delay, it is often sown with bere; the ashes are spread and ploughed in at the time of sowing, the seed covered with a harrow and trenched, generally in ridges of eight sods; the ridges of bere are usually higher than for other corn: bere is said to require new ground; the average produce is about thirteen barrels; from fourteen to fifteen is reckoned a very good crop, from ten to eleven a very indifferent one: some lands have borne above twenty-two barrels. For the last two years bere has been more cultivated than usual, as an early grain for food, and barley less so, on account of the restraint upon distilleries; bere was sold last year in general for 2*s.* a stone to make meal.

Oats—being hardier than any other grain, are cultivated in situations more various, and in modes more different than any other: the ground receives

greater

it ripens earlier by some weeks, and is more productive: *black oats* have been sown, but not frequently; they have rather a thin skin, and are in size between the English and Irish; they ripen sooner than the latter, and have the peculiar quality of being so dry, that if cut in good weather they are as firm as old oats; they shed however, and should be reaped a few days before they are ripe: the *Polish oat* is sometimes cultivated; it is much esteemed for its large white grain, which however it sheds too easily. Several farmers have raised the *Tartarian oat*, a distinct species, which gives a plentiful crop, but must be sown in good ground; it has a very dry straw, ripens late, but never sheds, which is a peculiar advantage, though it is liable to be lodged. Other varieties have been occasionally tried; the Rev. Dr. Butler sowed this year (1801) *Zealand*, *Canadian*, and *red oats*. The Zealand were very productive, two acres giving about forty barrels; the Canadian was much less so, and the husk too thick; the red oats were brought from the county of Tipperary, and sold in the market of Kilkenny for seed; the produce was good and the grain full.

Sir Richard St. George had spring corn drilled with Cooke's machine, at Wood's-gift, in 1801: the drilled oats had eight stone of seed to the acre; some sown in the common way had thirty-two stone; the former appeared much stronger and greener in July. Mr. Robert St. George had very fine drilled oats in a clover ley.

Rye

will bring a great return, and might without much injury be succeeded by wheat, if followed by a crop of potatoes.

In the hilly districts, where oats are the principal object of culture, and where they are sown after potatoes, fine crops are produced of twelve and fourteen barrels and more per acre: from stubble eight or ten barrels is accounted a tolerable crop; not more than five or six are often reaped from exhausted ground; the average produce is above nine barrels: this corn is almost always sown in narrow ridges, even where the ground is let out afterwards, as may be seen in most of the pastures, or rather wastes of the country. Like barley it is often trenched, particularly in very light or moist ground; farmers reckon the expence well repaid by the additional produce: an expeditious mode of trenching is often used, by throwing two ridges into one, which saves half the labour, as the earth is only raised out of every second trench: another method is called *blind trenching*, which is performed by casting the earth both over the ridge and the trench beyond, so that the interfurrows scarce appear.

The kind of oat most commonly cultivated is that called the *Irish*, the grain is hardy, but small, and often becomes bracket or spotted; but it has the advantage of not shedding easily: the *white English oat* is often sown, the grain of which is larger, and is so apt to shed, that it ought to be cut before it is quite ripe; it is not so thin-skinned as the Irish, but

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Imperfect fallowing increases weeds instead of destroying: when they are not ploughed in until the seed is formed, they are only multiplied by the operation, hence the quantity of annual and biennial plants in the tilled ground; and when the creeping roots of perennials are not dragged out, they are only increased by divison: hence fields are so often filled with *potentilla anserina*, white tansey, Ir. *luss lioch*; *agrostis stolonifera*, which is the commonest *scutch*, or *couch grass* of this district; *agrostis canina*, *triticum repens*, both called *couch grass*; *ranunculus repens*, creeping crowfoot, Ir. *crogh prichane*; *potentilla reptans*, cinquefoil, Ir. *lugh na goig meighar*; *convolvulus sepium*, great bind-weed; *sonchus arvensis*; *carduus (serratula) arvensis*, corn thistle, Ir. *fothanan*; and even *rubus fruticosus*, Ir. *dreseog*; with others too well known, according to the soils best suited to each. Other perennials which infest the tillage of this county, are *tussilago petasites*, and *farfara*; *Artemisia vulgaris*, mugwort, Ir. *bofulan ban*; *sabiosa arvensis*, and *succisa*, Ir. *urachalach*; *avena flavescens*; *cynosurus cristatus*; *chenopodium bonus henricus*, in rich grounds and rubbish; *rumex obtusifolius*, *crispus*, and other docks; *cucubalus (silene) Behen*; *cerastium viscosum*, and *arvense*; *lychnis flos cuculi*; *lamium album*, Ir. *neantog mharabh*; *digitalis purpurea*, Ir. *mearacan gorone*; *erysimum barbarea*, edges of rich ground; *vicia cracca*, Ir. *pis teighnan*; *arctium lappa*, Ir. *copog leigh*, angles of fields and rubbish; *crysanthemum leucanthemum*, Ir. *noinin mor*; *pyrethrum (matricaria) parthenium*,

Rye—is but little cultivated; when sown it is usually upon burned land, and in that way produces fine crops upon high mountainy ground: it is sometimes sown by small farmers in Fassadinan, and in the hilly part of Gowran, who make it into bread for their own use; none is raised for tanners: the average produce of rye may be about ten barrels; twelve or thirteen is a very good crop; eight a very poor one: it is sown at any time from November to Candlemas; it has been sometimes raised on potatoe ground, sometimes on land that had been prepared for potatoes, and is usually succeeded by oats.

Weeding.—These crops are but imperfectly relieved from weeds; the wheat is often clean to appearance, because the early growth of the corn restrains or hides them; but in the stubbles they are plentiful and conspicuous; the spring crops, less able to contend with the noxious plants that vegetate at the same time, are greatly infested, and when sown on exhausted ground, are frequently almost devoured by them; nor can it be otherwise, when every weed is suffered to flourish without impediment, and to shed its seeds upon the head-lands, and waste corners of fields, upon the banks of ditches and road sides, and particularly on the ribs left for divisions upon the lands tilled in partnership; from among the corn they are very imperfectly pulled, generally by hand, and by women with gloves, and the larger ones are sometimes drawn out by wooden pinchers, or cut off by a reaping hook.

Imperfect

Senecio vulgaris, Ir. *graun luss*, groundsell.

Anagallis arvensis, Ir. *falcaire fiodhain*, pimpernel; is the first plant that appears in fallows.

Lamium album, white dead nettle.

Galeopsis tetrahit, Ir. *neantog*, dead nettle.

Carduus tenuiflorus; edges of fields.

Chenopodium album, orache.

Valeriana locusta, corn valerian.

Atriplex hastata, Ir. *ceathramha luain griollog*, wild orache.

Lamium purpureum, red dead nettle.

Galeopsis ladanum, Ir. *neantog morogh buidhe*, nettle hemp.

Spergula arvensis, Ir. *corran lin*, spurry.

Myosotis scorpioides, Ir. *luss midé*, mouse-ear.

Urtica dioica, large nettle.

Æthusa cynapium, fool's parsley.

Chenopodium urbicum, upright goose-foot.

Geranium molle, and *columbinum*, dove-foot crane's bill.

Papaver argemone, poppy.

Veronica agrestis, field speedwell.

Gnaphalium Germanicum, cudweed; on poor stubbles and ground let out.

Sherardia arvensis, field madder.

Thlaspi campestre, bastard cress.

Bromus mollis, soft brome grass.

Stachys arvensis, hedge nettle.

Bartsia (Euphrasia) odontites, red eye-bright; and in moist pastures also.

parthenium, and *inodorum*, the latter in dry ground, and also among stones at the edge of the Nore, and called in Irish *feniol emollie; anthemis arvensis*, Ir. *coman miola; centaurea nigra*, and *scabiosa; equisetum arvene;* and others less common, as *chelidonium majus*, growing also on walls; besides a host of biennials and annuals, with whom the farmer must contend, and which are found pretty much in this order as to frequency.

Carduus lanceolatus, Ir. *fotharan garrogh*, spear-thistle.

Sinapis arvensis, Ir. *garabhogn fian*, and *praisseagh garuh*, charlock.

Fumaria officinalis, Ir. *phoim i thurogh*, fumitory.

Chrysanthemum segetum, Ir. *asping shaan*, and *buachalon buidhe*, corn-marygold, in poor ground.

Viola tricolor, pansy, in stubbles and fields let out.

Euphorbia peplus, Ir. *foghuirm*, spurge; stubbles.

Papaver Rhæas, Ir. *cauleach dhearg*, poppy; in lime-stone soils.

Sonchus oleraceus, Ir. *sharafarn*, sow-thistle, it is sometimes pulled by small farmers for pigs, who eat it greedily.

Polygonum aviculare, knot-grass.

Urtica urens, Ir. *neanta neantog*, nettle.

Thlaspi arvense, Ir. *pouissiach fiadh*, treacle mustard.

Cerastium vulgatum, mouse-ear chick-weed.

Alsina (stellaria) media, Ir. *fliuch*, chick-weed.

Senecio

Erysimum alliaria, Jack-by-the-hedge; more common on banks of ditches.

Cynoglossum officinale, hound's-tongue.

Lithospermum arvense, gromwell; neighbourhood of Kilkenny.

Geranium dissectum, jagged crane's bill.

Papaver dubium, small poppy; and on banks of ditches.

Matricaria chamomilla (suaveolens), wild chamomile.

Thymus acinos, annual thyme.

Ervum hirsutum, Ir. *reagh laigh*, hairy vetch.

Geranium pusillum, small crane's bill; stubbles and grounds laid down.

Linum usitatissimum, Ir. *lin*, flax; dry fields, and also among gravel in the bed of the Brukagh river, near Castlecomer.

These are more scarce:

Brassica campestris; fields laid down.

Chenopodium rubrum, Ir. *chruigh yairag*, red orache.

Papaver somniferum, white poppy; fields near Kilkenny.

Euphorbia exigua, least spurge; fields near Brownsbarn.

Every farmer is sensible, that useless plants deprive the cultivated ones of nourishment, and exhaust the soil; but every person is not aware that weeds have sometimes a more noxious effect, poisoning the ground perhaps by excrementitious juices;

Cardamine hirsuta, hairy ladies smock, in shady places also, and on walls.

Verbascum thapsus, mullein.

Thlaspi bursa pastoris, Ir. *sraidin*, shepherd's purse, and on walls.

Lolium temulentum, riley; particularly among barley.

Brassica napus, wild turnip; particularly among grass seeds sown in Iverk.

Carduus acanthoides, welted thistle, and on banks of ditches.

Polygonum persicaria, Ir. *clunach dhearg*, spotted knot-grass.

Scandex pecten Veneris, shepherd's needle.

Daucus carota, Ir. *careid fian*, wild carrot; more common on banks of ditches and also in meadows.

Lapsana communis, Ir. *duilleog mhaith*, nipple wort.

Senecio Jacobæa, Ir. *buachalan na heasearan*, ragweed; more common on road sides.

Avena fatua, wild oats.

Carduus marianus, milk thistle.

Onopordum acanthium, great thistle; sides of fields and banks of ditches, neighbourhood of Kilkenny.

Euphorbia helioscopia, large spurge.

Geranium (erodium) cicutarium, hemlock crane's bill,

Agrostemna githago, cockle.

Hedypnois (Leontodon) autumnalis, autumnal dandelion edges of fields.

Erysimum

oats are fit about the same time, but according to grain, sowing, and exposure, they vary very much, and in the hills many crops of oats are uncut in the end of September.

Six men can reap, and three women bind, an acre of wheat in the day: it may sometimes be done by fewer hands: the reaper takes three handfulls successively in his left hand, and lays them down together; two handfulls generally constitute a sheaf: the sheaves are usually set in stucks, six or eight together; three are placed leaning against three others, and these are capped by two more, the ears hanging down; but wheat seldom remains above a day in this state, and is then stacked in the field.

The same number of hands, and sometimes more, are required for an acre of barley: it is the object of the farmer to put this delicate grain into stack as soon as possible, but he is sometimes obliged to leave it on the ledge and turn it constantly: when dry it is bound and stucked as wheat, and if the weather is unfavourable must remain in that state some days, or even a week.

Eight men are usually required to reap an acre of oats, and four women to bind: oats are often left on the ledge, or in the swarth, for several days, and in the stuck as long. It was formerly a custom, particularly among small farmers, and where oats were the only grain cultivated, to keep them on the ledge for three weeks or a month in fine weather, and to turn them frequently; by this means the grain grew whiter, and produced as they said more meal; which probably

Mr. Humbold, a diligent observer of nature in Germany, has found that the oat is particularly injured by *carduus arvensis;* wheat by *erigeron acre;* flax by *euphorbia peplus* and *scabiosa arvensis;* buckwheat by *spergula arvensis:* that plants may have a peculiar and poisonous effect upon each other, is known to gardeners in the instance of the carnation, which perishes if planted in compost in which hyacinths have grown; Mr. Marshall's observations induce us to believe, that the farmers of England and France are not misled by prejudice, in supposing that wheat is singularly affected by the vicinity of the barberry, which at the period of shedding its farina damages the blossoms as far as its influence can reach; and Bradley mentions that nectarine trees were killed by planting mint near their roots: Pliny has noticed that plants could be killed by vegetable juices, " silvæ extirpandæ rationem Democritus prodidit, lupini flore in succo cicutæ uno die macerato, sparsisque radicibus."—H. N. l. xviii. c. 2.

Harvest.—The wheat harvest usually begins during the last days of August, or the first days of September; it varies according to seasons from about the fifteenth of the one to the tenth of the other, and even more, so that there is sometimes four weeks difference between the commencement of harvest, in a very late and a very early year, immediately in succession: corn is earlier on limestone grounds, and rather earlier near Callan, and on the Suir, than near Gowran. Barley is reaped during September, and is about a fortnight later than wheat. Some early

oats

a time often very injurious to the corn, in grounds badly fenced, and exposed situations; in all places it is attacked by great numbers of field mice, and frequently from damp and rain sprouts in the ear. Drawn home it is placed in larger stacks, generally of a similar form, but on stone stands and thatched with straw: if intended to be kept, the thatch reaches the edge of the roof and hangs over; otherwise it does not extend so far. Corn cannot be better kept than is often done here, in an airy haggard, and on circular stands; in the best, the uprights consist of single blocks of granite or of limestone, surmounted by large flags, or flat stones, approaching so near each other as to require no frame of wood: the pillars, caps, and frames, are sometimes all handsomely made of granite; there is a corn-stand at Mount Loftus of this construction. It is advisable not to make stacks in the yard so large, that an entire one cannot be taken down and threshed at once; and this the farmers generally attend to. Having small barns, they perhaps preserve grain safer and better than is done where the farming capital and offices are more extensive. After a stack is made, the sides should be neatly cut down or shaved with a scythe. Barns are sometimes entirely wanting, and corn is threshed on the ground of the yard; generally, however, the small farmers have a shed or a room just large enough to permit two men to use their flails. For the flail, holly is the wood preferred; when it cannot be had, white-thorn or ash are cut, for *bulk thorns*, as they are called. Winnowing is performed

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probably was the case; corn after it is cut continues to ripen, and it not only consumes whatever remaining juices may be in the joints of the stem, but it afterwards proceeds to convert gradually its mucilage into starch, and exposure to the air and sun contributes greatly to advance this process; this takes place in a slower manner in the stack or granary, and is the reason why old grain is more nutritious than new. Since tillage has increased this practice has been abandoned; the farmers say they are not able to pay the same attention now as formerly, though they are still convinced of its beneficial effects.

A few farmers have occasionally mown their spring corn: mowers do not like to undertake it, and say it spoils their scythes: it is constantly practised by Mr. Robert St. George, who advises that every kind of crop, except wheat, should be mown with a cradle scythe and the ground raked; as the corn is bound, it should be made into stucks, and carried home from them into the haggard, if the weather will allow, without stacking in the field; but if the mowers are not expert, reaping is preferable.

The perpendicular height of the sides of a field-stack is usually about ten feet, the conical crown is formed by sheaves with their top uppermost, which is capped by five or six others bound together, forming sometimes a neat topping, and placed on the summit with their buts upwards: to prevent crows from lighting on the stack, furze bushes are often fastened on the head: the stacks remain a long time in the field, waiting the convenience of the farmer;

a time

an acre: two years ago the price was seven or eight guineas a boat-load. Some farmers have put lime on the sod in summer, and have left it spread there until Christmas, when it has been ploughed in; dung was added when the potatoes were planted, and the produce was very great: with lime alone the quantity is not great, but the quality is good and dry: the advantage however would be very great, if lime was more commonly used with potatoes, and dung kept for meadows and corn crops; this would prevent a vast extent of unnecessary fallow, which takes place for want of manure, and would save farmers the expence of purchasing hay or meadowing at a high price, and drawing it from a distance. The old method of *setting* potatoes was *with the back of the spade*, and is still practised in many parts, particularly in the barony of Iverk: the ground having been ploughed into ridges five or six feet wide, dung is spread, often by a rope line; it is shaken out by a fork, and afterwards by the hand; the sets are spread on the dung, and men or women walking backwards cover them with a spade; women often drop the sets, and the men bury them; two persons work abreast on one ridge: sometimes women carry sets in their aprons, and digging the holes drop them in, (or *stick them in*, as it is called) behind the spade; then carefully placing a little dung over each plant, cover it, break the clods on the surface, and settle the earth with the back of the spade. This is a tedious and laborious process, but produces good crops; it requires a smaller quantity of seed than where the

planting

in the open air, often on an elevation, at a distance from the house; or in the high road, for the advantage of a draught of air: in unfavourable weather corn sometimes lies exposed in a hovel called a barn, to vermin, and to damp. Among rich farmers there are a few good barns built of stone, but scarce any winnowing machines; there are, however, a few in the county. The wood used in the riddle and sieve is always ash.

Straw—is sometimes stacked, and when not wanted for thatch, is given to cows in winter, or sold, particularly in Kilkenny, often at the rate of 2*s.* 2*d.* per hundred weight. Oat straw is esteemed best for cattle; bere straw is given also, and barley, but used for litter where other food is to be had; wheat straw is kept for thatch; it is said to be good for cattle in the beginning of winter, but afterwards becomes too dry; and rye straw is considered only as litter. Straw for food is never chopped.

Potatoes.—Ground intended for this crop is generally ploughed after Christmas; cross ploughed and harrowed in March. All the dung of the county, besides other manure, goes to raise potatoes; a large quantity are planted in burnt ground, some with compost of road scrapings, ditches, and earth mixed with lime; some with sea sand, and composts of turf-mould; lime and dung are sometimes used together. The street dung of Waterford is purchased at great expence by the inhabitants of Iverk; last year ten or twelve guineas were given for a boat-full, containing about eighty car-load, or manure sufficient for half

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but just turned with a plough, and the dung spread for potatoes on the back of the sod: to plant on grass, and cover with the sod, is scarce ever practised; in old rich ley near Kilkenny it has been done, and eight guineas per acre given for this potatoe ground. Twelve barrels of seed are often used with the plough; when a quarter of an acre is taken by poor people, they seldom think they do enough, unless they plant four barrels in it: potatoes in ground thus let by farmers in Iverk, are called *dairy potatoes;* perhaps from having been formerly usually raised on dairy grounds. Twelve guineas is sometimes paid for a manured acre of potatoe ground; from six to eight is a common price; or two guineas and often something more for a rood: for old ley burnt by farmers eight guineas is the usual price, if the tenants burn it themselves eight pounds, and in this case the farmers plough it in March, and the planters burn it any time before June, managing it in their own way. Potatoes are but imperfectly wed, and often dug late; the farmer sometimes prevents the digging until the ground is paid for, and the crop remains in the field until Christmas. The burning or *baiting* for potatoes is, in dry seasons, occasionally made the autumn before; by which great part of the beneficial effect of the ashes is lost; other manure is generally added to ashes, as sea sand or marle; to baiting thus made in the hills of Iverk, four or five hundred load of marle is sometimes added; the potatoes are followed by oats, and often but one crop of oats is taken in succession. Some few farmers run a plough between

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the ridges, to loosen the soil before earthing; and again to throw the earth from the edges of the beds at the time of digging; an imperfect step towards drilling. The principal defects in the common modes of setting potatoes are, that they are not sufficiently covered, by which they are greatly damaged in dry seasons, and that they are planted too thick, by which they become starved and small, the expence of seed great, and the produce diminished: one good set planted in the centre of a square yard, and well earthed up, will produce a greater weight, and of a much better quality, than ten of the common sets in the same space, and with the common culture; but sometimes a square yard contains more than ten.

The drill planting has made a slow progress in this district, though a general practice in Wexford; a few gentlemen practise it, and some farmers, particularly in Galmoy, who learned it from the Palatines in Tipperary; some who have tried it, state ill-founded objections; they say saving manure is disadvantageous to the succeeding crop; but the quantity of manure saved might be added afterwards, with greater effect, to the succeeding crop, if requisite, which from the additional tillage in drilling would certainly not be the case; they say the produce is not as great as in the old way, and that the potatoes are too near the surface, and liable to be injured; these objections only spring from their defective mode of execution, by making the drills too close, by not ploughing straight, and by not earthing sufficiently: in rows nearer than three feet they cannot

not be well tilled; the common plough, and the manner it is led, and the want of a good or double-mould, make drilling difficult and often unsuccessful: in bad drilling the ridges are left too flat at top, and the plants do not receive all the benefit of earthing: some have planted in double drills, which are about one foot distant, and the alternate spaces three feet, so that one side only can be earthed, which is an imperfect mode.

The saving in labour cannot be denied, a plough and three men can plant an acre in drills, in the day; that is the labour of five men and two horses, instead of about twenty men or more with a spade; in the common way with a plough, eight men or women, and a plough with two horses and two men are often required: five men besides a plough, have taken out an acre of drilled potatoes; but ten hands with two horses, do it easily, supposing two men to the plough, four men to raise the potatoes with prongs, and four women to pick; instead of about forty hands with the spade. All allow the saving of seed to be at least half, and of manure as much: four barels or four and an half are enough for a drilled acre, ten are in most places planted with the spade, twelve with the plough. As to the produce, the farmers even who will not adopt the mode, allow it to be equal to that in the common way; some who have tried, say it is superior, according to the tillage. Their usual mode is to make their drills not much above two feet or two and a half distant: to earth three times, sometimes only twice, when the plants

plants appear and when they flower, all with the common plough and two horses abreast; two horses at length have been seldom used. In ploughing out, they sometimes cross they ridges, a slovenly practice, and after picking, harrow to collect the remainder. In light soils, as soon as potatoes are dug, the field is often left open, or cattle turned in, to trample the ground well previous to sowing wheat; which they think is of service, and may perhaps be useful.

Good examples of drilling have been set by different gentlemen; Mr. George Keogh of Chilcomb, near Rosbercon, introduced the practice about twenty years ago into the barony of Idagh from the county of Wexford; his method has been slowly adopted by a few neighbouring farmers; the following is his mode, which he was so obliging as to communicate. "To drill potatoes, I prepare the ground as I would for barley, and draw on the manure in dry weather. The drills I make two feet apart, planting the sets from four to five inches in the drills, which I cover immediately with a one horse plough: when they begin to appear, I give them a second covering, and after as they advance in height I earth them with a two horse plough, as high as I can without covering the stalks. Should the weather be very dry and the earth get hard after the second covering, or weeds appear in the potatoes, I would recommend a two horse plough, with the mould-board taken off, to be run close to the drills to soften the ground before the first earth is put up to

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the stalks. I use no manure for potatoes, but what is perfectly rotted: where the dung is long, it should be laid in rows about twenty feet asunder, and laid over the sets with forks before they get the first earth. Mr. Young disapproves of wheat following drilled potatoes, as the potatoes are got out too late, and the ground is made too fine; I can assert from twenty years experience, during which, I never sowed any other grain, that wheat will do very well after drilled potatoes, and I had a most excellent crop of wheat from my potatoe ground in 1797, which was not sowed until the first week in February. I was kept so late by constant wet, that I would have that year sowed barley, only I had the wheat pickled before the rain began.

"From reading a treatise on husbandry (the Yorkshire Farmer) I prepared in 1779 to drill potatoes by ploughing an oaten stubble as soon as the corn was taken off, with a large wheat plough, with a shifting mould-board, which laid the whole level; the first dry weather in March, I began to draw on the manure, when I was persuaded by an old farmer who rented the next farm to me, to try part of the field in narrow beds, set with the plough: I exactly divided the field, one half I drilled, the drills three feet apart; the other half I planted, in beds about six feet wide, with the plough, and kept an exact account of the expence and produce of each half. The beds were trenched with spade and shovel, the drills earthed thrice with a two horse plough, the beds produced not quite four carts of

potatoes

potatoes more than the drills, the balance of expence of culture was £.6 : 17s. in favour of drills; the potatoes in drills much larger, not a cut potatoe among them, and but a very few that were not fit for market. The largeness of the potatoes in the drills, was the greatest objection, several of them were hollow in the middle, and though very dry, the outside was overdone when the heart was raw. I had the potatoes out by the latter end of October, when I sowed the whole with wheat; the drill half produced an excellent clean full crop; the bed mostly lodged and never filled. I so clearly saw from this one experiment the decided superiority of drills, that I have never planted a potatoe in beds, except one or two for early potatoes. On the beds I laid exactly double the loads of manure that I did on the drills, which caused the wheat to lodge. I now make my drills but two feet apart, and plant the sets from four to five inches; by this close planting, my potatoes are not too large, and the stalks cover the whole of the ground, so that no weeds can seed, which makes it superior to a fallow for either wheat or barley. My crop of potatoes last season was, I think, as good as usual: it was a general remark last summer, that drills by being so much exposed, would not produce, and that wide beds would best bear the extreme dryness of the season: in the latter end of last June I observed my potatoes did not look as well as usual, they had been second earthed about three weeks; on walking along the drills I found the earth quite hard; I immediately

had

had the mould-board taken off a plough, and run it as close to the stalks as I could go at one side of the drills, and immediately had the earth returned into the furrow with a one horse plough: when they had gone at one side of the drills, I made them do the same at the other side. The good effect it had, made me recommend it to several; one only could be persuaded to try it; his crop was the best in his parish. Last season one of his workmen who held the plough had twenty two drills in his master's field, but would not take off the clay from his drill; his master assures me he had more potatoes in one of his drills than his man had in four of his, though managed and manured equally in every respect, except in taking off the sod. In my long experince of drilling I never had occasion to do so until last season."

The Rev. Mr. Stone of Durrow, introduced the practice of drilling potatoes into his parish, and of ploughing with two horses without a leader, nor can the drills be well made in any other way; as soon as the sets are planted, he harrows the surface with the back of the harrow, which is a usual practice, earths his three feet drills with a common plough, and finishes the earthing with a shovel. In three feet drills there is no fear of the potatoes growing too large, and hollow in the centre, unless too great a quantity of dung is employed: between closer drills there is not surface enough for earthing, and if this is not completely done these plants are very liable to injuries

crows, particularly if early. A plough without a mould-board is the best for taking off the earth, and a double mould-board plough with one horse ought always to be used for returning it, saving half the labour, and doing it better. This method has been in use by Mr. William Barton of Mount-Roth, one of the best practical farmers in this district: in very good ground, a deep brown loam on a limestone basis, he has had 180 barrels on an acre, which he proved by weighing the produce of one square perch: the sorts he cultivates are the *great apple*, the *black potatoe*, and a large kind called the *quadruples*, which are remarkable for producing no blossom, and are perhaps the same sometimes called *truffe potatoes*, which have the same quality. As pulling off the blossoms has been proved by experiment to render the roots more productive, probably this quality is an advantageous one. Mr. Barton had also the *barbers wonders* supposed to be what are called *ox-eye-nobles* in Lancashire, but he has found them lately much infected by the curl, and intends giving them up; the same was observed in other places: he takes out an acre in the day, with two men, a plough and two horses, and sixteen women to pick; but fewer might answer; he would require twice the number of hands with the spade: the plough goes round three drills, taking the earth from the same sides of each, so that three rows are exposed together. Mr. Power of Kilfane drilled potatoes two years successively in the same ground, manuring the first

crop

crop only with lime; the second was a good crop. Lady Ormonde's steward found potatoes to answer better in narrow ridges than in drills; probably from being better earthed.

Sets are always cut ten days or a fortnight before planting, that they may get *a skin*, otherwise they might decay before they could vegetate, and also would be more liable to the attacks of insects. Farmers throw away the shoots, but plant the eye that has shot: the first eyes that vegetate are probably the most vigorous, and ought to be planted carefully, with the shoot attached to them, and they will form earlier and larger potatoes, but they require fine ground and moisture, that their vegetation, already commenced, may not be checked. Few have attempted to plant the shoots by themselves; Mr. Greaves of Thomastown tried it before he was acquainted with Dr. Maunsell's experiments, and I am indebted to him for these observations.

"Having thought that potatoes might be produced from the shoots, I was resolved to try the experiment, which I did with very great effect: I planted in the same ground and with the same quantity of manure, the shoots and the seed cut in the usual way, and at the same period; this was a fair trial and I was determined it should be so: the potatoes produced from the shoots were much more productive, larger and better in their kind, and three weeks earlier than the potatoes from the cuttings; and so convinced am I of the utility and

advantage of rearing potatoes from the shoots, that I am determined to do so constantly. The method of planting them is very simple; and only requires a little care and attention: the potatoes for planting are generally set apart in a pit or a house in a heap until the spring of the year; in this manner would I have them left until the ground is prepared, and the shoots then carefully taken off and laid in baskets. If in new ground spread the dung and lay the shoots thereon at proper distances and then trench them, and when they appear over ground, trench them again, and treat them in the same way you would any other potatoes. If it be old ground, plough in the dung, level the beds or ridges and make holes with sticks and put the shoots carefully down, as you would cabbage plants, observing to close the hole with the point of the stick; by this method the entire of the potatoe is saved, and can be put to the use of feeding pigs or cattle, or in a scarce year like the present may be eaten. There is no description of people who should attend so much to the planting of potatoes according to this method as the poor, because one barrel will produce such a quantity and succession of seed, as to make the saving of great importance indeed, as must be apparent to every one."

There are objections to cultivating shoots in the common mode of husbandry; in the carriage to the field, they are broken and injured, and consequently rot and perish; if no part of the potatoe is left with them, their growth will be checked, and their

first

first shoots weak for want of nourishment; in a dry season, they usually die, nor can they be well planted, unless the soil is in great tilth, and very fine; the care required in planting them demands more time and attention than common sets: I tried them more than once, and in light and dry ground they mostly failed: but farmers when they know what precautions should be taken to obviate these accidents, would do well to attend to the calculations and experiments of Dr. Maunsell: the method will be found profitable if done with discretion; to open pits and cut off the young shoots would be a detrimental practice; such shoots not attached to a set, would run a great hazard, and the second sprout of the same eye would be weak and good for little; though several shoots may be got from the same eye. Varieties that shoot late, may have an advantage; for the best time to plant a set would be just before the eye began to vegetate, as it would be well protected under ground: if our climate prevents that, eyes which have sprouted ought to be planted by themselves, in fine mould, where they will make early and vigorous plants.

The proper use of shoots seems to be for raising early potatoes; and this is understood in parts of Lancashire and Cheshire, where particular attention has been paid to this plant: the reader will find many important facts in the Lancashire report; in the Cheshire report, the mode is (p. 18) "to keep the potatoes during the winter guarded from frost in a warm place: the best place is a loft sufficiently dry

dry and airy, where they should be spread upon, and covered with straw; when they have sprouted about three inches, they should be planted early in March, in dry soil, with the sprout on, in drills, a small rib of earth between each drill, and the end of the shoot just under the surface: cover them with straw at night during the frosts; a second crop may be grown the same year: Liverpool market is thus supplied in May." Turf mould will effectually preserve early potatoes and the roots of many delicate plants from frost, if spread about two or three inches deep on the surface, probably better than straw, and would save the use of good litter. A second crop of potatoes may be had from the same plants; nor is this very uncommon near Kilkenny; a farmer of the name of Meany near Dunmore, practised it constantly, turning up the roots carefully, pulling the potatoes, which sold for an early crop, and by earthing them well, in replanting, the second crop was not inferior to a common one; had shoots been used, with a cut of the potatoe attached, as it should always be, the crop would have been much earlier and more valuable.

Mr. John Robertson, of Kilkenny, planted shoots in drills, in 1799, in the same ground with common sets and scooped eyes: the produce of the shoots, dug at the same time, was greatly superior to the sets, and twice as good as the scooped eyes: but small experiments may be affected by minute circumstances: the following is his account of other experiments, including observations on the tillage

near

near Kilkenny. "The soil within the liberties of the city is mostly of a light gravelly nature, forward in its produce, and affording excellent crops of all sorts of grain sown in the country: there is nothing peculiar or different from the old practice in its mode of tillage, except the custom may be such, which the farmers have of late universally gone into, of giving their worn-out ground rent free to the poor, for the purpose of manuring it for potatoes: the manure the farmers draw out gratis, and lay on the ground, at the rate of about a load and a half, or ten bushels to the tale, a measure of sixty square yards:* the potatoes they also frequently draw home for them. This practice they find very profitable, generally taking after the potatoes a crop of wheat, one of barley, and one or two sometimes of oats, in succession, and then give out their land as before: the town manure they esteem as much superior to their own, or stable dung, finding it more permanent in its effects, and have in consequence raised its price considerably: a one-horse load of twelve bushels, which some years since might be had for six pence, costing 1 *s.* 1 *d.* or 1 *s.* 7½ *d.* In planting potatoes this season, I tried an experiment on the efficacy of soot as a manure for them, strewing a quantity of it in some drills instead of dung, but was disappointed in its effects, finding it of very little benefit to appearance as yet, inferior in luxuriancy to those which got dung, and scarcely differing from some that had neither: I was

* Twenty yards in length, and generally two in breadth. See page 272.

was led to it, from observing its effects on meadow ground, a stripe of which that was lightly strewed with it by the hand this year, was much superior to the rest in the vigour of its appearance and produce of its grass; but from a former trial I find that its strength, when laid on in such small quantities, does not extend beyond the first season. I planted also last May in drills, about nine inches asunder in the drill, some shoots,* which had sprung up from the potatoes left last autumn in the ground at digging out, and were carefully raised up with their fibres, though without the bulb, and laid on some mould placed over the dung in the drill, and covered up to the necks with it: at the same time were planted some sets, in the common way, and some eyes scooped out of the potatoe about the size of a pistol bullet, on the same preparation; since that time they have received but little rain, yet thrive tolerably; the shoots preserving an evident superiority in forwardness over the rest, and have been a month earlier in blossoming, while the eyes are considerably weaker than the common sets. I think that independent of the saving his seed, and ridding his crops of what may be termed a troublesome weed; the planting of these shoots may be very advantageous to the farmer, who may have been prevented from putting down potatoes early, as they will be fit for use as soon as those planted a month before: abundance of them may always be had in spring from potatoe ground of the preceding year."

Scooped

* Or young plants.

Scooping the eyes is a practice well adapted to save food in years of scarcity: but the results of the practice have been too various for the farmer to hazard his crop upon; in a dry season, and in ground not very well tilled, they are liable like the shoots to be starved, and from their smallness they require more attention in setting. From their form, however, they might be sown by a drill machine, which would save much labour. By planting scooped eyes Mr. Robert St. George saved eight barrels in twenty, out of a mixture of large and middling sized potatoes: the produce in a square perch was seven pounds superior to the common sets, in ground well tilled and fine. Mr. Sheckleton, of Castlecomer, tried them in 1800, and 1801; his ground was rich and well manured, adjoining to, and perhaps formerly a part of the church-yard: in the first year he saved half the weight of the potatoes, in the latter, three-fourths: he found them answer so well, that he resolved to pursue the method always: he planted shoots at the same time, which failed on account of the dryness of the season. Scooped eyes plant a greater quantity of ground than the same potatoes cut into sets, each eye being scooped out single; common cuts have often two or three. To try the effect of small sets with single eyes, the Rev. Dr. Butler cut off the crowns of the potatoes, in which most of the eyes are lodged, and by this means saved the other half; each eye was cut out, making a small set; seven acres were thus planted by twenty barrels of potatoes; nothing could be more productive; from twelve stone of *Barber's wonders*,

wonders, the produce was thirty-four barrels; but, "he does not approve of small sets, or scoops; nor will he ever again plant them: he is convinced that had not the rain fallen most critically, he should have had no crop: he supposes that there is not sufficient moisture in the scoop to feed the plant, until it forms new glands: that in moist weather, and in rich ground, the nourishment from the set may not be required; but in the generality of ground, in dry weather, the plant cannot thrive unless it has glands to supply it with moisture at first." Add to this also, the plants being weaker are more liable to be attacked by the red worm, as was observed in some places.

The varieties usually planted are the *English reds*, the *apple*, and a few *white eyes* for early use: the first are ill-tasted, often wet, of a livid red without, and having a reddish circle within; they are cultivated because they produce good crops with little manure, and sometimes in fallow ground without any; they are rather early, and remarkable for producing no apples, though they blossom; they succeeded the *Turks* and *high-cauled caps*, which grow well in poor ground, and are still continued in some places: the *apple potatoes* were first introduced and planted in this county, between forty and fifty years ago, by the late Sir William Fownes; from whence they became general, and are invaluable to the poor, as they will keep longer than any other, by which means they have potatoes all the year round; and they succeed better for being planted late, that is, in the latter

end

end of May, and even in the first week of June; the *great apple* is a variety that some farmers possess: *Barber's wonders* are large, dry, and early, and fit for cattle; they are planted in many places; their disposition lately to the curl has been noticed: *Wicklow bangers* have the good qualities of the last sort, and have been raised by several persons: the *black potatoe* is not much known here, but has been introduced by the Rev. Dr. Butler, and by Major Reade Rosanarrow, they are mealy, sweet, early, and keep well: a kind called *coppers* has been tried, and are said grow too near the surface to be fit for a dry season: *pink-eyes* are long, dry, and early.: many other early varieties are sown, one of the best is the *flat Spanish*, which is well known: they will grow from good sets to a great size: but varieties are continually degenerating, and soon forgotten, probably from bad management; the *apple potatoe* has degenerated much, and no substitute has been found; it has, however, lasted longer than most varieties; and Dr. Maunsell supposes that this arises from its shooting so late: the eyes are therefore generally planted before they have sprouted. Taking sets from small or injured potatoes seems the principal cause of degeneracy; were they taken from the largest or best, and from the most vigorous plants, varieties might perhaps be very long preserved, and even by care improved: that they must ultimately fail is perhaps probable: see Darwin's Phytol. and Knight on cyder, who state some ingenious ideas upon the necessary degeneracy of plants, if reproduced from buds, or in any way

except

except from seed. But with regard to one class, that of bulbous-rooted plants, which are renewed from buds often from time immemorial, it has never been shewn from experience, that in their natural soil and climate they must necessarily degenerate: with us potatoes may decline from being an exotic.

Eighty barrels of potatoes are reckoned a very good crop: from sixty to seventy are sometimes produced; many are below fifty, some, badly circumstanced, as low as twenty-five; the average in all seasons is not much above fifty barrels.

Having taken a general view of the mode of culture, as to corn and potatoes, *local practices*, or those of particular districts should be noticed, which are well pointed out by some communications which were very obligingly made by different persons; occasionally where the local practice is also the general one, a repetition may occur, but the processes are set in a different point of view, and by practical farmers.

Mr. Barton of Mount Rothe favoured me with this statement of his usual tillage, compared with that of the neighbouring farmers.

"*Mode of Culture in the Parishes of Gowran, Grange-sylvia, Shankill, and Kilmacahill.*

"1. *Corn.*—Generally fallow for wheat, three ploughings; seed from fifteen to twenty-five stone per acre; for oats, plough the wheat stubble and harrow in the oats: some plough in winter, and sow under the plough in spring; seed twenty-eight stone

per

per acre; bere in potatoe ground, in high ridges from five to eight sods, seed ten stone; barley sowed in potatoe ground and harrowed in; seed from sixteen to thirty-two stone.

The mode of culture I use is generally to sow wheat in potatoe ground, in broad sets, and then harrow; seed ten stone per acre; plough in winter for oats or barley; seed of oats from fourteen to sixteen stone; of barley nine stone: generally very good crops: I sowed this year (1800), for the first time, bere in drills; remarkably fine seed, not seven stone per acre: I approve very much of drill-husbandry, as it takes less seed by one-half at least, and crops better than in high ridges, where they bury at least two-thirds of the seed. The present mode of collecting tithes is injurious to the farmer, many being obliged to let the corn be damaged before they can settle for their tithe; one hundred barrels at least, lost in these four parishes every year; an acreable tithe would encourage the farmer to make his lands better.

"2. *Harvest.*—Wheat is bound and stacked as soon as reaped; barley and oats let to swarth for three or four days, then bound and stacked; they are more easily threshed for this swarthing, and not so apt to heat.

"3. *Potatoes.*—It is usual to plough the stubble in winter, harrow in spring, spread the dung, and plough it in narrow ridges, and plant the potatoes with a spade; seed about one hundred and eighty stone per acre; the tithe is in this tillage a restraint,

and

and a most grievous oppression, as they are the sole support of the poor; and in my opinion it is tithing the poor man's dunghill, as potatoes are only a fallow crop, and a preparation for corn. They are generally *heaped* when taken out of the ground, and covered over with stalks and some earth to let them *sweat*, and after three or four days either housed or pitted; this mode is of great use in preserving them.

The mode of culture I use is, to plough stubble early in winter, cross plough in April, then turn it, and form the drills with a double mould-board plough, and put out manure, one-third less than in the common method; plough in the seed with the same plough; two men and two horses will cover in two acres per day: this tillage is in general productive. I harrow after planting, and, when coming up, run the double plough to earth them; in June or July take a paring sod off each side the drill, and weed between the stalks: in three or four days, when the weeds are thoroughly withered, run the double mould-board plough again through the field, which ends the process until ploughing out: seed the same as in the other method."

Mr. Barton drills his corn with the plough: in 1801, he had a very great crop of wheat in this way, but eight stone of seed to the acre; he had also bere and oats sown in the same manner. When he wishes to return manure to the surface, which has been buried too deep, he first gives the ground a shallow turning with a wheel-plough, then with a swing-plough turns up the under mould from a good depth,

taking

taking the spit at a few inches distant from the first furrows.

Heaping potatoes as soon as dug, is an excellent practice, and particularly in moist weather; the heaps are conical, well covered with fresh stalks and earth, and in these they often remain a week; here they lose the superfluous and external moisture, and in a manner ripen; and all tendency to putrefaction is stopped by taking them out in good weather, and then pitting them in large pits, well secured and roofed with dry stalks, and sometimes fern, and covered with earth.

Mr. Ellis, who is perfectly conversant in the practical tillage of the northern part of this county, took the trouble, at my request, to draw up the following account of it.

Modes of Tillage in the Barony of Fassadinan.

1. *Oats*—Are generally sown from the first of March to the latter end of April, and for the most part, in land that has been burnt, or manured once with dung, having often produced two crops of potatoes; when the potatoes are dug out, after which oats are intended to be sown, the land is left nearly flat, and so continues till the following spring, when the oats are sown and covered in about five inches deep, with a two horse plough, and sometimes with a four horse plough, and formed into ridges about three feet broad; the furrows are then strewed with oats, and the whole is settled by a two horse

horse harrow, which makes the land again nearly level, and so it remains till the oats are reaped. It is usual to sow oats in land that has produced a crop of potatoes, and one of barley, or one of potatoes and one of wheat the two preceding years; in either case, the land is left in stubble till the spring season, when it is only once ploughed by a four horse plough, and formed into rough ridges of about three and an half feet wide; the oats are then strewed upon these ridges; in a few days after, they are ploughed, and covered in by a two horse harrow.

"Land that has been dunged and limed, after having produced a crop of potatoes, and one of wheat, or one of potatoes and one of barley, and sometimes two of barley, produces afterwards two crops of good oats, and sometimes a third crop of oats is sown; the first of them is sown in the last mentioned way, and for the second and third crops, the land is fallowed by once ploughing it with a four horse plough, about the tenth of November or later, in which state it is left till the first of March; the land is then nearly made level by a two horse harrow, or if the ground is strong and lumpy, by a four horse harrow; the oats are sown with a two horse plough, covered about five inches deep, the furrows are sown after, and then the land is harrowed by two horses.

"Oats are often sown in the mountainous parts, (but rarely so in the low lands) in poor, worn out land, that has been long tilled with potatoes; the

oats

oats are sown on the ground, without stirring it, and covered by cutting trenches through it with spades and shovels, the ridges by this mode are generally about five or six feet wide, and the trenches from which the earth to cover the oats has been taken, about two and an half feet wide, or less, and the produce and quality of the oats tilled in this way, is generally good; notwithstanding, if it had been sown as above, by ploughing and harrowing, it would scarcely be worth reaping; from twenty to twenty-eight stones of oats are the quantity sown in an acre of land, the poorer the land the more seed is generally sown, which seems to be a very great error, as the contrary appears to be more reasonable, and by experiment is proved to be so.

"2. *Potatoes* are cultivated in a variety of ways, the most abundant crops are produced from burnt land, which is thus prepared; the ley or surface of the land is ploughed up, by a two or four horse plough, into thin broad strips, about one inch and a half thick, and nine inches broad, and left so till they dry a little; then it is cross ploughed, by two or four horses, to break the sods small, and handy to be heaped when dry; and then they are burnt; this is sometimes done in the autumn before. A few days before the potatoes are sown, in March, April or May, the ashes are spread on the surface of the land; and then it is ploughed about five or six inches deep, into ridges from three to four feet wide; the ridges are settled, and the sods cut small

with spades; after this, the potatoes being previously cut nine or ten days, they are stuck into the ridges with spades, about four inches deep, and six or seven inches asunder; in this state they are left until the potatoes are peeping over ground, or near it, and then they are covered with two or three inches of earth taken from the furrows with spades and shovels. The ensuing year or spring the land is prepared and planted in the same way (except burning) which commonly produces a better crop of potatoes than the first; if potatoes are planted a third year in the same ground (which is often the case) it is manured with dung, which is spread upon the surface, and tilled the same way as before. Where potatoes are intended to be planted, in land having produced barley, wheat, or oats, it is ploughed from the stubble in October or November, into narrow ridges about three and a half feet wide, or very broad sets, perhaps ten feet wide, and so left till the following spring, when it is ploughed again once, and sometimes twice, and well harrowed; dung is then spread on the surface, and a furrow is made about six inches deep with a two horse plough; on the side of this furrow, within about two inches of the bottom, (but not on the bottom as the horses would bruise and disorder the seed) a row of seed potatoes are laid, about six inches asunder, and then are covered in, by running the plough along the side of the furrow, within about five or six inches of it, by which the first furrow is filled up, the row

of

of seed covered, and a new furrow made, in which a row of seed potatoes are laid as before, and so on till the ridge is made about three and an half feet wide; this done, the ridges are settled with spades, and so left till the potatoes want to be earthed, which is done with spades and shovels. The seed potatoes are sometimes spread about six inches asunder, on ridges made in land as last prepared, and then stuck in with wooden stakes, or spades. Planting potatoes on the ley, or grass, is done by spreading dung on the surface, about two inches thick, in beds of about three feet and a half wide, leaving a strip about two feet wide, between them without any dung; the seed potatoes are then laid on the beds of dung about six inches asunder, and covered about five inches deep, with the sod and earth taken from the strip (or trench) of two feet wide. For another crop of potatoes, this land is ploughed up in spring, and the seed stuck in with spades. This last mentioned mode is less practised than any of the foregoing ways; it is usual to plant from ten to twelve barrels of seed potatoes in an acre of land, reckoning twenty stone to the barrel; this is a great error, as less would do better, and the produce would be greater.

3. *Wheat* is most commonly sown in summer fallows, which are thus prepared; the ley or grass is ploughed up with four or six horses (and five inches deep) into high ridges about four feet wide, about, or before midsummer, and left so till the latter end of July following, when they are broken with large

heavy harrows, drawn by four horses, and then from eighty to an hundred barrels of roach lime to the acre, is spread on the surface; it is ploughed in by four horses, and the ground again well harrowed and sufficiently broken, the wheat then from the first of September to the first of December is sown, (being first steeped in a solution of urine and salt, and sometimes in urine only, for sixteen hours, and then coated over with air-slacked lime,) and ploughed in about five inches deep, and formed into ridges of five turns, or spits of the plough, they being about three feet broad, which leaves furrows of about one foot broad, and finishes the sowing: this is also the preparation used on barley or oaten stubble, where wheat is to be sown: wheat is often sown in broken, or old tilled land that has produced one crop of potatoes only, since it was manured with dung; in this case it is sown soon after the potatoes are dug out, which is generally about the middle of October, and the land left nearly level; the seed wheat is then strewn on the surface, and ploughed into ridges and furrows; twenty stone of wheat is generally sown in an acre; less would answer better.

4. *Barley*—In land having previously produced one or two crops of potatoes, and once manured with dung, barley is sown from the first of April to the middle of May, on the surface of the ground unstirred since the potatoes were dug out, and then ploughed into ridges about three and an half feet broad;

broad; the furrows are then sown, and the whole well harrowed over by two horses; some land of this description is ploughed up and winter-fallowed about the first of January, and harrowed about the first of April; and then the barley sown as before. When barley is to be sown in wheaten stubble, the land is ploughed up in high ridges, about the first of December, and left so till the first of April; then it is harrowed and ploughed, and harrowed again, and the barley sown with a two horse plough. When barley is to be sown in poor oaten stubble ground, it is ploughed up about November, and left so till the latter end of March; then sixty or eighty barrels of roach lime, or an hundred barrels of slacked lime, are laid out to the acre, spread and ploughed in; after this, it is sometimes harrowed across the ridges, and the barley sown; sixteen stones of barley, and sometimes eighteen allowed to sow an acre, but either are too much; twelve stones would do better, as experiment has proved. It is rare to see bere, peas, or rye, sown in this barony.

5. *Harvest*—Men only are employed to cut down wheat with a sickle, the sickleman cuts only half a ridge as he goes along; to every two sicklemen, one woman comes after to bind; it is their task to bind into sheaves what two sicklemen cut; and it is their part to carry back all the sheaves produced on the ridge, to be made into field stacks, which contain from three to five barrels of wheat, and are made up the same day the corn is cut,

by

by a man called the field stacker, who has a man to attend and pitch him the sheaves. In these field stacks the wheat remains ten, twenty, or thirty days, before it is brought home to be put into the grand rick. It is supposed to be dry weather for the above practice, which in case of wet weather is altered, by making the wheat or sheaves into stucks, where it is left till sufficiently dry to be made into field stacks.

"Men are only employed to cut barley, and a sickleman sometimes cuts a whole ridge, and sometimes only half; the barley when it has weeds and long grass in it, is left in swarth three or four days till they wither and dry; it is then bound by men and women promiscuously, and put into stucks (if not sufficiently dry for field stacks) in which it is left for five or six days, and then made into field stacks containing about two or three barrels each; in these it is left twenty days, more or less, before it is threshed for market, or made into a great rick. Oats are managed as barley: barley free of weeds, may be saved in the same way as wheat."

Mr. Ellis farther remarks, that the fallowing is very imperfect, not exposing the soil at proper seasons to the influence of the atmosphere, and seldom destroying the roots of weeds, which rob the crop; that in ground tolerably prepared, less seed would do better; as eighteen or twenty stone of oats, fourteen or fifteen of wheat, and ten or twelve of barley to the acre; and if crops were rolled, less seed would answer and be more productive: that by cutting

cutting the eyes of potatoes single, instead of two, three, or four together, a saving of four or five barrels would be made to an acre, and of more if planted in drills.

Mr. Edward Stapleton of Ballyragget, who farms about 500 acres, which he is enabled to manure by means of an extensive distillery, was so good as to state his mode of tillage, in the following manner:

"For wheat he has practised several ways of preparing ground, first by ploughing the ley and trenching oats, or harrowing it in; after the oats to plough the stubbles and in the proper season to trench in wheat, which gave an excellent crop; another way has been adopted, to plough the ley, plant in potatoes with the back of the spade; the next year it will be very well prepared for wheat or barley; it may be laid down with grass-seeds, and the ground will be twice as good as before, and will produce fine meadowing: if the ground is to be continued in tillage, there may be two crops of potatoes, a crop of wheat and a crop of oats taken; then fallowed for one year, to sow wheat in the second, and it will give a good crop: after wheat, oats, then manure with either lime or sand; a good manuring sand will bring many crops. He approves of lime, and that to be laid on according to the depth of soil; if a deep clay soil, from one hundred and fifty barrels to two hundred and fifty of good roach lime to the acre; if a light soil, not gravelly, or limestone near the surface, one hundred barrels to the acre; if gravelly, mix the lime with clay;

clay; let it lie for sometime, give it a digging and put it out.

"As to potatoes his methods of planting them are different; sometimes he lays out dung on poor stubble ground after a winters ploughing and harrowing, and then what is called a *turning*; that is a second ploughing and harrowing; to have the dung well spread, plough it in, settle the ground with the spade, spread the potatoes on the ridge, and stick them in; some plough them in with the dung; he has found his method answer best. After the potatoes, he has had three good crops; after the third which was oats, he fallowed one year, and had three good crops more without any manure.

Harvest—Wheat he binds after the reapers, and makes it into small stacks till fit to bring home; barley he binds in the same manner, stucks it and caps it, which will save it in any weather; when thorough dry in stuck, he stacks it: as to oats, it is not so tender a grain, and may be swarthed for some days; when dry he binds and stucks it; he binds it from the hook if the weather is very fine, and then there is no occasion for capping."

From Mr. Peter Walsh of Belline, I am favoured, among other very obliging and interesting communications, with an account of the state of agriculture in his neighbourhood.

Mode of Tillage in the Parish of Fiddown.

"The lands of this parish, are for the greater part employed in tillage, and have been so for a very long period: but no experimental farming has been introduced into it; the son tills just as his father and grandfather have done before him."

"The common course of tillage in the lowland parts of this parish, is as follows:

"1. *Potatoes*—For which the land is well manured; they are commonly sown in beds, rarely in drills; from the beds they are in general dug; but sometimes ploughed out where the quantity is great, hands scarce, and the season advanced: from the drills, they are always ploughed out: when taken out of the ground, some of the farmers keep them in close houses, and others in pits.

"2. *Wheat.*—Sown in potatoe ground, as soon as possible after the potatoes are out.

"3. *Oats or Barley.*—After the wheat; our best farmers make a winter's fallow of the wheaten stubble even for oats. This rotation is carried on as long as the farmer likes, still manuring highly for the potatoes at the commencement of each rotation. When letting the land out to grass, greedy improvident farmers, sometimes take both a crop of barley and a crop of oats, two successive years after the wheat; but this exhausts the land, and leaves it in an impoverished state, so as to require the lapse of many years to recover its fertility, unless restored by manure.

nure. Indeed even two crops of corn without manure, after potatoes ever so well manured, leave our lands here, in general, too poor to be let out to grass; accordingly, when it is intended to lay down any of our tilled lands for grass, our best farmers take only one crop of corn after potatoes; or they highly manure the ground for the second or third crop: the grass-seeds sown, are commonly of mixed kinds.

"The farms being generally small, we have very seldom any summer fallows; the prepation for wheat is almost always potatoe tillage. In the hilly parts of the parish, where neither the soil or climate would be suitable for wheat, oats is the grain sown immediately after potatoes; oats thus produced, prove the heaviest and whitest we have and most productive in meal.

"*Bere or rye* seldom sown. No oxen used for draft, and scarcely any mules.

"Our manures are the *dung* of or our farm yards, stables, cow-houses and all manner of suillages: *street dung* from Waterford, and Carrick on Suir, conveyed by water carriage to the south west side of our parish: *lime*, and what is called rotten limestone, a calcareous sand which runs in copious veins through some quarries of very brittle limestone in this part of the country, and which sand is found most efficacious on the hills: it does not produce equal fertility on our low-lands. We have some pit marle; but it is not much used. Our farmers make a kind of artificial marle, which they

called

called *mooreen*, which is a composition of lime and clay, intimately blended; turf-mould is sometimes spread as a manure on grass lands near our turf bogs. Salt water mud, of a blue colour, intermixed with small sea shells and a portion of sand, sometimes is brought up the river Suir, by boats, from what is called the little island below Waterford, and proves a good manure.

"What is said here of the modes of tillages in the parish of Fiddown, is equally applicable to the agriculture of every other part of the barony of Iverk."

Mode of culture near Callan,

FROM THE REV. DR. STEVENSON.

"Summer fallowing for wheat, and winter fallowing for potatoes is the general practice; *manure*, lime, lime and earth, limestone gravel, and dung; the last always put on for potatoes, and when they are dug out, wheat is generally sown in the months of November and December; and where this is omitted, bere or barly is sown in the course of the spring, the former in January and February, the latter in March and April, and beginning of May: these and oats are the only crops cultivated in this parish except rape, which is always sown in burned ground. The sowing of wheat in summer fallows is generally finished in the month of October, and is fit for cutting about the 20th of August, varying a little according to the season, and there is seldom any wheat uncut by the first of September, when

when the barley harvest generally begins; though some crops of barley are in with the wheat.

"Until within a few years there was scarce any manure used but limestone gravel and dung, but latterly the farmers have got into the spirit of putting out lime, and find it so much to their advantage that it is thought it will soon be the only manure used, besides dung.

"*Harvest.*—Wheat is generally bound and stacked after the reapers; some, however, leave the sheaves on the ground for two or three days before they stack them; others make them into stucks for the same length of time, or longer: bere, oats, or barley, are saved by swarthing and stucking until they are sufficiently soaked to be made into stacks; there is scarce any corn cut but with the sickle."

Rape, or *colewort*, *brassica napus*, is not a general article of culture; it is usually sown in bog or wet ground, drained and burned for the purpose of being reclaimed, and sometimes on good land: the ashes are ploughed in before the seed is sown, which is generally covered with a light harrow; some drive sheep over the field instead of harrowing, and some sow it under the plough: it is cut in the end of July or in August, and sometimes lies a day or two on the ledge; when a field of any size is to be saved, it is usual for the neighbours to assist, that it may be done in one day, which becomes a kind of holiday, the farmer supplying entertainment and a piper: another day is occupied in threshing the whole upon the ground; for this purpose a plot of grass is often left

in

in the centre of the field, the herbage of which is burned, after the rape is cut. Produce of rape seed, ten or twelve barrels per acre. The stalks are generally burned, and the ashes sold to chandlers. The best use of this plant, and its value as green food, is little known.

Peas.—Grey peas are occasionally raised by poor farmers, on ground so exhausted that it will produce no other crop; even the peas are starved, and so full of weeds as sometimes to be scarce worth pulling: they are given to horses; they bear no price in this district, and farmers seem not to know what to do with them; their cultivation, which was always small, has decreased for some years past.

Turneps—are sometimes sown on burned ground, to bring it into tillage; scarce ever as an intermediate crop, or for feeding stock; they have now and then been given to cattle, but by farmers they are usually sold for the market, at about six pounds per acre; a broad-cast acre of turnips, in good ground near the river, and about a mile from Ross, produced but six guineas, or thirty guineas for six acres, for the supply of that market, though a good crop; they are never hoed: the *green turnep* is the kind usually sown; one pound to an acre; price 1*s.* 7½*d.* per pound. The mountain ground of this country produces excellent crops of turneps after a slight burning: at Woodstock several have been taken up, weighing from sixteen to eighteen pounds, and measuring three feet in circumference, in a broad-cast field slightly tilled and burned from a heathy sod:

the

the kind sown were what are here called the *red Norfolk*.

These are the only crops that ever enter into the course of field cultivation, except with two or three distinguished farmers, whose practices ought to be noticed under other heads. The common culture of *cabbages* is only in gardens, and that of *flax*, *hemp*, and *teasels*, is trifling and local, and relates rather to the head of Manufactures; and no *artificial grasses* are raised as a crop, in the modes of common tillage.

Sect. 2. *Extent of Culture.*

In the best cultivated parts of Gowran, about one-third of the ground is under tillage, independent of fallow; but in the hilly parts, which constitute one-half of that barony, the proportion is much less: in the centre of the wheat district are some sheep walks and waste lands; and the productive tillage of that barony, including the liberties of Kilkenny, does not exceed twenty-seven acres in one hundred; in Fassadinan the tilled land amounts only to five acres in one hundred; in Galmoy to fifteen; in Crannagh to twenty-three; in Shillelogher, and the liberties of Callan, to thirty-eight; in Kells to thirty-five; in Knocktopher to nine; in Iverk to thirty; and in Idagh

Idagh to thirteen: which would make the proportion in each barony nearly thus:

	Acres of tillage.
Gowran, and liberties of Kilkenny,	21,364
Fassadinan,	2,053
Galmoy,	4,097
Crannagh,	7,316
Shillelogher, and liberties of Callan,	7,997
Kells,	8,337
Knocktopher,	2,860
Iverk,	7,487
Idagh,	4,850
Total productive tillage,	66,361

Perhaps these acres may be considered as thus employed:

	Acres.
Wheat,	26,000
Barley,	8,000
Bere,	1,500
Rye,	50
Oats,	10,000
Potatoes,	20,600
Rape,	60
Peas,	50
Turneps,	90
Field cabbage,	11
Total	66,361

The

The average produce of wheat would therefore be 156,000 barrels; of barley 80,000; of bere 19,500; of oats 100,000; of potatoes 1,030,000.

These calculations are, however, very subject to error, but have been made after some consideration, and various enquiries.

By the annexed tables the state of tillage may be seen in several parishes, dispersed through the county; the quantity is in general taken from the surveys of the tithe-proctors, which may not be perfectly exact, though nearly so; the total number of acres is either computed, or stated according to the Down survey, and is in general less than the real amount; a twentieth part may be sometimes allowed for this deficiency: but the relative distribution of ground in various parts, is shewn with sufficient accuracy. To the respective clergymen of several of the parishes mentioned, I am indebted for the returns of tillage.

From

PARISHES	Arable	Grass	Meadow	Furze	Moor	Bog	Mountain	Heath	Wood	Waste	Arable	Grass	Meadow	Furze	Moor	Bog	Mountain	Heath	Total
	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. R. P.
1. Union of Macloneil	502 2	163 2	86 2	6 0	19 0	312 2	18 0	5 0	–	–	80 0	888 0	412 0	–	55 0	(2547 0 & 1000 sheep)	–	–	83 0	280 0	4005 0 0
2. Dysert . . .	30 0	150 0	30 0	–	19 0	215 0	–	–	–	4 0	30 0	482 0	200 0	–	20 0	611 0	–	–	150 0	280 0	1670 0 0
3. Rate . . .	100 0	350 0	50 0	–	–	300 0	–	–	15 0	–	–	865 0	300 0	–	(18 with orchid & dairies)	4582 1 32	100 0	–	80 0	63 0	5835 1 32
4. Ecke . . .	189 0	355 0	114 0	–	26 0	102 0	20 0	25 0	–	10 0	100 0	1187 0	576 0	–	–	3624 0 0	–	50 0	600 0	2239 0	7295 0 0
5. White-Church	78 0	65 0	48 0	–	–	95 0	–	–	–	5 0	15 0	321 0	112 0	–	–	500 0 0	50 0	20 0	100 0	12 0	1097 0 0
6. Dungarvan .	441 0	584 0	132 0	3 0	–	295 0	–	–	–	–	200 0	1205 0	–	–	–	And waste 2526 0	–	–	–	–	5611 0 0
7. Union of Odogh	250 0	215 0	160 0	–	–	210 0	–	–	–	–	80 0	915 0	250 0	–	–	4705 0 0	–	–	–	–	3980 0 0
8. Kilmeaan . .	30 0	11 0	3 2	–	–	12 0	–	–	–	–	–	30 2	34 0	–	–	625 0 0	–	–	–	–	309 2 0
9. Ardcanny . .	95 0	45 0	60 0	–	–	95 0	4 0	–	–	–	–	200 0	284 0	–	–	4223 0 0	–	–	–	–	3016 0 0
10. Part of Annaah	12 0	30 0	6 0	–	–	20 0	–	–	–	–	–	57 0	55 0	–	–	733 0 0	–	–	–	–	885 0 0
11. Emmaing . .	198 2	95 2	19 1	–	–	58 2	–	–	–	–	140 0	445 2	94 0	–	–	498 2 0	–	–	–	–	965 0 0
12. Part of Dorrow	107 0	96 0	29 0	–	–	127 0	–	–	–	–	–	407 0	189 0	–	–	1024 0 0	300 0	–	–	–	1302 0 0
13. Clonamery .	43 0	78 2	9 0	–	–	87 0	–	3 0	–	–	–	405 2	57 0	–	–	1617 1 0	31 0	9 0	40 0	–	1965 3 0
14. Kilmanagh .	130 0	103 0	38 0	–	–	163 0	–	–	–	–	100 0	545 0	100 0	–	–	1847 0 0	–	8 0	–	–	2500 0 0
15. Part of Union of Burn Church	1537 2	401 0	260 2	–	6 0	771 0	–	–	–	–	566 0	2587 2	643 2	–	–	(3724 0 & 3147 sheep)	–	–	–	–	9932 0 0
16. Comer . . .	–	250 0	6 0	–	–	450 0	–	–	–	8 0	–	720 0	668 0	1 0	–	11062 0 0	–	–	–	–	12677 0 0
	3284 0	2529 2	1113 0	9 0	50 0	5589 1	36 0	31 0	15 0	28 0	1320 0	9833 0	3627 2	1 0	95 0	45281 0	28501 0	87 0	1150 0	2811 0	103935 2 30

PARISHES.	Wheat.		Oats.		Barley.		Potatoes.		Turneps.		Flax.		Fallow.		Total Arable.		Natural Meadow.		Pasture and waste.		Woods.		Plantations.		Bogs.		Total.		
	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	A.	R.	P.
1. Inishoge . .	139	0	291	2	173	0	265	0	10	0	—		6	0	904	2	98	0	3958 2 *, 500 sheep		250	0	49	0	—		5230	0	0
2. Knocktopher	260	0	73	0	56	0	128	0	—		—		160	0	659	0	123	0			—		—		—		—*—		
3. Agharilor .	94	0	140	0	16	0	90	0	—		—		89	0	429	0	90	0	—*—		—		—		—		5041	2	8
4. Derrynahinch	96	0	145	0	30	0	100	0	—		—		94	0	465	0	97	0	—*—		—		—		—		1839	2	16
5. Kilmaguy .	220	0	184	0	20	0	222	0	—		—		150	0	796	0	382	0	—*—		—		—		—		4566	0	16
6. Dunmoyin .	263	0	90	0	40	0	140	0	—		—		170	0	703	0	180	0	—*—		—		—		—		1722	2	24
7. Listerlin . .	42	0	298	0	4	0	234	0	—		—		—		578	0	86	1	—*—		—		—		—		1991	3	0
8. Callan . .	559	0	105	0	67	0	333	0	—		—		200	0	1243	0	254	0	—*—		—		—		—		—*—		
9. Coolaghmore	342	0	83	0	35	0	200	0	—		—		140	0	800	0	183	0	—*—		—		—		—		—*—		
10. Tullaroan .	26	0	329	0	54	0	355	0	—		—		—		764	0	563	0	—*—		—		—		—		—*—		
11. Kilkloe . .	243	0	35	0	25	0	145	0	—		—		100	0	548	0	330	0	—*—		—		—		—		2054	0	24
12. Ballycallen .	280	0	119	0	50	0	259	0	—		—		70	0	768	0	244	0	—*—		—		—		—		—*—		
13. Tullamaine .	111	0	17	0	10	0	34	0	—		—		80	0	252	0	33	0	—*—		—		—		—		—*—		
14. Fartagh . .	100	0	150	0	115	0	250	0	20	0	10	0	20	0	645	0	80	0	—*—		—		—		—		1641	0	0
15. Powerstown .	—		—		—		—		—		—		—		827	0	—		—*—		—		—		—		3054	0	0
16. Grange-Sylvia	—		—		—		—		—		—		—		913	0	—		—*—		—		—		—		1355	0	0
17. Kilmeaden .	—		—		—		—		—		—		—		878	0	—		—*—		—		—		—		2006	0	0
18. Kilmeaven Killaghy Rosman	12	0	252	0	—		250	0	—		—		—		514	0	81	0	—*—		—		—		—		5104	2	32
19. Kilcoan Kilbride	25	0	82	0	—		60	0	—		—		—		167	0	32	0	—*—		—		—		100	0	2148	2	16
															13537	2												

The totals are mostly taken from the Down survey, and in general do not contain the perfect number of acres, though they come near them; and the pasture and waste have not been estimated.

From the returns of the union of Burnchurch, the proportions of a few town-lands in different districts, will exhibit a closer view of the local tillage.

Barony of Gowran—Woollengrange Dunbell.

Wheat.	Oats.	Barley.	Potatoes.	Total tillage.	Computed fallow.	Meadow.	Pasture and waste.	Total.
A.	A. R.	A. R.	A. R.	A. R.	A. R.	A. R.	A.	A.
135	36 0	6 2	37 0	214 2	100 0	16 2	148	479
139	32 2	25 0	38 2	235 0	100 0	40 0	425	800
				449 2				1279

This is above thirty-five per cent. of tillage, not including fallow; but it is in the centre and most cultivated part of the wheat district.

Barony of Crannagh—Garanamanagh.

Wheat.	Oats.	Barley.	Potatoes.	Total tillage.	Meadow.	Pasture and waste.	Total.
A.	A.	A.	A.	A.	A. R.	A.	A.
9	30	4	20	63	29 2	227	320

19.22 per cent. of tillage.

Barony of Iverk—Ardera.

Wheat.	Oats.	Barley.	Potatoes.	Total tillage.	Fallow.	Meadow.	Pasture and waste.	Total.
A. R.	A. R.	A. R.	A.	A. R.	A.	A.	A. R.	A.
52 2	55 2	2 2	41	151 2	10	46	112 2	320

Or 47.22 per cent. of tillage, which is a high proportion.

Barony of Idagh—Curraghmore.

Oats.	Potatoes.	Total tillage.	Meadow.	Pasture and waste.	Total.
A. R.	A. R.	A. R.	A.	A.	A.
14 2	15 2	30 0	4	216	250

Tilled acres in 100 = 8.04.

State of Culture in different Townlands.

1 Townland.—Barony of Gowran.

380 Acres.

Culture.	*A.*	*R.*	
Wheat, .	51	2	
Oats, .	13	0	
Barley, .	4	2	
Potatoes,	19	0	tilled 88, or 23.06 per cent
Fallow, .	30	0	
Meadow,	1	2	
Pasture & Waste,	260	0	or 68.16 per cent.

2 Townland.—Barony of Gowran.

100 Acres.

Culture.	*A.*	*R.*	
Wheat, .	10	0	
Oats, .	15	1	
Barley, .	1	3	
Potatoes,	5	1	tilled, 32 per cent.
Fallow, .	5	0	
Meadow,	4	2	
Pasture & Waste,	58	1	

3 Townland.—Barony of Shillelogher.

561 Acres.

Culture.	*A.*	*R.*	
Wheat, .	142	0	
Oats, .	17	2	
Barley, .	19	0	
Potatoes,	55	0	tilled 233 : 2 or 41.698
Fallow, .	90	0	per cent.
Meadow,	14	0	
Pasture & Waste,	223	2	

4 Townland.—Barony of Galmoy.

610 Acres.

Culture.	*A.*	*R.*	
Wheat, .	13	0	
Oats, .	11	0	
Barley, .	4	0	
Bere, .	6	0	
Potatoes,	16	0	tilled 30 A. or 8.12 per cent.
Meadow,	22	0	
Pasture & Waste,	538	0	

5 Townland.—Barony of Fassadinan.

200 Acres.

Culture.	*A.*	*R.*	
Wheat .	5	0	
Oats .	16	0	
Barley .	17	0	
Potatoes	6		tilled 44 or 22 per cent.
Meadow	10	2	

Though tillage seems to have much encreased within the memory of man, and though it extends itself daily towards the summits of the hills; yet its progress has not been equal in all places, nor perhaps in general proportioned to the encrease of population: in the year 1737, the tillage of three parishes surveyed by the clergyman, stood thus,

	Tilled acres.	Total acres by Down survey.
Kilcollum	606	3255
Gaulskill	77	641
Dunkitt	416	2832
	1099	6728

above

above 16 per cent of tillage: though no accurate account could be obtained of the present culture of these three parishes; yet the state upon enquiry does not seem to be higher now, no more than the general average of the district: in the union of Burnchurch, which is dispersed through different parts of the county, the quantity of tillage has decreased within the last ten years, and the number of sheep has been augmented: in the Welsh mountains tillage occupied 40 or 50 years ago, large tracts now given up to the dairy; and the ruins of some villages may be seen in the middle of those unimproved pastures.

The following notes taken down in different places, will shew the distribution of land, the proportions of stock, and the state of agriculture, particularly in small farms, better than any general statement.

1 Farm.—Parish Dungarvan.—Barony Gowran.

51 Acres.—*Stock*, 5 cows; 4 heifers: 2 calves; 20 sheep, all ewes; 10 lambs; 5 horses; 4 pigs.

Culture,	*A.*	*R.*	*P.*
Wheat, . .	12	0	0
Barley, . .	4	0	0
Potatoes, . .	5	0	22
Fallow, . .	9	0	0
Meadow, . .	3	0	0
Orchard, . .	0	2	0
Flax, . . .	0	0	20
Oziery, . .	0	0	7
Pasture, house, waste	16	0	31

Management.—Buy about two acres additional meadowing at £.5 per acre: plough sometimes with

with oxen: five acres of the wheat was sown on potatoe ground, the rest on fallow: for meadowing common grass seeds sown with half a pound of red clover to the acre: 50 barrels of oats consumed in the year, partly by the family who are eleven in number, partly by the horses, who only get them sometimes in Winter, mixed with bran: the land is kept for twenty years in tillage, and let out for five or six.

2 Farm.—Parish Powerstown.—Barony Gowran.

109 Acres.—*Stock*, 5 cows; 10 horses.

Culture,	*A.*	*R.*	*P.*
Wheat, . .	30	0	0
Oats, . . .	5	0	0
Barley, . .	3	0	0
Potatoes, . .	1	2	0
Fallow, . .	20	0	0
Meadow, . .	8	0	0
House, garden, waste,	2	0	0
Pasture or worn out cosheers	39	2	0

3 Farm.—Parish Powerstown.—Barony Gowran.

22 Acres.—Soil clayey loam on a limestone bottom: rent 26*s.* per acre: lease for 31 years.—*Stock*, 1 cow; 3 horses; 3 goats; no pig.

Culture,	*A.*	*R.*
Wheat, . . .	7	0
Barley, . . .	3	0
Potatoes, . .	2	0
Fallow, . . .	4	2
House, waste, .	1	2
Pasture, . .	4	0

Management

Management.—No meadow, the farmer buys a small quantity of hay at the rate of seven guineas per acre; he keeps his horses chiefly for the purpose of drawing flour to Dublin, at the rate of 2*s.* 8½*d.* per cwt.: the ground has been tilled from time immemorial, and produces from five to seven barrels of wheat and from thirteen to fourteen of barley per acre.

4 Farm.—Parish Powertown.—Barony Gowran.

18 Acres.—Rent 26*s.* per acre; no lease; held in partnership by two brothers: tithe about £.4 per annum.—*Stock*, 2 horses; neither cow pig nor goat.

Culture,	*A.*	*R.*
Wheat, . .	6	0
Barley, . .	1	0
Oats, . . .	1	0
Potatoes, . .	4	0
Pasture, . .	5	0
Gravel pit and waste	1	0

Management.—They have a fallow of about four acres every second year: no meadow, buy an acre at the rate of £.6; for ploughing fallow borrow two additional horses; the horses sometimes get the potatoe skins, and a few potatoes for food, and occasionally some furze tops: sow a barrel of wheat to an acre; 20 stone of barley, and 2 barrels of oats; expect in return six barrels of wheat, eight of oats and seven of barley: lime two acres annually upon an average, with forty barrels of lime, mixed with earth from ditches and other places; this manure

manure serves for part of their potatoes; the remainder (about 2 acres) is manured with about 160 load of manure made in the bawn; the two brothers with a son and a daughter perform the whole work of the farm: the men were ragged and their houses miserable; the crops of wheat and oats were excessively bad; and a small piece of ground *let out* three years ago, had scarcely a covering of grass: the ground has been in tillage above thirty years.

5 Farm.—Parish Graigue.—Barony Gowran.

100 Acres.—*Stock*, 6 cows and calves; 5 horses; 20 sheep; 2 pigs.

Culture,	*A.*	*R.*
Tillage, . .	12	0
Meadow, . .	18	0
Pasture and waste	70	0

6 Farm.—Parish Dungarvan.—Barony Gowran.

134 Acres—*Stock*, 6 horses; 240 sheep.

Culture,	*A.*	*R.*
Tillage, . .	40	0
Meadow, . .	20	0
Pasture, . .	74	0

500 sheep have been on it in summer: course of crops, 1. fallow, 2. wheat, 3. wheat, 4. barley or sometimes oats; bere sown though not often; tillage the same as for wheat.

7 Farm.—Parish Tulloherin.—Barony Gowran.

181 Acres.—*Stock*, 20 cows; 180 sheep; 10 horses; 10 pigs.

Culture.	*A.*	*R.*	
Wheat,	27	0	
Oats,	13	0	
Bere,	2	0	
Barley,	3	0	
Potatoes,	5	0	tillage 50
Fallow,	24	0	
Meadow,	20	0	
Pasture and waste,	87	0	

Management.—Another farm of 70 acres, at some distance, belongs to this, where 71 of the sheep are usually kept, besides 12 heifers: the cows in spring and the latter end of winter get hay in the morning, and straw at night: few farmers in this district keep so many sheep: the small farmers have none.

8. Farm.—Parish Macullee.—Barony Fassadinan.

60 Acres.—*Stock*, 11 milch cows; 2 heifers; 2 horses; 2 pigs.

Culture,	*A.*	*R.*
Oats,	2	0
Potatoes,	2	0
Meadow,	20	0
Pasture,	32	0
Coarse ditto and waste,	4	0

Management.—Land usually laid down with common grass seeds and rye grass, after five crops, in this order: 1. potatoes, from ley burnt; 2. oats, manured

manured with lime; 3. oats; 4. oats; 5. potatoes, with dung; 6. oats, with grass seeds: the ground last laid down, was entirely covered with *Bromus mollis*.

9 Farm.—Parish Macullee.—Barony Fassadinan.

This is one of the few grazing farms in this county, and almost the only one that fattens any cattle for the spring market of Kilkenny, which at that time is supplied from other counties.

300 Acres.—*Stock*, from 170 to 180 cattle—all store cattle, and to be fattened for market; except three or four milch cows.

Culture,	*A.*	*R.*
Potatoes, ...	2	0
Meadow, ...	8	0

No corn: no sheep.

Management—Ten beasts, stall-fed in winter, for the spring market of Kilkenny: the rest kept out all the winter: no plough horses; two or three kept for the farmer's use, or to draw a car occasionally: oats are bought. At the commencement of the lease, the ground was covered with fern and rushes; the greater part was drained with covered sewers, ploughed, fallowed, limed, and laid down with grass seeds without any crop, which succeeded in producing thick and good herbage: part was limed on the surface, and did not answer well: the drains appear not to have been deep enough, nor well formed, as the rushes begin to re-appear. The goodness of the fences, and the thriving state of the thorn quicks, which are well preserved, is a circumstance

cumstance too unusual, not to make this farm remarkable.

10 Farm.—Parish Comer.—Barony Fassadinan.

12 Acres.—Rent 16*s*. per acre.—Soil moory, substratum clay.

Culture.	*A.*	*R.*
Potatoes, ...	0	2
Meadow, ...	6	0

Management—The grazing of the remainder let out at 20*s*. a collop: two cows or collops were on it: hay sold at £.1 : 14*s*. : 1½*d*. for a cock of about four small load, or less than a ton of indifferent hay: the farmer works, when he can get employment, as a labourer, for 13*d*. a day, or 8*d*. and diet.

11 Farm.—Parish Comer.—Barony Fassadinan.

10 Acres.—*Stock*, two cows and a calf.

Culture.	*A.*	*R.*
Potatoes, ...	1	0
Meadow, ...	2	0
Pasture and waste, .	7	0

12. Farm.—Parish Dysart.—Barony of Fassadinan.

16 Acres.—*Stock*, 4 cows.

Culture.	*A.*	*R.*
Oats, ...	1	0
Potatoes, ...	1	0
Meadow, ...	1	0
Pasture and waste, .	12	0

Management.—Had usually kept one horse and three cows; generally sows two pottle of flax-seed; makes but two cwt. of butter from the four cows.

13. Farm.—Parish Donoghmore.—Barony Fassadinan, close to the town of Ballyragget.

9 Acres.—Rent, three guineas per acre.—*Stock*, 1 cow; 1 calf; 2 pet lambs.

Culture.	*A.*	*R.*
Wheat, ...	1	0
Pasture and waste, .	4	0

Management.—The other four acres let out and manured for potatoes, at £.7 per acre; the lambs bought in summer, and sold after one shearing the next summer for two guineas a piece.

14. Farm.—Parish Conahy.—Barony Fassadinan.

12 Acres.—Rent, 17*s.* per acre.—*Stock*, 1 cow; 1 horse; 1 pig.

Culture.	*A.*	*R.*
Oats, ...	2	0
Potatoes, ...	1	0
Pasture and waste, .	9	0

15. Farm.—Parish Ballycallan.—Barony Crannagh.

40 Acres.—*Stock*, 8 cattle; 20 sheep; 2 horses.

Culture.	*A.*
Tillage, ...	12 chiefly oats.

16. Farm.—Parish Tullaroan.—Barony Crannagh.

14. Acres.—*Stock*, 3 cows; 1 horse.

Culture.	*A.*	*R.*
Oats, ...	3	0
Potatoes, ...	3	0
Meadow, ...	0	3
Pasture and waste, -	7	1

17. Farm.—Parish Killahy.—Barony Knocktopher.

27 Acres.—*Stock*, 7 cows; 1 horse; 4 lambs; 2 pigs.

Culture.	*A.*	*R.*
Oats, ...	2	2
Potatoes, ...	1	2

Management.—The rest is bad pasture; no meadowing; rent made by butter; lambs to be sold after two shearings: a little hay bought when necessary.

18. Farm.—Parish Aghaviller.—Bar. Knocktopher.

20 Acres.—Rent, 10*s.* per acre.—*Stock*, 4 cows; 1 horse.

Culture.	*A.*	*R.*
Oats, ...	3	2
Potatoes, ...	1	2
Meadow, ...	4	0
Heathy pasture and waste,	11	0

Management.—Rent partly made by butter: meadow laid down with common grass seeds saved on the farm, which are sown with a crop of oats, after two of potatoes; sometimes two crops of oats after potatoes, which was acknowledged to be injurious: the ground manured for potatoes the first year by burning, with sand from pits of limestone gravel; the second year by dung; third year laid down with oats without manure: ground has been tilled a third year for potatoes, and manured with lime, and it produced in this manner a better crop than it did the first year: average produce eight or nine

nine barrels of oats per acre; forty barrels of potatoes; land often kept in tillage 14 or 15 years.

19 Farm.—Parish Fiddown.—Barony Iverk.

13 Acres.—*Stock*, 2 cows; 1 horse.

Culture.	*A.*	*R.*
Tillage wheat and oats, .	7	0
Meadow, pasture and waste,	6	0

Management.—The cows are mostly fed on straw during the winter, and kept in at night from Christmas until 25th March.

20 Farm.—Parish Whitechurch.—Barony Iverk.

10 Acres.—*Stock*, 1 cow; 1 horse,

Culture.	*A.*	*R.*
Tillage wheat and oats, .	4	2
Pasture and waste, . .	5	2

Management.—Some hay is bought: manure calcareous sand from decomposed limestone; one manuring gives four crops: 1. potatoes, 2. wheat, 3. barley, 4. oats; the sand is also put out on the pasture ground and produces excellent herbage: with this manure they can keep the land perpetually in tillage; from 150 to 200 load is put out on an acre: for potatoes it is esteemed much better than lime, or compost made with lime: the wheat produced by it was very fine-grained.

21 Farm.—Parish Alish.—Barony Iverk.

20 Acres.—*Stock*, 2 cows; 2 horses.

Culture.	*A.*	*R.*
Wheat, ...	3	0
Oats, ...	2	0
Potatoes, ...	4	0
Meadow, ...	4	0
Pasture and waste, .	7	0

22 Farm.—Parish Rathkyran.—Barony Iverk.

15 Acres.—Rent, one guinea per acre.—*Stock*, 4 cows; 1 horse.

Culture.	*A.*	*R.*
Wheat, ...	2	0
Oats, ...	2	0
Potatoes, ...	2	0
Meadow, ...	2	0
Pasture, ...	7	0

Joins with a neighbour in keeping a plough.

23 Farm.—Parish Kilmacow.—Barony Iverk.

60 Acres.—*Stock*, 16 cows.

Culture.	*A.*	*R.*	
Tillage, .	20	0	chiefly wheat,
Grass, .	40	0	chiefly pasture.

Management.—This farm is in the neighbourhood of Waterford; and the grass land is often well manured wiih dung from that city, which in spring costs nine or ten guineas a boat load; in autumn four or five guineas; a boat contains 80 small car load: two boat loads required for an acre of potatoes: sea-sand, as it is called, is also used, which is sludge raised in the river near the Little Island; it costs 26*s.* for a boat load of fifty good load, and is generally used mixed up with the earth of ditches, or other compost: a good cow on this land gives sometimes one and an half cwt. of butter in a season, and sometimes even two cwt.

Manure in this district, and in some others, is generally laid out by the *tale* as it is called; the tale is measured by the spade, supposed to be six feet

feet long, and is ten spades in length, but not always of the same breadth;* a good load of dung to a tale is reckoned sufficient: until lately, Waterford dung was about £.3 a boat load in autumn, and from four to five in spring.

24 Farm.—Parish Listerlin.—Barony Idagh.

55 Acres.—Soil fourteen to twenty inches of a light clayey loam, with small stones of argillite; beneath, yellow clay one foot deep, resting on a rock of argillaceous slate; the ground is naturally inclined to produce red clover; rent paid to the proprietor 11*s.* : 4½*d.* per acre, to the middleman by the occupier 15*s.*; valued at 20*s.* per acre; held by lease of twenty-one years: tithe lately but two guineas, having been let by the rector during incumbency many years ago: tithe now about four guineas; county cess from 3*d.* to 3½*d.* per acre every assizes.—*Stock*, 9 cows; 2 horses; 4. pigs; a bull kept during summer.

Culture.	*A.*	*R.*
Oats,	5	0
Wheat,	1	0
Potatoes,	3	0
Meadow,	1	0
Flax,	0	1
2 houses, yard & cabbage garden,	3	
Road, stream, waste,	2	0
Pasture,	42	0

Five

* A *tale* of potatoe-land is twenty yards long on the ridge, or ten spade lengths, and often but six feet broad; but may vary by the breadth of the ridges.

Five or six acres of which consist of boggy bottom near the stream.

Management.—The farm is held in common by two occupiers with small families: the rent is made by butter and pigs: they can sell in the year from four to six pigs, of from two to three cwt. and can make eight cwt. of butter: the occupiers are allowed by the middleman one boat load of limestone annually, value 16*s.* 3*d.* which is brought by him to the river side; it costs them near as much more to draw it from thence, over a very bad mountain road of two miles. The limestone here used is brought from the banks of the Suir, about twenty-four miles by water; it is burnt in a kiln constructed to hold a boat load at once, which produces about sixty barrels of roach lime, and this is reckoned sufficient for one acre of ground; the kiln is built of large field stones without mortar, the interstices being filled with clay or sods, where it is necessary; the upper part is made of sods only; in the base, two or three flues, like sewers, are left, between the dry stones, to light it by: the limestone and turf are placed in it, in alternate layers, ten of each, which rise somewhat above the kiln.

Sea sand also, raised in the river a little below Ross, is used here as manure; a boat load costs 8*s.* 1½*d.*; besides 2*s.* 2*d.* for landing, and 3*s.* 3*d.* for the dinner of the boatmen: a boat holds sixty car load, and is sufficient for an acre; it is drawn from the river as the limestone. Average produce per acre, ten barrels of oats; seven barrels, wheat;

fifty barrels, potatoes; one ton of hay. Course of crops, 1. potatoes, 2. wheat, 3 oats, repeated for fifteen years; in the last year grass seeds are sown; generally the white meadow grass, *holcus lanatus*, which is bought at Waterford for 3*s.* 3*d.* for four stone, and always bought by weight: a small quantity of red clover is sometimes added. Ley ground when broken up is burnt, and stripped either with a hoe, or plough; the latter is here preferred: to the ashes, one boat load of sea sand is added per acre: this manure gives these crops, 1. potatoes, 2. wheat, 3. oats, 4. oats, an additional crop of oats being taken from new ground; the land is then fallowed in summer, limed and sown with 5. wheat, succeeded by 6. oats, to which follow 7. potatoes with dung, and the usual course, 8. wheat, 9. oats, as mentioned before; which is seven white crops out of nine: instead of sea sand, lime has been sometimes added to the ashes of the *baiting*, and has answered as well: lime alone, has been tried for potatoes but the produce was less than in any other way.

In winter the cows are housed at night, and are fed with straw as long as it lasts; but when it fails in spring, a small quantity of potatoes is given them, and usually boiled: horses in winter have a small allowance of hay; but their best food consists of pounded furze, with sometimes a few boiled potatoes: they plough with two horses in general, but in ley ground with four, two being borrowed: the pigs get sour milk, in which cabbage is often boiled

for

for them, and when put up to fatten, oatmeal: all the milk goes to them, except what is necessary for the family, and for rearing two calves.

A cottier and his family live on this farm, and the man is paid 6½*d.* a day when he works, and often is fed with three meals; he has ground enough to give him forty barrels of potatoes; has no cow, but receives about a quart of milk a day; he pays his rent by fifty days labour; he pays also for liberty of cutting turf on another land, and it is drawn home for him; he pays no tithe or cess.

It was thought right to dwell on the management of this farm, as a general idea may be formed from it of the small farms in this district; and upon the whole, these small farms that connect the tillage and dairy business in some degree, are the best in the county: the occupiers excell the common farmers of the wheat district, in attention, diligence and management. From these different notes, some notion may be had of the distribution of land in each district: No. 1, 2, 3, and 4, exhibit common farms of various sorts in the wheat district: No. 6, and 7, are in the same district, belonging to rich farmers, who differ from the generality in their attention to sheep: No. 5, is in the oat district, and belonging to a rich farmer: No. 8, is in the northern dairy district: No. 9, is a very peculiar feeding farm, of which there are hardly any in the county: No. 10, 11, and 12, are specimens of poor farms in the northern dairy district: No. 13, a poor farm near the town of Ballyraggot: No. 17, is in the

southern dairy district: No. 14, 15, 16, are more or less in the oat district: No. 18, and 24, unite in some degree the dairy and oat culture: No. 22, is peculiar from its vicinity to Waterford, and unites the wheat culture with the dairy. No. 19, 20, 22, and 23, shew the small farms in Iverk, where both wheat and oats are cultivated, almost equally. As far as the influence of the Waterford market extends, and which is often from ten to fourteen miles, except where the population is too great, a good part of the rents are made by butter; that mode was much extended during the late war, when the price of butter often varied from £.5 to £.7 per cwt. and this tended in some degree to check the growth of tillage: the farms that have lately been taken at the highest rent, in proportion to the value of the ground, are those let for grazing: mountain ground, heathy, and mostly uninclosed, has been let for this purpose near Mullinavat, for 40*s.* an acre; a rent that the same ground in tillage would not have paid: some land near the Nore, six and seven miles from Ross, has let for about ten shillings an acre more, as dairy land, than it would probably have produced from tillage farmers: pasture farms have encreased near Kilmagany, and land which was let there for £.1. 11*s.* 6*d.* per acre in 1790, and on which the tillage farmers failed, has been re-let at the rate of from two guineas to three pounds an acre for grazing.

The encrease of tillage however in other parts appeared by several returns, where the quantity of

fallow

fallow and of potatoe ground together, destined for wheat next year, generally exceeded the proportion of wheat in the current year: the encreasing value of corn contributes to extend tillage, wherever it is not overbalanced by the price of butter: the great demand for the latter was principally in consequence of the war; that for the former will be constant.

The total number of acres under fallow annually in the county may be estimated at 7,500 Acres,

Add productive tillage, . 66,361 ——

Total arable, ... 73,861 ——

Sect. 3. *Course of Crops.*

In the preceding sections, some of the usual courses of crops have been necessarily alluded to; one general succession seems to be aimed at, which is fallow or potatoes, wheat, barley; this is adapted to the best grounds: in small farms the fallow is omitted, and no corn sown but after potatoes; in poorer grounds, oats are substituted for wheat and barley; in some of the mountainy lands, potatoes and oats are raised alternately for fourteen or sixteen years, and the ground let out with grass seeds; but the greater part of the tilled ground is *let out*, without any grass seeds; the course in mountain land is often thus 1. potatoes, with baiting and river sand or calcareous gravel; 2. oats; 3. oats; 4. potatoes

tatoes and sand: 5. oats and a few grass seeds: in worn out ground, the course is 1. potatoes, oats, potatoes, oats, oats, which is let out without seeds, being sufficiently exhausted. Two crops of wheat are sometimes sown in succession; three crops of oats rarely. In the wheat district there are lands that have been tilled form time immemorial; from some of them six crops, one of potatoes, and five of corn, have been taken after one manuring; this is not however an usual practice; and the farmers allow that two crops of oats in succession, particularly after wheat, are very injurious, though they often practice it. The course that the wheat farmers seem most to approve of, in the best land, is this: 1. ley oats trenched; 2. potatoes with dung; 3. wheat; 4. barley; 5. fallow with lime; 6. wheat; 7. barley; 8. oats; 9. potatoes with dung; 10. wheat; 11. barley or oats, with grass seeds: the ground then remains seven or eight years before it is broken up again. This exhausting course, reduces the soil to a poor state when let out, and the latter crops are very indifferent; sometimes after the second crop of wheat, the land is laid down with oats and grass seeds. In the best grounds the course has sometimes been potatoes, wheat, fallow and lime, wheat, oats. Some land in the lower part of the barony of Idagh, had in 1801 a crop of wheat, which looked well in May, after this course, 1. potatoes with baiting, the land was old, rich wood land, and had never been tilled before, 2. potatoes; 3. wheat;

3. wheat; 4. oats; 5. oats; 6. fallow; 7. wheat; and this with no manure except the burning. Where wheat has been long cultivated, the quality of the grain is said to become worse, and the millers prefer that raised upon new ground.

The small farmers justly say, that they cannot afford to fallow; nor would the occupiers of large farms do it in the manner they now practice, if their capital was proportioned to the size of their farms; their rents, though not low, are often less in proportion to the quality of the ground, than that of the small farmers in the hilly districts: fallow is adopted as a substitute for manure, and not for the purpose of cleaning land; indeed it has frequently a contrary effect.—Course of crops near Rosbercon, 1. potatoes, 2. wheat, 3. oats repeated for nine years and some clover sown.

According to the present management, particularly in the wheat district, the soil continually decreases in value, and the crops in goodness; lime the only manure used in any quantity, diminishes greatly in effect every time it is applied; the greatest part of the farm which is *let out*, is rather waste than pasture, and for many years totally unprofitable, after having been exhausted; no stock is kept, to make manure; no meadowing produced; the hay even for the horse-team is bought at a great price from the low grounds, that cannot be tilled, near rivers, or from gentlemen whose demesnes are appropriated to this purpose. The value of the produce

produce of an acre in tolerable ground at 24*s.* rent under such a course may be,

	s.	£.	*s.*	*d.*
1. Potatoes, 60 barrels, at	6	18	0	0
2. Wheat, 10 ——,	26	13	0	0
3. Barley, 9 ——,	20	9	0	0
4. Oats, 10 ——,	10	5	0	0
5. Fallow and lime,	0	0	0	0
6. Wheat, 10 ——,		13	0	0
7. Barley, 8 ——,		8	16	0
8. Oats, 8 ——,		4	0	0
9. Potatoes, 50 ——,		15	0	0
10. Wheat, 8 ——,		10	8	0
11. Oats, 10 ——,		5	0	0
12. Oats, 7 ——,		3	10	0
13. Let out—Waste,		0	0	0
14. to 20. for six succeeding years it will not be worth 30*s.* a year for grazing.		9	0	0
Value of produce for 20 years,		£.113	14	0

In a course beginning in the same manner, on similar ground, adapted to wheat and barley, by introducing intermediate crops of green food, and applying to them a part only of the manure made by the stock they would keep and fatten, the produce of crops in the same period, and with the same tillage, might be,

1. Potatoes

	£.	s.	d.
1. Potatoes,	18	0	0
2. Wheat,	13	0	0
3. Turneps,	6	0	0
4. Barley, 12 barrels,	13	4	0
5. Winter Vetches,	6	0	0
6. Wheat,	13	0	0
7. Potatoes,	18	0	0
8. Barley 16 barrels with clover,	17	12	0
9. Clover,	8	0	0
10. Clover,	8	0	0
11. Wheat, 12 barrels,	15	2	0
12. Vetches,	6	0	0
13. Oats, 15 barrels,	7	10	0
14. Rape for green food,	6	0	0
15. Barley, 16 barrels,	17	12	0
16. Potatoes,	18	0	0
17. Wheat,	13	0	0
18. Turneps,	6	0	0
19. Barley, 12 barrels with grass seeds,	13	4	0
20. Meadowing 3 ton,	6	0	0
Twenty years produce,	£.229	4	0
Deduct,	113	14	0
Difference,	115	10	0

Or above double.

The green crops are but moderately valued; the value of half the manure made by the stock fed with those crops is to be added; and this would enrich other meadow ground; with improved tillage or drill-husbandry, the produce of the crops would be much greater, and land at the end of the course at least

least in as good a state, as at the commencement. In each course are nine crops of corn, but in the former they necessarily decline in value, and would do so in a greater degree in indifferent ground; the rent in both cases is the same, the tithe a little more in the latter, in proportion to the improved crops, and the expence of tillage also, a little more: but one fallowing is supposed in the first course, whereas a fallow comes frequently into the course every third year, and often every second year. Some land in the parish of Dungarvan had been sown with wheat and fallowed alternately every second year, for many years; an acre of it in 1799 (which was a bad year) returned but three barrels, for one barrel of seed; as it was nearly out of lease, the tenant had declined putting manure upon it for several years, a management by which he seemed likely to lose more than the landlord: this land had been in tillage for above thirty years.

The expence of tilling a fallow properly is greater than that of any green crop: the price of the ploughing per acre, is about 16*s.* 3*d.*; it has varied from 15*s.* to 20*s.* Expence of tillage £.2. 8*s.* 9*d.* + rent 24*s.* = £3. 12*s.* 9*d.* produce 0. Expence of a crop of rape for green food, seed 8lb. 2*s.* 8*d.* at the highest, add expence of tillage £.1, 12*s.* 6*d.*; add cutting and giving to cattle £.1. 10*s.*; rent 24*s.* in all £.4. 19*s.* 2*d.*; net profit £.1. 0*s.* 10*d.* if the rape is worth £.6.*

Fallowing

* If expence of tillage is lower, the profit will be proportionable: in the latter two ploughings are required, in the former three.

Fallowing may be usefully resorted to in dirty ground, for the purpose of destroying weeds; but then it should be a perfect fallow: not a plant suffered to vegetate; the headlands and fences cleared of weeds, which continually shed their seed. It is only to be considered as a remedy to lands abused by a bad mode of cultivation, and no more to be introduced in a regular mode of tillage, than physic into a regular course of diet. Much has been written upon fallowing, and the arguments need not be repeated; a sensible essay on the subject will be found in the report of West Yorkshire. It is sufficient to say, that it is only necessary in ground both dirty and exhausted; and where not necessary, should not be resorted to; in good husbandry land would never be in a state to require fallowing: in clayey soils, drilled crops* have all the advantages of fallowing, without suffering the ground to be baked; and the weeds are kept down with double effect, by the horse-hoes and by the crop.

When old worn-out cosheers come in the hands of a good farmer, he will be obliged to fallow, in general, to destroy weeds. For the following hints on the mode of reclaiming such grounds I am indebted to Mr. Robert St. George. "If manure is to be bought in a town at a convenient distance, the improvement may be easy and cheap, by ploughing and turning out a sufficient quantity for drill potatoes, turneps, and rape, in broad cast or drill, supposing the land to have been in poor stubbles: other parts in worn-out cosheers

* Green crops improve the soil by shelter and by exhalation.

cosheers may be fallowed regularly, and the same course as the former followed in the next year, liming with a hundred barrels, and laying all down with wheat and barley; the potatoe land answering well for wheat, the turnep and rape ground for barley and grass seeds, harrowed in with a light harrow and rolled.

"If a worn-out cold clay on a slate, or over strong loamy gravel, is the subject, I would fallow for a year and destroy all weeds; then lay on from one hundred to two hundred barrels of roach lime to the acre, plough it in lightly, in a month or two after, mix it with the soil well with the scuffler, or a harrow, sowing such crop, of barley or oats, as the situation of the land points out; or as the object is to improve and not to exhaust, sow rape with grass seeds, and a few pounds of white clover to the acre, feeding sheep on the rape, as soon as the grass begins to cover the ground. I would put a layer of putrified dung on all exhausted land, if possible to be got, as lime will with its assistance serve the land much more than without it, particularly on light gravelly soil. If old ditches are to be had, turn them with spade and shovel into such form as the plough can fallow them for a year at least, mixing them with roach lime and dung (without the latter, the old ditches may in general have better stood for shelter), laying out this compost on the new laid down ground, after mowing the first crop, will serve the land much. Much manure may be made on all farms, particularly where the inclosures are small, by cleaning dykes, and by ploughing the head-lands adjoining the walls and

ditches

ditches about twelve feet wide, ploughing the roach lime thick, and if convenient dunging them in some time after, when the lime has been slacked by the clay: in meadows or corn fields these may be planted with potatoes, with a line in rows, hoeing them into drills at three feet and a half distance; an easy and profitable mode of fertilizing and mixing the head-lands; in other cases they may be fallowed, and the sheep will like to lie on them; the clay and lime will assist in keeping their feet from lameness: cast this out in winter, and slope the head-land to the ditch, the shelter will attract the stock to the head-land, and the plough will carry in more clay, which in time will enrich it again, and the same course may be pursued."

The following is the practice that Mr. St. George has pursued in his farm of Belief. Having taken this land into his hands mostly in a worn-out condition, except a small part in old ley, his practice has been, fallowing a part (not having any manure on entering on the farm, and the land being over-run with couch-grass) and laying it down with one crop of corn, barley, and oats, two bushels of rye-grass, and ten pounds of red clover to the acre. Other parts in rather better condition, though still very poor cosheers, have been ploughed up evenly, and let out with rye-grass seeds on one ploughing and harrowing, and are to remain so, till it is convenient to put them into a regular course of tillage. This practice pays well for the expence of ploughing and seeds, by feeding a few stock, where before there had been but about one-

fourth

fourth in quantity of the worst kind of food: a part of the poorest and dirtiest was limed on the surface, then trench-ploughed to prevent the air from coming at the weeds, the lime putrifying them, and converting them into manure, then let out with rape and grass seeds to feed sheep. Some headlands have been limed and dunged, and potatoes planted in drills, the dykes scoured, and banks of the ditches thrown in, which when sufficiently rotted, will be turned out on the surface to assist the rye-grass. Some of the old ley ground has been ploughed lightly, or floated, burned, the ashes spread, ploughed and harrowed in for turneps and rape, which as they are drawn off and eaten, is ploughed deep into ridges of four feet, to remain so for the winter; in March it is scuffled across, and then ploughed into drills of three feet, dunged in the intervals; the drills reversed or split with the horse-hoe, or double mould-board plough; a light roller run over the top lengthways, flattening the top of the drills, to prepare it for dibbling the cabbage plants; when the plants have taken root, a narrow mould-board plough takes off some clay at each side of the drills, going as near the plants as possible without hurting them: in some time after, as the weeds appear, or the more forward state of the plants require it, the horse-hoe should again be applied to mould them; this practice is to be pursued four times, or as often as the state of the ground, or appearance of weeds, may demand during the summer. In other parts of the same land borecole, or Scotch cale have been planted, with the double

furrow

furrow plough, at two feet and a half between the rows: the furrow being first opened, boys and girls are placed at regular distances to lay down the plants in the furrow, at two feet asunder, which are covered by the plough with the next sod; the boys and girls still proceeding to lay down the plants immediately after the plough, one attending the seed-bed in the same field to take up the plants, another person conveying them in bundles: this crop has succeeded well, without any manure, hoeing it once, by running the horse-hoe up the centre, to mould each side, being planted in August: other parts of the same land have had drilled potatoes, being hoed four times; but he prefers preparing any poor stubble by ploughing it in the winter, and dunging the drills for potatoes: after these three crops of turneps, cabbage, and potatoes, the ground is laid down with barley, rye-grass, and clover.

Mr. St. George first proposed to adopt this course, which would answer well on good ground: 1. part oats, part beans, or barley; 2. potatoes, turneps, cabbage, cole and carrots, manured with dung; 3. wheat in the potatoe ground, barley in the rest; all laid down with red clover and rye-grass in April: but finding the land too weak to give good grass after these crops, he prefers burning for turneps and rape to feed sheep, then dunging for cabbages and drill potatoes, next year sowing turneps in drills with a seed-sowing barrow tied to the roller in the Northumberland manner; and letting the ground out next season with rape, rye-grass, and clover, for the

sheep,

sheep, instead of sowing barley; all ameliorating crops. In other fields where there is not a sod to burn, being clover leys of two or three years old, he ploughs up for oats, and harrows in with them rye-grass; in some he sows horse-beans and vetches under harrow; the bean and vetch land as soon as the crop is off, is fallowed for the winter, and let out in April with rape, rye-grass, and clover, to feed sheep in summer: this he finds a good method of refreshing light ground, besides making summer keep for sheep, in soil which otherwise would give very little after two years, when the clover dies and the land grows husky.

Sect. 4. *Markets for Grain.*

The wheat and barley of this district find a ready sale with the millers and maltsters in the county; none is brought to market; at the mills it is sold by sample, and the number of them makes sometimes a competition between the millers, by which the farmer generally gets a good price for his grain; he is paid usually in notes at various dates; some corn, chiefly oats, is purchased upon commission from Waterford, or Ross, and sent down the Nore. The facility of procuring a good market for all produce, renders the value of lands rather high. Oats are also brought to the market of Kilkenny.

The principal part of the grain has always been sent to Dublin, in the form of flour, malt, and meal; the

the manufacturing of which is an additional source of profit: the greater part has usually gone by land carriage; taking off the inland bounty hardly diminished the quantity sent, and had very little effect on the tillage of this county (but it prevents corn being sent unground, which may be an advantage); the price of corn having latterly been high, and the demand great.

In the year from August 1758 to August 1759, the quantity sent to Dublin by land carriage was

			£.	s.	d.
Quarters of corn, at 40 stone the quarter,	9554	Premiums paid	1871	7	3
Quarters of meal, at do.	3559	Premiums do.	684	12	10

The quantity sent and premiums paid, in later times, have been;

		Cwt.	Premiums paid.
Year ending March 1794,	Flour by land carriage,	64,534½	£.6194 13 10
	Flour by Grand canal,	17,801	1750 12 5

	Wheat.	Oats.	Bere and Barley.	Malt.	Meal.	Total stones.	Premiums paid.
By land, ... *stones*	1596	—	10,334	56,439	52,881	121,250	£.1314 17 0
By Grand canal, . . . *stones*	9184	2020	5,102	47,978	804	65,088	568 17 9

		Cwt.	Premiums paid.
Year ending March 1795,	Flour by land carriage,	37,358	£.3541 18 11
	Flour by Grand canal,	25,791	2461 11 3

	Wheat.	Oats.	Malt.	Meal.	Bere and Barley.	Total stones.	Premiums paid.
By land, ... *stones*	173	136	51,200	77,968	6,925	136,402	£.1478 18 3
By Grand canal, . . . *stones*	1520	2845	41,877	5,543	13,981	65,766	561 12 11

The quantity sent and premiums paid—Continued.

		Cwt.	Premiums paid.
Year ending March 1796,	Flour by land carriage,	36,174	£.3466 17 1
	Flour by Grand canal,	36,535	3550 16 9

	Wheat.	Malt.	Meal.	Rye.	Bere and Barley.	Total stones.	Premiums paid.
By land, ... *stones*	—	27,588	27,336	759	—	55,683	£.610 6 3.
By Grand canal, . . . *stones*	4200	34,149	1,220	—	1306	40,875	365 17 10

		Cwt.	Premiums paid.
Year ending March 1797,	Flour by land carriage,	30,404	£.2952 2 11
	Flour by Grand canal,	35,157	5342 14 5

	Wheat.	Malt.	Meal.	Bere and Barley	Rye.	Total stones.	Premiums paid.
By land, ... *stones*	83	7,416	11,517	10,256	282	29,554	———
By Grand canal, . . . *stones*	—	63,465	9,886	1,120	—	74,471	£.686 7 5

The quantity sent and premiums paid—Continued.

		Cwt.	Premiums paid.
Year ending March 1798,	Flour by land carriage, ...	12,135	£.1176 9 3
	Flour by Grand canal, ...	11,688	749 2 10

		Wheat.	Malt.	Meal.	Bere and Barley.	Total stones.	Premiums paid.
By land, ...	*stones*	148	57,645	4,724	4,037	66,554	£.749 2 10
By Grand canal, . . .	*stones*	—	74,667	336	6,419	81,422	745 4 5

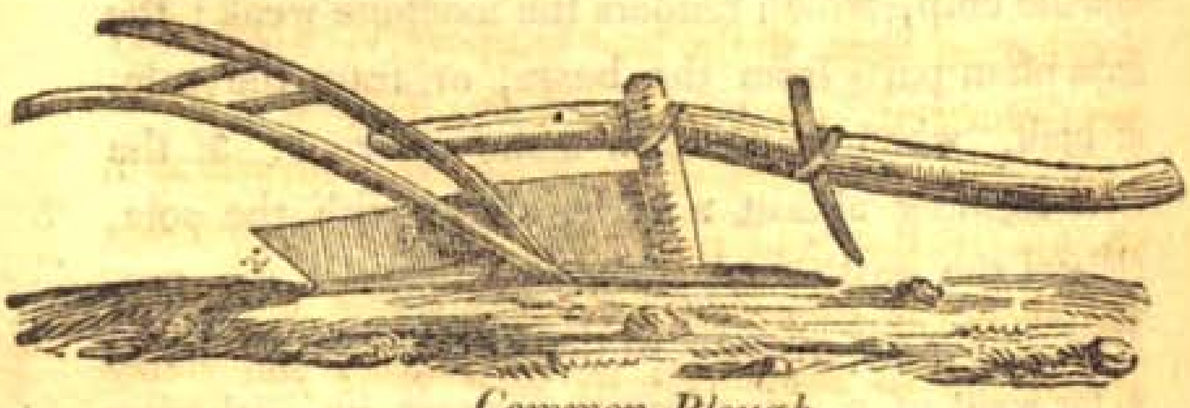
SECT. 5. *Implements of husbandry.*

Ploughs.—Heavier ones were formerly used than what are in general worked at present: a clumsy plough however, of from seven to nine feet beam, or a four horse plough, is generally employed in breaking and turning fallows, ley ground or burnt land, and it is sometimes drawn by six horses: a lighter one, or a two-horse plough, of about five feet beam, but of the same structure, is used in seed sowing, planting potatoes, and other very easy work.

The defects of the common plough of this county and of the mode of using it are very great: 1. the chip or sole has too long a heel, which makes it awkward in working and turning: 2. the cross is morticed into the chip, which renders the machine weak; the cross often parts from the beam, or from the sole, or both, when it meets a stone or root: 3. the cross forming almost a right angle with the sole, collects the earth and sods, and impedes the progress, and adds greatly to the weight of the draft: 4. for want of a side-plate to prevent its gathering earth, it becomes constantly clogged, the mould often filling the plough at every step, and even passing through it: 5. the mould-board being straight cannot cast off the earth as it ought, nor lay the sod; on the contrary by its narrowness and position, it often throws it on both sides, and the clay which adheres to it must be perpetually scraped off:

off: 6. the coulter is blunt before and has not a feather edge to make it cut clean: 7. the consequent encrease of labour it requires in the cattle, and the ploughman; the latter is necessitated to use all his force to remove the obstructions; for this purpose he leans sideways, and turns the share upon its edge, by which not above half the soil is fairly turned, the surface of the field being left in this form beneath the sole of the plough:

8. the weight of the ploughman at one end, combining with the draft from the point of the beam, which is always very low, at the other, draws the share continually out of the ground; to prevent this, one man with a great stake, and sometimes two, one at each side, are obliged to keep the plough constantly in the earth.



Common Plough.

It is evident that such a machine can never make a clean furrow, nor of equal depth; that it is not calculated for drilling, sowing ley oats or ploughing balk, or any sort of neat husbandry; that corn sown by it must be unequally buried, and vegetate at different times; and that the loss of

labour

labour in its management is very great: add to this, that in the manner it is conducted, by a man always leading the cattle, it is almost impossible for it to plough in a direct line; the man who leads can never go exactly in the sense of the plough, and draws the horses from the straight line, who on their part are not directed by having a clean furrow on one side; whereas, if the ploughman guided the cattle, they would be compelled to take a straight direction from him, who is the only person that can be so placed, as to be able to guide the plough properly; but as the machine is impelled by two forces, which rarely coincide in direction, the furrow is almost always made in a curved line: sometimes the first curvature was made to answer the winding ditch; but more frequently it will be seen to take a bend not corresponding to any fence, and the very fences appear rather to have been formed to suit the tillage; the original ones having been slight and temporary, when they were renewed, they followed the ridges. Often a second curve is formed in a contrary direction in the same ridge, and even a third in a large field; for when the ploughman finds his first error, he endeavours to correct it by a second; and sometimes when he sees that the ridges have become too much bent, he leaves off in the middle of a ridge, ending with an angle, and begins a new one in a better direction. By these means, not only much land is lost, but the furrows from their crooked shape, no longer answer the purpose of carrying off superficial water, where it is necessary,

nor

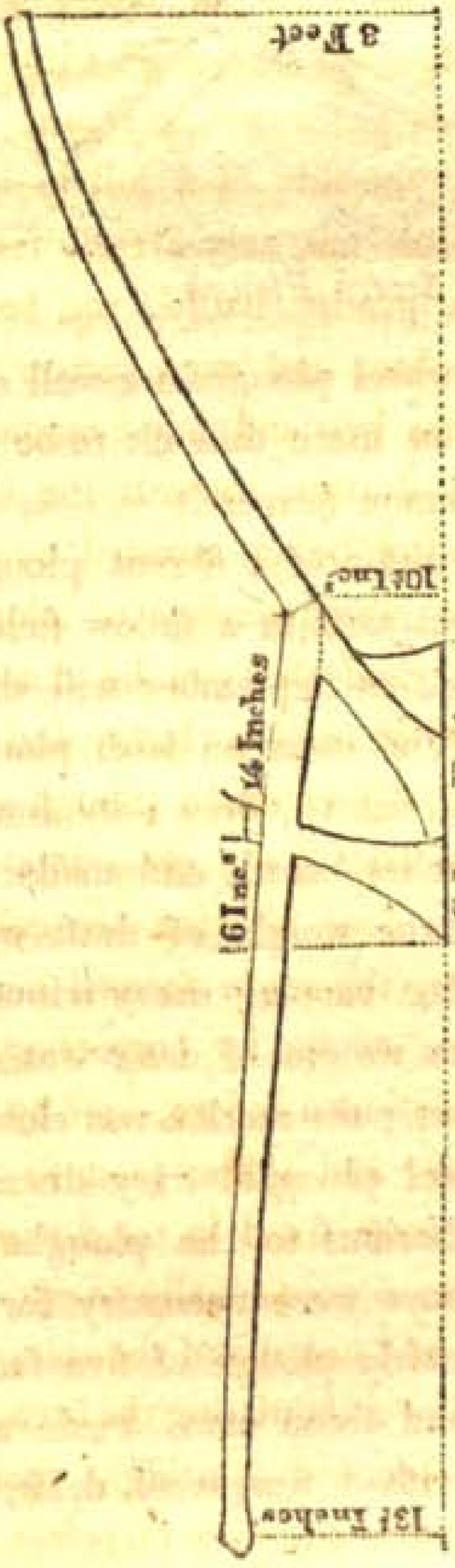
nor of ventilating the corn by straight alleys: these curved and waved ridges, may be seen in every part of the county; they are particularly conspicuous in the hills of Idagh, and parish of Rosbercon: there are however some fields well and straightly ploughed in the wheat district.

Another evil results from an heavy and unmanageable plough, the sod cannot be turned against a moderate declivity; for which reason, the farmers always plough the side of a hill in a perpendicular direction: this not only greatly fatigues the cattle, but tills the ground badly; the best plough could not make a clean and even furrow in such a method; besides the best and finest mould is washed down by every shower, towards the lower part of the field, instead of being arrested by cross furrows. It has been recommended to plough such ground diagonally, and this can be done with the common plough, when not too clumsy and heavy.

Some defects of the common plough might be corrected by not morticing the cross into the sole, but affixing it as is done in what are called block ploughs: by making the angle formed between the cross and sole more acute, by correcting some of the other faults mentioned before, and by finishing the work in a neater and lighter manner; and perhaps if two screws were fixed in the lower part of the plough handle so as occasionally to widen the angle between the mould-board and the sole, it would be of great advantage in regulating the breadth of the furrows: but the defect of a straight mould-board would still remain; the adoption therefore of a new

plough

plough on a simpel construction, with a curved or cast-metal mould-board, is the only effectual remedy. The section of an improved Irish plough is annexed, shewing the timbers and the long handle: this with a curved mould-board would be one of the best and simplest improvements that could be made:

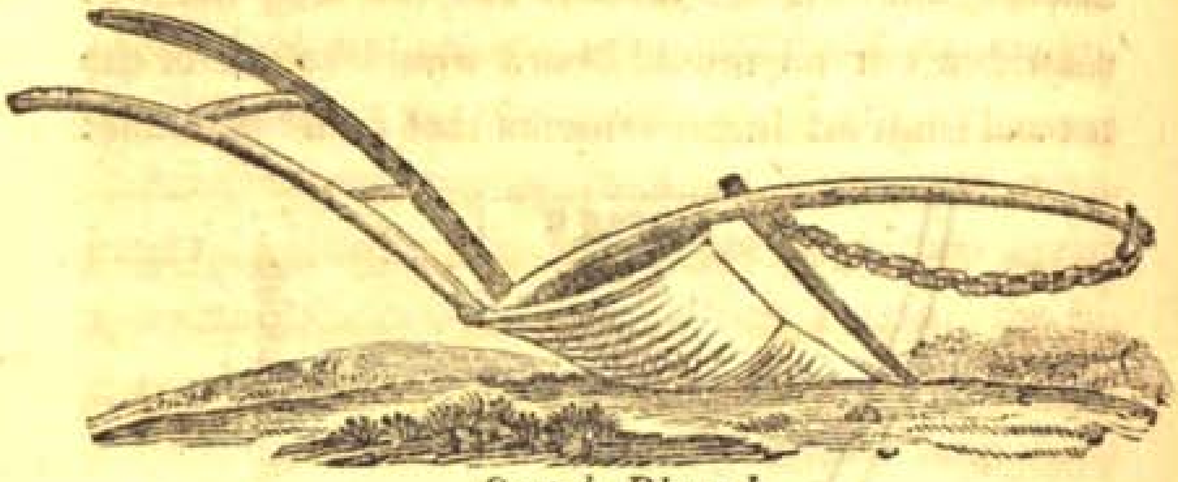


Improved Irish or Block Plough.

Beam 6 feet 9 inches, out and out.
Long handle 6 feet 3 inches.
Breadth between the heelpiece and mould-board, out and out, 8 inches.
—— at the top of the mould-board, 6 inches.

the

the Scotch chain plough now well known in Ireland, and easily to be had, seems very fit for general use;



Scotch Plough.

the Leicestershire wheel ploughs are well calculated for good tillage, but more difficult to be procured or repaired by common farmers.

The weight of draft of different ploughs tried by the plough steel-yard in a fallow field of Mr. Robert St. George's in September will shew their different action. The common Irish plough, one of the best in the country, drawn by four horses, cut a sod eight inches broad, and made a furrow five inches deep; the weight of draft was never less than 4 cwt., but varying every minute by its uneven motion, the weight of draft was occasionally six or seven cwt.; the motion was slow in comparison of the wheel ploughs, very distressing to the horses and laborious to the ploughman, besides whom two boys were necessary for leaders. A very light Irish chip plough of five feet beam, with four horses and three men, made a furrow 3½ inches deep, with a weight of draft, usually

2½ cwt.

2½ cwt. but varying; but taking a furrow 5½ inches deep, the weight was 4 cwt.: it is to be observed, the steel-yard does not take the absolute weight, from which there is an allowance made of ½ cwt.; but it measures the relative draft exactly. In these trials with the Irish plough, the share being held edgeways, the part under the sole remained unturned, part of the earth was thrown on the wrong side, the sod was uneven and the track of the plough was rather a bad drill than a furrow.

The Leicestershire single-wheeled plough, drawn by two horses in reins, and one man, took the earth at a depth of 4⅝ inches, made an even and equal furrow, the weight of draft was 1¼ cwt.; at a depth of 5½ inches, the weight was 2¼ cwt. The two-wheeled Leicestershire plough turned a sod 10½ inches broad, and made a furrow 5½ inches deep, with two horses in reins, with an even draft of 2½ cwt. The double furrow Leicestershire plough, with two horses, ploughed at four inches deep with a draft of 2¾ cwt.

The price of this last plough in England is six guineas; of the double-wheeled £. 3 : 15 *s.* English, and of the single-wheeled £ 3. : 5 *s.* English; these ploughs had been in constant work for four years, and were in good order. An Irish plough costs from £. 1 : 14 : 1½ *d.* to £. 2; besides which it requires harness for four horses, double swingles, and double chains, is always liable to be out of order from its bad structure, seldom lasts a year with good work, and with the same work the Leicestershire ploughs had

had had, would not have lasted six months: add to this, the loss of time and labour by drawing such a machine, and a good plough will perhaps be found cheaper than a bad one.

Some of the Irish ploughs in Galmoy were lighter than in other parts, and were made a few years ago for about twenty-five shillings. The price in Kilkenny for the timber work of a plough, is 11*s.* 4½*d.* add five stone of iron at 4*s.* 4*d.* total cost £.2 .3 :0½*d.* the price of the timber of a four-horse plough, in some parts of the county, is thirteen shillings.

Harrow.—The common harrow consists of five bulls, about three and a half inches square, and almost four feet long, with five tines or pins in each; at the fore part they are about ten inches asunder, and in the hinder about a foot; the draft is from the second bull; the heavy breaking harrows differ only in weight, and the greater distance of the bulls; these are connected by three cross bars, one between the two first rows of pins, and two between the three hinder: the heavy harrow is generally drawn by four horses, and sometimes loaded with stones to increase the weight. The tines being put in without system, often follow each other in the same track, leaving intervals of six or seven inches unstirred; their points incline generally too much towards the fore part of the harrow, and their sides are turned to the front instead of their angles: by these circumstances the draft becomes more difficult, and the harrow is soon clogged with sods, which it does not suffer to pass through. Add to this, that being made in one frame,

it

Fig. 1.

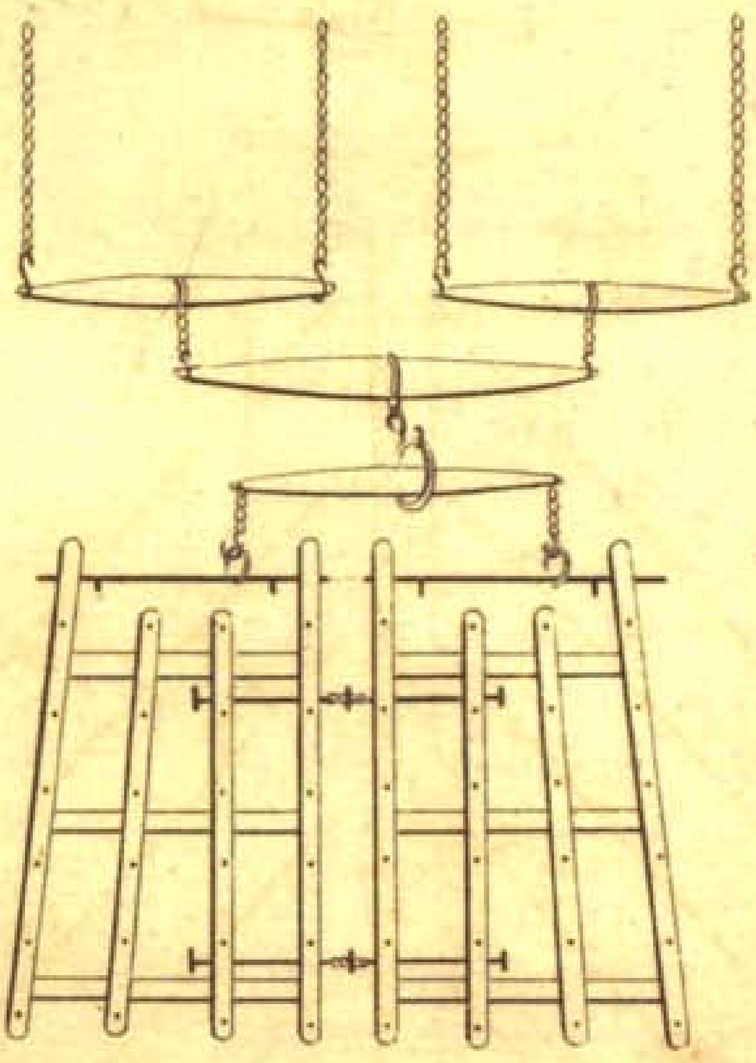
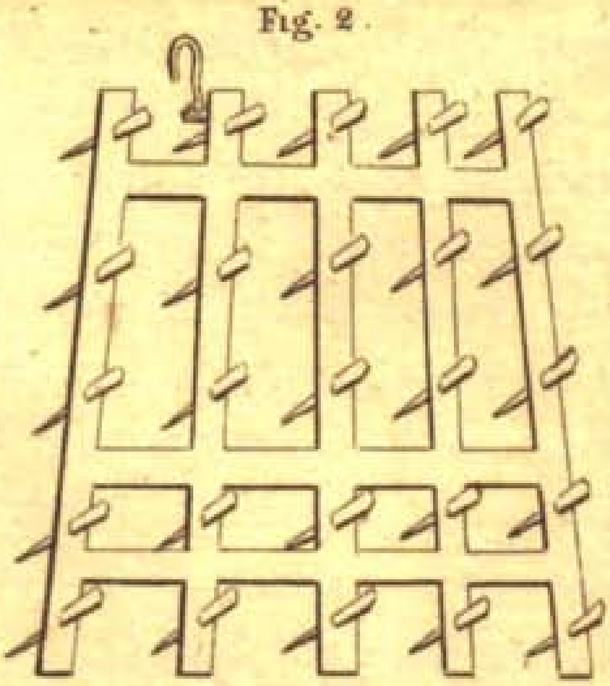
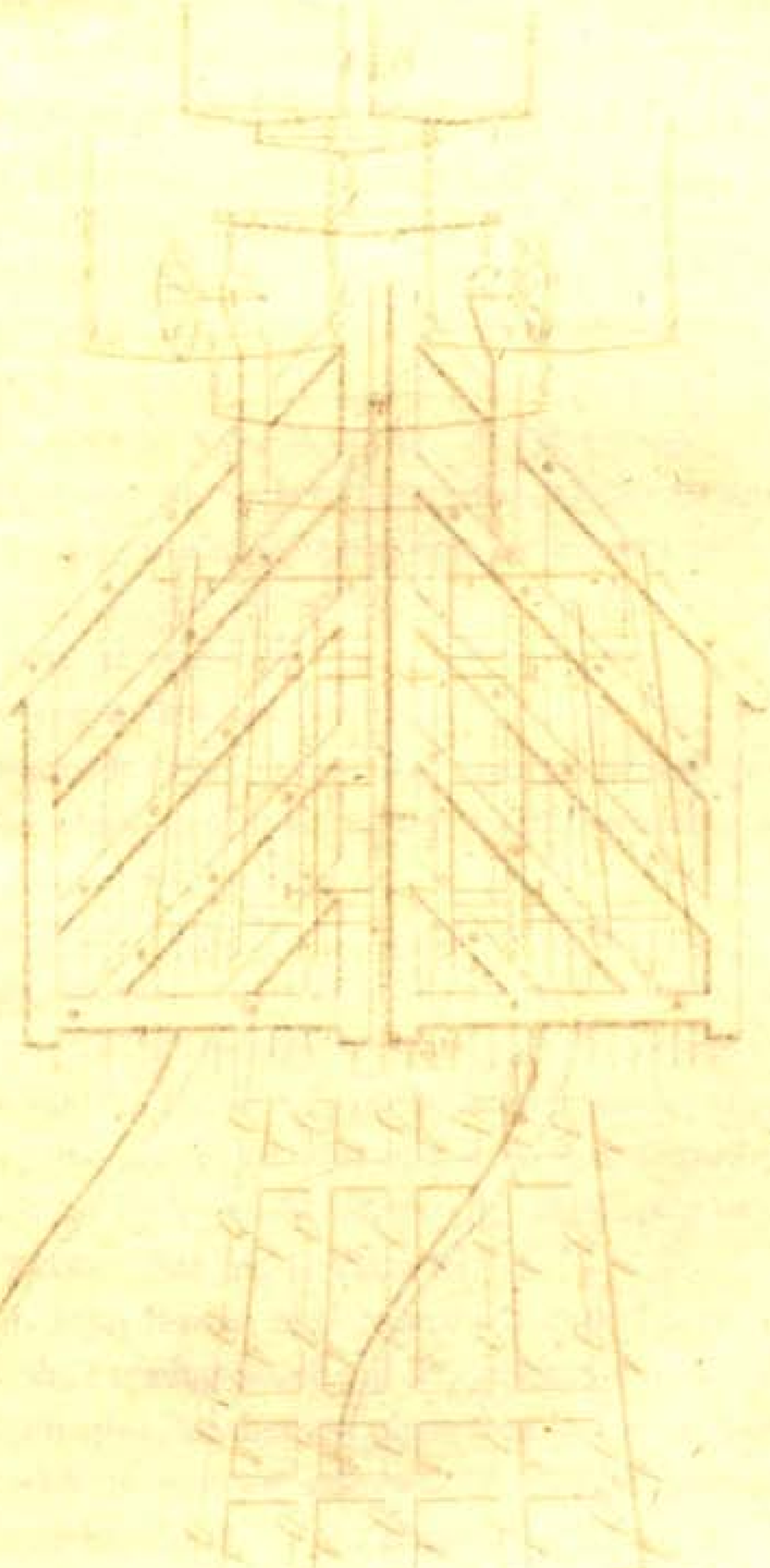
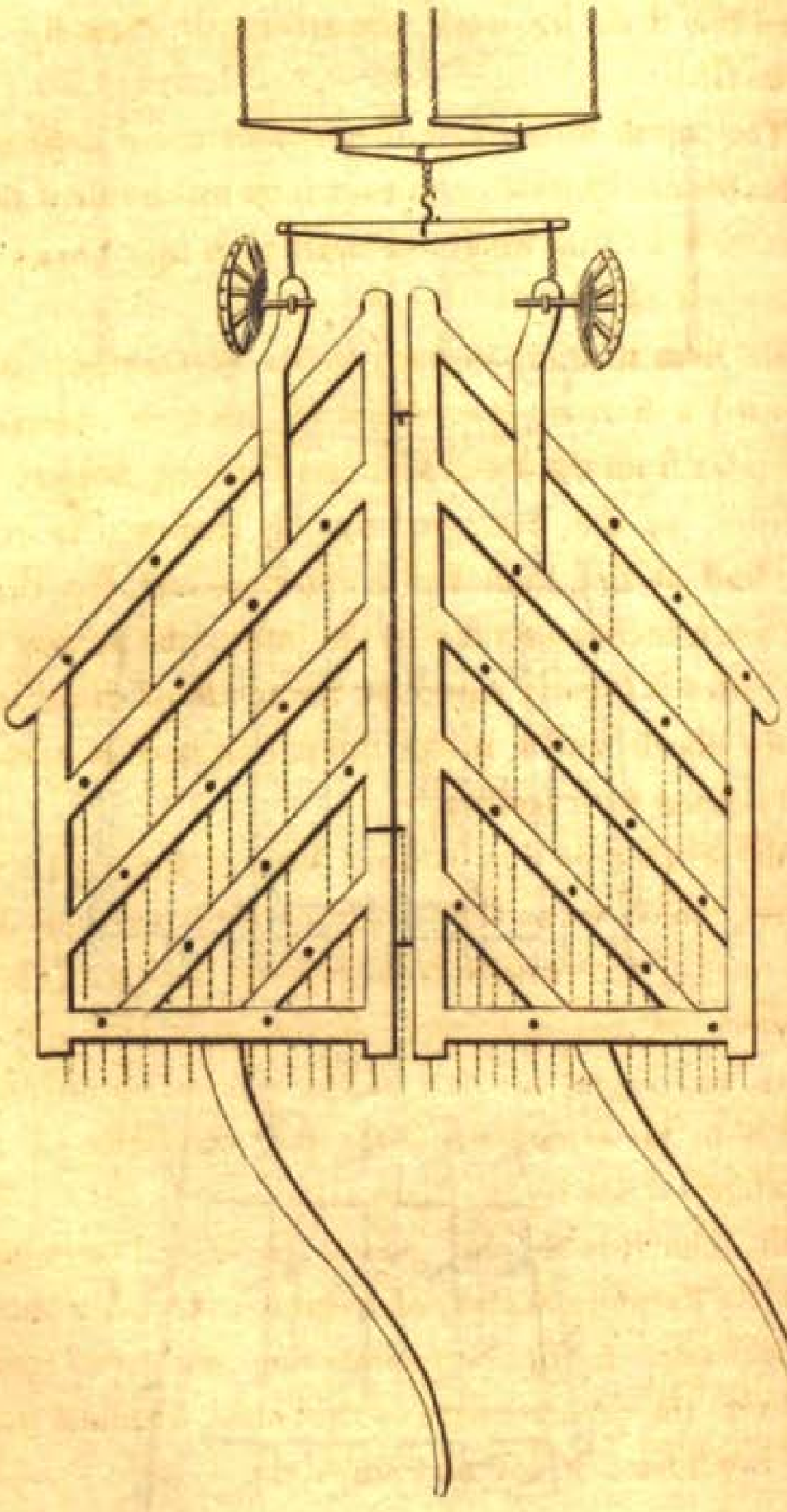


Fig. 2.





Plan of a Harrow by John Rowan.



it is too heavy for the driver to lift up conveniently, to free it from the weeds and sods it collects, and it cannot adapt itself like a hinged harrow, so as to sink and rise with the inclination of the ground, and therefore does its work imperfectly. (See fig. 2. Plate III.)

The patent hinge harrow obviates these defects; it has besides thirty-five tines, which make thirty-five parallel drills; its weight of draft with four horses in fallow was 3½ cwt.

Mr. John Rowan, steward to Mr. St. George, constructed a harrow, (see Plate IV.) which obtained the prize from the First Midland Farming Society at Durrow, as the best seed-sowing harrow; it cuts the land at one inch and a quarter, and the tines are seven inches asunder in the bulls; the labour of the horses is greatly eased by the mode of draft and by the wheels, and it is like the patent harrow turned and cleaned with facility.

Mr. St. George has a light harrow for a pair of horses, which turns very easily at the headlands, by the rings of the swingle trees playing backwards and forwards on the iron bars, so that it works angle-ways, and leaves no part of the ground untouched, and is to be commended for the simplicity of its structure. (See fig. 1. Plate III.)

Mr. John Rowan also gained the second premium from the Farming Society of Ireland, in October 1801, at Ballinasloe, for the best ploughing in a given time, and with the greatest ease to the cattle, with one man and two horses, in ley and stubble.

The

The Spade—is generally five feet eight or ten inches in length; the handle is curved about three or four inches out of the direct line; it is connected with the iron part by a piece of wood forming the step on the right side, with an upright part spliced to the handle, and fastened by two iron hoops, below it fits into the iron, which is at top almost closed round it; the iron is about fifteen inches long, and bent in a direction contrary to the handle, it is narrower towards the upper part, where it is about four inches broad, and towards the lower part about five and a half inches; the iron sometimes differs in being a few inches longer; it is not a bad instrument for digging in stony ground.

The Shovel—is usually rounded, but varies in having sometimes a point rather sharp; and it is often made square at the end, especially in the northern part of the county: the square shovel is often used for earthing potatoes and trenching corn, for which it is particularly well adapted. The weight of iron in a spade four and a half pounds, and one-fourth of steel; in a shovel about four pounds.

There are no other implements of husbandry in general use.

The Roller,—which would be highly advantageous in all the light soils and grass lands, is nearly unknown.

The Scuffler,—one of the best implements of modern invention for some purposes, has been used by Sir Richard and Mr. Robert St. George; when its effects shall have been seen for some time, it will probably

probably be adapted by great tillage farmers, as no instrument can prepare and clean fallows in the same manner, or prepare ground so effectually and quickly for wheat: with four horses, it can go over near six acres of fallow in a day, and with two horses, from two to three, leaving no part of the soil unstirred, and dragging out all the roots and weeds: it has seven pins, and when they were set at the depth of nine inches the weight of draft was 3¾ cwt. For exhibiting this instrument and others at Ballinasloe, and for his endeavours to make public the advantages resulting from their use in tillage, Mr. Robert St. George justly received the thanks of the Farming Society of Ireland.

The common *Car*, with outward block wheels of three solid pieces, and a heavy wooden axle-tree, is the only one usually seen; its frame rises behind, so as to fit a kish; for drawing lime it has sometimes boarded sides and bottom, and is called a box car; its cheapness is its principal recommendation, as the price is from two to three pounds; the cost of the wood work in Kilkenny is about thirty shillings; the weight of iron in a car four and a half stone. The great friction of its clumsy axle-tree, and its turning with difficulty, are disadvantages which might partly be obviated by an iron axle-tree, which though it might cost a little more, would last many years longer: some gentlemen, and particularly Mr. Neville of Marymount, have long had iron axle-trees, but the example has not been followed by the farmers. A better method, and also a cheap one, is to have each

wheel

wheel turning under the car on a separate gudgeon and staples of its own, by which means very little space is required to turn in; cars on this construction have been introduced by Mr. St. George. The neck collars are often fastened only with gads or ropes, instead of small chains, and the hames not armed with iron plates to preserve them; the common harness is often made out with ropes, and fastened with gads for cars as well as ploughs.

Besides Hanford's improved Leicestershire ploughs and scuffler before mentioned, these implements have been introduced by Mr. Robert St. George. *The Northumberland plough*, to which a wheel has been added by his steward Mr. John Rowan, which makes it cut at a regular breadth, and renders it more handy in turning; *Hanford's turnep cutter; Cooke's drill machine* and *cultivator; Lester's patent harrow; the turnep transplanter; the steel-yard for weighing the draft* of ploughs, &c.; *the carpenter's turning engine for fork handles, &c.; the winnowing machine*, as made for the Dublin Society; *the English tooth-rake* for hay and corn, four feet long in the head; *the Northumberland drill barrow* for sowing seeds with different seed boxes; *Fanner's turnep drill sower*, with four boxes, nine inches asunder; *the triangular hoe* for turnep hoeing; *another* with three forks on one side, to pull up couch grass or weeds; *Rowan's wheel harrow*: all these instruments are what he has approved of upon a fair trial, and most of them by constant use. Sir Richard St. George uses also with success most of the same implements, and finds the

advantage

advantage of them. Other gentlemen have adopted some of these implements, and the improvement of agricultural machinery seems to gain ground.

There is not a threshing machine in this county, though it abounds with streams in most parts, calculated for water wheels of any kind. *Potatoe washers* are not uncommon among the farmers in Galmoy. Stripping ground for baiting is done by a large *hoe*, with a long and curved head, sharp and broad at one end, it resembles the hoe used for the same purpose in Devonshire, and perhaps the instrument as well as the term baiting, or burn-baiting, was introduced from that part of England: for pulling out weeds in grass land, a *foot-hoe* with a small step and an angular iron, widening at bottom, is sometimes made use of; it does not do the work well or expeditiously. The *dung-fork* has often three iron prongs; the *pitch-fork* sometimes only two wooden ones.

Sect. 6. *Draft Cattle.*

The use of oxen in the plough seems to be rather increasing in the neighbourhood of Kilkenny; and they are used in some degree by different farmers all over the county; though the proportion is very small in comparison to horses. The farmers justly prefer spayed heifers when they can be got. They are always harnessed with straw collars and hames, and generally with straw back bands, and neck collars of gads by which they support the chains of the plough:

none draw with yokes; some gentlemen use the same harness as for horses. Mr. W. Barton observed that he did not find bullocks equal to spring work, though fed with peas; he therefore preferred horses, from the quantity of work they will perform in a given time, and the consequent saving of labour, and from their dung being preferable for potatoes, or for manure in general; admitting at the same time, that a bullock may be ploughed from being worth two guineas to sixteen, and a horse from sixteen to nothing: he farther observed, that giving the feeding of three horses to two, will enable them to do the work of four.

Bullocks certainly will not work in proportion to their food, in the same manner as horses, and in the spring of the year, when most wanted, they become weak, nor at any time will they bear such constant labour; nor would it be prudent to use them off the farm, upon the hard roads of this country. In point of expence, feeding a horse by furze, by Swedish turneps, and other modes which have been found to answer, will render his keep not much more expensive than that of a good bullock, who if fed upon hay, will consume fifty-six pounds in a day. It is said oxen may be worked entirely upon straw, but that has not been practised here as yet. The decreasing value of the horse, and the increasing one of the bullock, are not always fairly considered; the bullock is supposed to be sold at the time when his price is at the highest, and the horse when his is at the lowest; but if plough horses were sold after two or three

years work, at the period of life when they are most valuable, then their price would rise in a greater proportion than that of bullocks, and the return of profit would be much quicker. On a large farm colts may be bought in cheap at three years old, and sold with a certain profit at six, and this profit when calculated, will be found to exceed that of oxen; at three years old the bullock might cost five pounds, and the colt seven pounds, the former sold at nine years old may bring sixteen pounds, or eleven pounds after six years, the latter may bring sixteen pounds at six years old, or nine pounds in three years. But if the horse was sold without any profit, his advantage would be great, as two horses generally do the work of four bullocks, and do it better. Bullocks perhaps are hardier, and require less care, and their profit is more certain; without very attentive management the keeping of horses is much more expensive: on large farms it may be adviseable to keep both, but whenever it is requisite to send to market, horses are necessary; and small farmers will probably never use bullocks, as a horse serves them for all purposes. Many calculations upon the relative value of horses and bullocks have lately been made, and the subject has been long discussed. See Northumberland and Somerset reports.

The proportion of horses is about four to forty acres of tillage, and it is not much more where all the ploughing and harrowing is done by four horses.

The native horses are lively, active, and hardy, and well adapted to the uses of the farmer; not

many are bred in this district, though the small farmers like to have brood mares for their own use, and if they can, to get a little blood in the breed. The English black draft horses seem ill calculated for this country, particularly for the hilly parts, and not hardy enough for the service of the farmers; an entire horse of this sort was however in the county last summer. If any English breed are particularly to be sought for, it should seem to be the Suffolk sorrels.

Some farmers go as far as the county of Limerick to purchase young Irish horses, many of which have been bred in Clare; the fair of Castledermot is sometimes resorted to; the only fair in the county esteemed for horses, is that of Callan, to which they are chiefly brought from Munster: a good draft colt fit for work, may be had for about ten pounds, common working horses from six pound to nine pounds.

One of the commonest maladies to which draft horses are liable, is grease in the heels; which proceeds chiefly from neglect, by suffering them to stand with their legs wet and dirty, and not rubbing the feet and fetlocks: the following remedy has been used with success in removing this complaint, and also as a salve for sheeps feet.

½ lb. of hog's lard,
½ lb. of honey,
¼ lb. of Venice turpentine,
½ lb. of train oil,
1 lb. of roach allum,
1 oz. of bol. ammoniac,

} Finely powdered and passed through a sieve.

Mix

Mix them all together over a slow fire, stirring them for half an hour.

Mules are often used, and may be purchased at fairs in this county, and in Wexford, at a reasonable price; they are generally low, but kind in draft; a small mule, very fit for an Irish car, may often be had at four years old for eight guineas, and from that to twelve: sixteen guineas is the highest price that very handsome mules have been sold for.

Sect. 7. *Stock.*

Cattle.—The common cattle of this district, are a mixture of the Irish breed, with some of the long horned English. A few may be seen of the ancient native stock, or what may be supposed so, whose characteristics appear to be, upright horns, distant, dry, bent somewhat backwards, and tipped with black; ears rather large, body black, and face white.

The Kerry cows are often driven into this county for sale; they are preferred in dairies for their quantity of milk, as well as for the low price they bear, even compared with their diminitive size: I have seen a bull and three dry cows sold for six guineas; and a bullock and six dry cows for nine guineas: but these were all of the smallest kind; a score has been sold for £.30. Their size often does not exceed

exceed a moderate sucking calf; when put on good grass, they fatten in a greater degree than the cattle of the country. For the last two years their price has rather risen. Their shapes are often very good; a bull of this breed exhibited at Durrow in July last, was allowed to be nearly perfect in all his points.

Few beasts of any of the best English breeds have been introduced.—Mr. Boyce of Bishopshall, has taken some pains to introduce the most approved sort of cattle, the modern Leicestershire; he got his breed principally from Mr. Henfield, in the county of Tipperary; he had besides others, one thorough bred cow and two bullocks extremely beautiful; some of his cattle are from half bred Tipperary cows, which he continues to improve, by looking out for the best cows in the country: but the thorough bred are continued from the same blood: he gives half bred bull calves to his tenants, who are very anxious to improve their cattle, but prefer the half bred to the full bred stock, as they say that the former give more milk: milk not being the object with the great breeders, it is not the quality which they have tried most to improve, and they are generally satisfied with allowing that their cattle may give less in quantity, but that it produces more butter; that from four pottles of the milk of the thorough bred cow, as much butter will be given as from six of the Irish cow; and that individual Leicestershire cows have equalled any others as milchers. Here the little

farmers

farmers who sell milk prefer the Irish cow from the quantity it gives, independent of quality; and the dairy men approve rather of the half bred cattle. Sir Edward Loftus has some fine beasts of the old large, long horned English breed, that were imported many years ago. Mr. Power of Kilfane, has one of the best thorough bred Leicestershire bulls in the county, from the breed of Mr. Jacob of Mobarnan: and Mr. Wm. Barton, a very handsome bull of Mr. Doyne's breed. There are others who possess very good half bred cattle.

The First Midland Farming Society offers premiums which may contribute to improve the stock, without specifying any particular breed; the different kinds now most in request ought to have a fair trial in this country: the Devonshire cattle, are light, and appear well calculated for the hilly pastures, they are said to be equal to the most admired of the Dishley breed, in some of the best points on the back and hind quarters; and the shoulder is said to be less weighty, though as round and well formed as in any other cattle; the head and neck small and clean, and the bone fine: the Hereford is a breed much esteemed; the Derbyshire are said to give a large proportion of butter; and the polled Suffolk, a large quantity of milk. Polled cattle seem to have peculiar advantages; for horns both in the bale and in the plough are extremely inconvenient, and there seems as good reason for preferring polled cattle as polled sheep.

Profits

Profits of stock, communicated by Mr. Henry Ellis.

"On a subject so changeable and uncertain it is difficult to form an accurate statement; the following may be applied to the year 1800.

	£.	s.	d.
Suppose twenty calves fit to be reared cost 11*s.* 4½*d.* a piece, ...	11	7	6
To feed them for twenty days with new milk, giving each eight quarts beer measure per day, at 1*d.* per quart, .	17	10	0
To feed them forty-five days with sour milk (which will leave them two months old) at six quarts per day to each, the quart being three pints beer measure, rated at two quarts for 1½*d.* . . .	11	5	0
Grass of six acres of land for them, till twelve months old, rated at 30*s.* per acre rent, ...	9	0	0
Six tons of hay to winter them, at 40*s.* per ton, their dung is supposed to pay for attending them, ...	12	0	0
	£.61	2	6
Twenty calves of the above description, might at twelve months old sell for from £.3 to £.3 10*s.* each; suppose at £.3 5*s.* for the whole, the amount would be	65	0	0
Profit of rearing, .	£.3	17	6

Now

Now suppose the aforesaid twenty calves, at one year old, are bought in at May for £.3 5s. each, the amount would be	65	0	0
It would take ten acres of land at 30s. per acre to keep them for twelve months, the rent whereof would be . . .	15	0	0
It would take six ton of hay at 40s. a ton to winter them; their dung paying for attending them, &c.	12	0	0
	92	0	0
Twenty yearlings, of the above description, might sell out for from £.5 to £.5 10., suppose at £.5 5s. each, the amount would be	105	0	0
Profit for keeping them twelve months,	£.13	0	0

Note.—The expence of rearing and keeping heifer calves, and bulchion calves, till they are two years old is nearly the same; at one year old they differ but little in value, and at two years old, heifers are put on better land, and bulchions of the same age are put on worse land than before.

Suppose twenty two year old heifers are bought in at May for £.5 5s. each, the amount would be	£. 105	s. 0	d. 0
At this age it would require eighteen acres of land at 40s. per acre, to keep them for 12 months, and in 3 months hence they take bull, viz. about the 1st Aug.	36	0	0
Twenty tons of hay to winter them, at 40s. per ton, their dung paying for attending them, &c.	40	0	0
	181	0	0

These last mentioned heifers might sell out as springers or new milch cows, at three years old, for £.10 5s. each, the amount would be 205 0 0

Profit for keeping them twelve months, 24 0 0

After all this, casualities must be considered, such as dying, missing bull, slipping calf, &c. &c.

Now suppose twenty bulchions bought in at May, when one year old, for £.3 10s. each, amount would be 65 0 0

To keep them twelve months would take ten acres of land at 30s. per acre, the rent would be 15 0 0

It would take six tons of hay at 40s. per ton to winter them; their dung paying for attending them, &c. 12 0 0

92 0 0

The above twenty bulchions might sell out at two years old for £.6 5s., the amount would be 125 0 0

It would take forty acres of land, at 10s. per acre, to keep them twelve months, the rent would be 20 0 0

To winter them, ten ton of coarse hay at 30s. per ton, ... 15 0 0

160 0 0

At three years old the above twenty bulchions might sell out at £.8 10s. each, the amount would be 170 0 0

Profit for keeping them twelve months 10 0 0

Note.—The interest of the money laid out in purchasing stock is not reckoned in any of these calculations.

For fattening, suppose twenty three years old bulchions bought in at May for £.8 5*s.* each, the amount would be .	170	0	0
Thirty acres of land at 40*s.* per acre, to feed them for twelve months, or less, the rent thereof would be	60	0	0
Twenty ton of hay to feed them in winter, at 40*s.* per ton, their dung paying for attending them, &c.	40	0	0
	270	0	0
They might sell out fat, at three and an half or four years old for £.15 each, the whole amount would be . .	300	0	0
Profit for keeping them 9 or 12 months,	30	0	0

Cows, called strippers, for fattening, are generally bought in about May, and are such as have slipped calf the winter before, or that have been kept milking since the May before, and prevented from taking bull; they are commonly from four to ten years old, but five or six are reckoned the best ages for fattening;

Suppose

Suppose twenty cows of the above description, viz. five years old bought in at May to be fatted, cost £.8 each, .	160	0	0
Thirty acres of land at 40s. per acre, six months on which will fatten them; rent of said thirty acres for six months, say 35s. per acre, ...	52	10	0
Herding them	2	0	0
	214	10	0
Say the said cows would sell out after six months keeping for £.12 per cow, the amount would be	240	0	0
Profit for fattening . . .	25	10	0

Casualities to be considered.

"*Observations on fattening cattle in Fassadinan.*

"Cows and bullocks are bought at the spring, and early summer fairs, viz. at Kilkenny 17th March; Leighlin-bridge 14th May; Carlow 4th May; Rathbeagh 1st May; Durrow, Ballinakill, Ballyragget, and Kilkenny summer fairs about the middle of June: the cows from four to ten years old; prices from six to ten guineas; bullocks from three to four years old, price from £.7 to £.12. The graziers chuse the cattle they find most forward, or in the best order, supposing them to have been housed and well foddered with hay the preceding winter; they are turned into grass about the middle of April, about an acre allowed to each cow,

cow, and sometimes an acre and an half, according to the quality or kindness of the land: here they remain without any other food than grass, some three, some four, and some six months, before they are fat or fit for market.

" Some, but not many, bullocks and dry cows or strippers, are housed for the most part, from the first of November to the first of April, and let out only a few hours in some fine days; and during that time, they are fed abundantly with hay only; but kept clean and well littered, then about the first of April they are turned into forced or early grass, for a month or six weeks by which they become tolerably fat, and sell to advantage, leaving a profit, sometimes more sometimes less, but the medium may be about 40*s.* a beast. The cows and bullocks housed and fattened in the last mentioned way, have failed in being fatted in the previous summer season, but when bought up for this purpose, they are in good order, and such as is generally called French or slippery beef."

Some cattle are fed at distilleries: at Mr. Delany's distillery at Durrow, an hundred head of cattle are generally fattened in the winter; they are bought at Ballinasloe in October, and are fat in March; they cost from sixteen pounds to eighteen pounds, and sell for about thirty pounds a piece; each beast eats fourteen pounds of hay per day, and is not stinted in grains and wash: Mr. Delany has a still of 500, gallons, and by this means is enabled to manure his ground well.

Milch

Milch cows are often kept out during the whole winter, and foddered with a little hay, which is thrown to them on the ground, in a small inclosure near the farm house; some farmers say they are more healthy from being kept out, and that when they have been put into a house they become sick, slipped their calves, and were subject to the itch; if this was the case it must have arisen from the dirty manner in which they were treated. A milch cow is often allowed a ton and a half of hay; when kept with straw, one cwt. will serve five cows for a night. Calves are taken immediately from the cow, and taught to suck with the finger, and then fed with milk or whey; after the first fortnight they often get these mixed with one third part of hay water; and when they grow stronger half hay water and half milk is given.

For the disorders of cattle the common cow docters have various remedies composed of herbs; the complaint called the murrain, a bloody flux followed by obstinate retention, has been cured by an infusion of *Pyrethrum inodorum*, *Chara vulgaris*, and *malva sylvestris*, with a little soap and butter; possibly the latter ingredients were the most useful.

Sheep.—Perhaps the pure Irish breed is not very common, but there are a good number of sheep in the neighbourhood of Kilkenny, that have every defect of form that can well be assembled in the animal, according to the modern ideas of perfection. Near Callan are some large sheep which bring good prices though tall and big boned.

The

The farmers shear in the beginning of June, wean the lambs in the middle of July, and shear them in the latter end; it is their practice to milk the ewes for two months and even three after the lambs are weaned; they say it does not injure the ewes, who generally breed for five years, and are then fatted. Of the milk, cheeses are made, which are sold to persons who come about for the purpose of buying them and retailing them in the market of Kilkenny: the cheese weighs about two pounds, and is sold for 1*s.* by the farmers; in one farm 140 ewes gave six cheeses a day at first, and afterwards four. In another sixty ewes gave four cheeses a day, two in the morning and two in the evening: they lie in the press for twelve hours, and are piled in a wooden vessel to dry; they are fit for sale in two days.

The breed of sheep is rapidly improving in this part of Ireland, by the exertions of different gentlemen, who have introduced some of the best new Leicester breed, particularly Mr. Robert St. George, and Mr. Fitzpatrick of Urlingford.

Mr. St. George, with the assistance of Mr. Astley of Odston, whose breed was formed from the first of the Leicestershire, imported ewes from Mr. Pagot of Ipstock, Mr. Stubbins of Holm, Mr. Buckley of Normanton, and others, the greatest breeders in England, and by taking some of the best rams has carried the tup business to a greater height than ever it had been before. In 1800 he let thirty rams for £1744, the highest price was 150 guineas and five ewes sent; unfortunately this ram, which was hired

to Mr. Cassan near Tipperary was barbarously murdered the night after it arrived, an atrocity which it is hoped will not be heard of again. Nor could the value be presented upon the county or district. In 1801 he let rams for the following prices; each ram is known by his particularunmber.

	Guineas.
No. 20, Mr. Wynne, Hazlewood, County of Sligo,	150
No. 19, Rev. Thomas Radcliffe, Castlecoote, County Roscommon,	150
No. 6, Mr. Millet, of Scotsborough, County Kilkenny,	100
No. 12, Sir R. B. St. George Bart. Woodsgift, Mr. Thomas Neville, Aghnamult, Rev. Doctor St. George, Kilrush, } County Kilkenny	100
No. 4, Mr. Lewis, King's County,	60
No. 5, Mr. Murphy, County Tipperary,	60
No. 13, M. Lalor, Ballyragget, County Kilkenny,	60
No. 14, Mr. Langley, Brittas, Mr. Lloyd, } County Tipperary,	50
No. 18, Lord Doneraile, Doneraile, County Cork,	50
No. 21, Lord Donoughmore, Knocklofty, County Tipperary,	50
No. 22, Mr. Brown, Mount-prospect, County Roscommon,	50
No. 23, Lord Doneraile, Doneraile, County Cork,	50
No. 25, Mr. Kirwan, County Mayo,	40
No. 3, Mr. Reinnel, Reinnella, County Westmeath,	30
No. 27, Lord Doneraile, Doneraile, County Cork,	30

Guineas.

No. 2. Mr. M'Cullough, Ballyragget, County Kilkenny, ... 20

No. 7, Mr. Mitchell, Goresgrove, County Kilkenny, 20

No. 8, Mr. Lalor, County Kildare, ... 20

No. 9, Mr. Boyce, Bishopshall, County Kilkenny, 20

No. 11, Mr. Neville, Marymount, Mr. Levinge, Belview, } County Kilkenny, 20

No. 17, Mr. Wade, Fort-william, County Roscommon, 20

No. 28, Mr. Mitchell, County Roscommon, . . 20

No. 29, Rev. Doctor Butler, Kilkenny, . . . 20

No. 30, Hon. Sir Edward Crofton Bart. Moate, County Roscommon, ... 20

No. 31, Colonel Bagwell, Marlfield, County Tipperary, 20

No. 33, Mr. Kirwan, County Mayo, ... 20

No. 1, Mr. Tighe, Woodstock, County Kilkenny, 20

No. 10, Mr. Millet, Scotsborough, County Kilkenny,

No. 15, Rev. Mr. Averel, Tentour, Queen's County,

No. 16, Mr. Edward Dwyer, Johnstown, County Kilkenny, ...

No. 32, Messrs. Lewis & M'Donough, Balief, County Kilkenny, ...

And two tups rode ewes of the following perſons at Balief-Caſtle, at two guineas per ewe.

	Ewes.	Guineas.
Mr. Caſſan, County Tipperary, ...	40	80
Sir R. B. St. George, Bart. Woodsgift, County Kilkenny, ...	20	40
Mr. Millet, Scotsborough, County Kilkenny,	10	20
Rev. George St. George, Tully, County Roscommon, ...	10	20
Mr. Burne, Ballyspellin, Mr. Purcell, } County Kilkenny,	10	20

	Ewes.	Guineas.
Doctor Baker, Kilkenny, ...	10	20
Mr. Scully, of Tipperary, ...	10	20

In this list are included many of the breeders of this county, one of the principal of whom, whose stock is very extensive, and breed highly improved, is Mr. Millet of Scotsborough.

Mr. Fitzpatrick lets annually from forty to fifty rams, and has about sixty. The highest price he has usually let for, as yet, is fifty guineas; he has some let as low as ten; and many from that price to thirty; but he is improving his breed in a very spirited manner, and this year, he will probably let for higher prices. Last season he took three rams from Mr. Buckley of Leicestershire, and imported ten ewes and nine lambs of the highest price, from Mr. Stone: before this, he had taken a ram yearly for eight seasons from Mr. Honeybourn of Dishley. His first breed was formed from the late Mr. Dexter's of the county of Tipperary, and from ewes of his own. In October 1801, Messrs. Fitzpatrick father and son, obtained the prize at Ballinasloe for the best pen of five one year old ewes of any breed.

Mr. Fitzpatrick has a show for his tups on the fourth of June; he exhibits his rams first in their wool, and then shorn; he shews them all together and tied to rails. Mr. St. George has his shew-day on the eighth of June,* in the sheep-house at Balief; his tups are led out after being shorn, one by one, and then as called for, but are not seen together; they are brought out with neat leather collars, and covered with a flannel cloth;

* This year (1801) it was changed to the 31st of May.

cloth; they wear this cloth for about three weeks after shearing, it consists of a yard of flannel tied with tape, and keeps the pelt soft, not suffering it to be parched and hardened by the sun. When just shorn, the sheep is supposed to look better, and to be fitter for examination than afterwards; but it appears right also, that they should be seen before shearing: the wool, however, is not regarded as an object of much importance by the Leicestershire breeders, at least it is considered as inferior to all other points. Mr. St. George conforms himself exactly to the practice of shewing, adopted by the first tup-breeders in England.

To prepare their rams for this exhibition, is the principal care of the breeders; and this is entirely done by green food; it is a point of honour not to give corn; the rams after they have served the ewes are fed on turneps, cabbages, and hay; and the art of feeding consists in increasing their food gradually, and constantly, instead of suffering it to be diminished at any period, until the time of shew. The cost of feeding a ram is computed at two and a half guineas. It may be feared, that emulation may rather prompt the breeders to over feed than otherwise; for by rendering these rams too fat, they become liable to the stranguary, from mere indolence and unwillingness to get up. While serving the ewes they are fed on grass.

One collateral advantage resulting from this kind of stock is, that every farmer who goes into the system, must cultivate a great variety of green food of the best kind, and in the best mode of tillage, other-

wise he could not keep up his tups. Mr. St. George's farm is therefore, in this respect, a perfect garden: and Mr. Fitzpatrick pays much attention to his green crops: the benefit of their culture is universally seen; the methods become well known to the country, and these are the only ways by which they are likely to be brought into general use.

This district, with the adjoining ones of Tipperary and the Queen's county, is the only part of Ireland into which the tup-breeding system, with sheep of the first blood, has been introduced; and from breeders in the two other counties several persons in Kilkenny have taken rams, and purchased ewes, for the improvement of their flocks. Mr. Maher, of the Queen's county has let several, and from him Mr. Reynolds, of Kilkenny, has obtained a handsome breed of new Leicesters; from Mr. Steele, of the Queen's county, Mr. O'Flaherty, of Castlefield, and some others, have improved their sheep; some of the most esteemed sheep have also been derived from the flocks of Mr. Lloyd and Mr. Dexter, of the county of Tipperary; the latter was the first person who went extensively, in this district, into the improvement of sheep; his first breed, which were soon extensively spread, had some defects, which have been corrected in the more modern Leicesters; they had too much belly and offal, and necks too thick, and wanted some of the fine forms which characterize the present race: they were inclined also to have their legs too short, a fault at one time considered a perfection, but now justly corrected in the improved Leicestershire sheep; latterly Mr. Dexter imported ewes from England, of the

first

first breed, and let his rams at great prices. Mr. Boyce, of Bishop's-hall, took a tup from him annually, and has a very excellent flock.

The improved Leicestershire sheep is distinguished by its small and nicely formed head, curved and tapering neck, broad chest, and rounded shoulders, level back, full chine and ribs, fine bone, thin pelt, and small tail: its superior qualities are, the small proportion of bone and offal, and the disposition to fatten early; to this may be added its thriftiness in feeding, for it not only fattens sooner, but takes less food in a given time than other sheep, and the grain of the meat is very fine: some have added to these qualities, fineness of fleece, and docility of temper. See Bedford Survey, p. 32.

The advantages to the farmer from breeding thrifty or easily fatted sheep, are, that they are more profitable to the breeder, by being fat for the butcher a year sooner than an unthrifty kind, or the old Irish breed; by which means, in the course of six years, he has three returns instead of two, and every year one-third more fed on the same quantity of land: they are more profitable to the feeder, or grazier, who even buys in October to sell in spring; holding them over half a year, as he can keep near a third more, and they will hold their condition better; they are more profitable to the kingdom, as when the breed becomes general, the public will be supplied with nearly one-third more fat mutton annually; the price of course must be lower, or the number of consumers must increase.

Some

Some persons object to the Leicestershire sheep being too fat at two years old: this is giving them the best character the farmer can wish for, if he values his grass, as the remedy is easy and profitable, by putting four sheep in the place of two or three, and feeding them to that degree of fat only, which he wishes to lay on.

Those who have been accustomed to eat six year old mutton, say the Leicestershire sheep are not good at two year old, but the farmer feeds for the butcher, who buys his meat when fat, and it is a doubt whether many would know the difference on the table, provided the meat is kept a day or two longer before it is dressed: the gravy of the former may be higher coloured, but they will not know it by the taste. However, the gentleman has it in his power to keep these sheep to the age of any other, or of the oldest buck in his park, if he chuses to go to that expence, and then may compare the colour of his gravy and quality of his flesh, which from the nice texture of its grain will be equal to that of any unprofitable breed of mountain mutton, which has cost the feeder from one to two or three shillings a pound, by feeding a number of years.

Mr. St. George has not disregarded the improvement of wool, though it is esteemed a secondary consideration, and particularly in Ireland, where the difference made between fine and coarse wool by buyers is inconsiderable. *Messrs. Astley and St. George

* The partnership being dissolved, and the stock divided equally, between Messrs. Astley and St. George, the latter has now

George obtained at Ballinasloe, in 1800, the premium for the new Leicester ram with the finest fleece: they also obtained a premium at the same time for a South Down ewe; they obtained the medal also for the best ewe of any breed; and the second prize for the best new Leicester ram: in November 1800, they obtained in Dublin the prize for the best three year old wether bred by themselves: it was adjudged also to be the best wether produced, having the lightest offal in proportion to the weight of the carcass: the measurement and weight of this wether was taken by the judges, and stood thus:

Leicester wether.

	In.
From the tail to the commencement of the leg,	11
Depth of breast,	3
Ditto of cushion fat,	2½
Ditto of loin,	6
Fat on the back,	2
Ditto on the twist,	3
Depth of hind quarter,	8
Ditto of chine,	2½
Ditto of rib,	3
Ditto of lap,	1¾
From the back to the breast in a straight line,	14½
By circle,	21½

Weight.	*lb.*	*lb.*
Weight of shoulder,	24½	
Do. of neck and breast	14½	
Do. of hind quarter,	32	
Head and pluck,	9½	
Pelt,	23	
Belly fat,	13	
Guts,	11	
Blood,	6	
Carcass,	140½	
Live weight,		203

The

now recommenced the business with new spirit, and with a flock, which has been improving for thirty years by the exertions of Mr. Astley, from the first breeds in Leicestershire, &c.: and to do justice to which Mr. St. George hired, this last season, a ram, from Mr. Stubbins of Nottinghamshire, for four hundred guineas.

The proportions of an Irish wether taken at the same time;

	lb.
Height, three feet two inches.	
Live weight on the grass, ...	245
Pelt, ...	24
Blood, ...	10
Head and pluck, ...	14
Belly fat, ...	10
Guts, ...	24
Carcass, ...	124
Dung and waste, ...	39
	245

The first person who imported any of the improved English sheep into Ireland upon speculation, was Johnson, who once kept the George Inn at Derby, and who was the original exhibiter of feats of horsemanship, which have been since imitated by others; he brought his sheep to Ballinasloe, and sold them well to the neighbouring gentlemen; from him the late Sir Richard St. George, and others, had their breeds, which by the rage that then subsisted for crossing, they entirely transformed and spoiled; afterwards Mr. Dexter, an Englishman, father to the late great breeder of that name, brought over a Leicestershire flock, and from him began the spirit of improvement that has diffused itself in this district.

Mr. St. George has imported also a few of the South-down sheep; and has let a South-down ram for a good price, and sold the ewes for ten guineas a piece. These sheep might be useful in our higher grounds; but perhaps are not much to be preferred to other English breeds equally hardy, as the Ryeland,

land, which are said to have the good shapes of the Leicester, on a smaller scale, and with fine wool; the Cotswold, the Cheviot, and others; but all these are a year behind the Leicesters in fattening: there are few of our pastures that would not support the new Leicester sheep, if they were properly laid down, and sheltered by good fences and plantations.*

For sores upon sheep, a poultice of stirabout is one of the best applications: for curing the mange, the Rev. Dr. Butler has found the following remedies infallible, and he obligingly communicated his mode of using them.

Mercurial

* Since these observations were written, the Society have republished Mr. Billingsley's experiments on sheep; (II. Trans. 1801, p. 252) it does not appear that any inference can be drawn from them to the disadvantage of the new Leicesters; for it is stated, first, that the northern breeders declared those tried by Mr. Billingsley "to be the very worst they ever saw;" secondly, they appear to have been unhealthy from the beginning, as they continued falling off the whole time, and one of them actually died; thirdly, the folding, to which they were not accustomed, was not a fair mode of trial, unless the first object in sheep is to breed those that will bear folding best; the hardiest sheep, and coarsest (like the Wiltshire), and some of the worst made, may be the most fit for this purpose, such as some farmers in England call, "good working sheep." The same objection occurs to the experiment at Longleat; unless "*hard working sheep*" are preferable to those which will, *with the least expense of keep, be the soonest fit for market.* Even by Mr. Billingsley's experiment, the five Leicesters, worth originally but £.8 : 6 : 1½*d.* consumed but 1440*lb.* of food, while the five Gloucesters, esteemed the first by the judges, and worth originally £.8 : 14 : 4½*d* consumed 1865*lb.*: when killed, the Leicesters had a great advantage in the smaller proportion of offal.

Mercurial wash for sheep.—" Take any number of quarts of *rain water*, and completely saturate it with common salt; to each quart of the saturated water add one drachm of corrosive sublimate of mercury. The longer it is made the better.

" The sheep are not to be scored, or cut with a knife, but the water is to be rubbed in with a bit of soft stick: if the shepherd rubs it in with his hands, it will blacken and injure his nails, and may be absorbed and materially affect his constitution.

" I apply this wash in dry weather, and use it three times, at an interval of three, four, or five days, as the weather answers.

" A week after I apply the following; make a strong ley with any kind of vegetable alkali; weed ashes, baker's ashes, wood ashes, pearl, barilla, or potash; strain it, and into every gallon put one pound of leaf tobacco; let it stand some days before it is used: it is to be applied to every part of the sheep, three or four times: it perfectly confirms the cure, sets the wool, and prevents its peeling. By following the above, I cured sheep after they had been declared incurable. I am persuaded that *digitalis purpurea*, fox glove, added to the above, would be an incomparable addition to the tobacco.

" All kinds of dirty applications, brine, urine, dirty water, &c. I constantly have found injurious; as also all applications of the knife: the longer the tobacco infusion is made, the better I have found it. I also have found, that boiling the tobacco, in a great measure destroys its virtues. I have tried tobacco water bought

bought from tobacconists, and found it of no value. I also have used it in the room of pure rain water, in making the ley, and also found it prejudicial, and not near so effectual as the pure water."

The common shepherds use for the mange, infusion of tobacco, with various herbs, as the roots of *epilobium hirsutum*, willow herb; the leaves of honeysuckle, Ir. *fealhog na ghrann*, docks, and others. In the red water, driving the sheep about for a good while is said to cure it. In the dry grounds of this county, sheep are seldom troubled with complaints, though sometimes lame and scabby for want of attention.

Goats—are kept by many small farmers and cottiers, but not in flocks; a few are found among the dairies in the Welch mountains. The quantity of milk of six goats is said to be equal to one cow.

Pigs.—No species of stock seems to stand in greater need of improvement; the common pigs, and particularly those of a large size, have generally long legs, flat sides, narrow backs, large ears, and every defect of shape that could well be imagined: they are usually bred by small farmers and cottiers, and it would be of great consequence to have a kind with less bone and offal, and that would fatten with ease. Pigs from a Leicestershire breed imported by Sir Richard St. George, have sold for high prices; Mr. Robert St. George has two sorts from Leicestershire; one black, and one reddish, which when well fed will come to about five hundred weight, at two years

years old; in these the fat and lean is well mixed, which is a great advantage over the smaller kind sometimes seen in England, who appear to consist entirely of fat without any meat. Mr. St. George has also the white pig from Nottinghamshire, which is finer in the skin, and has less offal, and is more lengthy; and, in his estimation is better adapted to improve the common Irish breed, by giving them breadth, fineness of bone, hair, and ears, and lightness of belly. He thinks, if pains were taken in selecting some of the best Irish pigs for breed, and that if the breed was continued with the best of the produce, in a short time a kind as good as any other might be obtained: for this purpose he lets a Nottingham boar to the neighbouring farmers, at half a guinea a sow: he sells the breed of both kinds at ten guineas a couple, at six weeks old.

Fowl.—Rearing fowl is an object with small farmers: a great number of turkeys are brought by them to the fair of Callan, on the tenth of October; as well as to other fairs, particularly that of Ballyragget. The quantities brought to Callan supply part of the neighbouring counties, and many of them are bought up upon commission for Bristol, to which place they are shipped from Waterford. Young turkeys are fed for the first ten days with eggs chopped, and mixed with curds and peppercorns, after which they peck upon the stubbles; and being bred in the same cabin with the family, the warmth of the house contributes greatly to their growth and health. Geese

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and ducks are not so numerous. Geese are fattened with raw potatoes pounded and mixed with oats: turkeys and ducks with oats alone.

Pidgeons are scarcely reared for sale; in one or two places old towers have been assigned to their use; and an attempt was made in one, to make holes for them with clay against the wall, which did not appear to answer well: there are however a great many old castles, which might be easily and advantageously adapted to this purpose; the pidgeons take to them voluntarily, and there are several already occupied by wild ones. It may be doubtful how far they ought to be encouraged in a tillage country; they might be made a profitable stock to the farmer, if they were not mischievous to his neighbours.

Bees—seem to have been formerly an object of greater attention than at present; the uncertainty of seasons and the severity of some winters, are supposed to have greatly diminished them. Some years ago, it was not uncommon to have meade made of the honey, but scarce any is met with now. A good hive of bees costs about 11*s.* 4½*d.*, and a hive of honey may be had from 11*s.* 4½*d.* to 16*s.* 3*d.*

The hives are usually placed upon stones, which are injurious to the bees in Winter, by being too cold, and in the Summer by being too hot. No mode but that of smothering has been adopted for taking the honey; but the Rev. Dr. Butler of Kilkenny has introduced a method of preserving hives during the winter, which from its facility and suc-

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cess may perhaps become more common: he tied them up in a cloth, with a round board under the bottom, and hung them in the dark from the collar beam of a house in the beginning of October; he released them on the first of April, and the five hives which he treated in this manner, were strong and apparently in better health than those that were treated in the usual way: at the bottom of one hive there were about one hundred dead, and not above thirty in each of the others: a great many more would have perished in the common way and at any season this mortality in so great a number would be extremely small: as it entirely saves all the winter food and preserves the insects also in the best manner, there can be no doubt of its being the safest and most profitable way of keeping bees.

The Abbé della Rocca, in his treatise, mentions this as a common practice in many parts of the Turkish empire; and if it succeeded with him in an island of the Archipelago, it ought to answer better in a colder climate. Care must be taken to keep them in a place remote from noise, and without light; when like ants in this country, and most other insects, they will become insensible during the cold weather, which appears their most natural state in all northern countries.

To destroy the bees in taking the honey, seems a barbarous and aukward custom, when the structure of hives by Wildman and other persons have been so long known; when bees can be made with

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ease to fill several separate hives, of which the proprietor can take away such as he pleases. Wildman's hives are flat, seven inches in height and ten in depth; in the upper row of straw are fastened small bars, to which the bees affix their combs; over this is placed a flat cover of straw; in a short time after the bees are hived, a second flat hive may be put under; and as soon as they appear to want room, which will be in less than three weeks, a third: a few days after, the top hive may be taken away and will be found full of honey; in good seasons they will fill five of these hives, and the two last are sufficient for their own use, and more, if they are hung up in the Winter. The process is extremely simple, and certain of success, with hives of a proper size; it has succeeded with me, even with a large common hive. When a hive appears full, it is not uncommon for the country people to put a rise under it, for the bees to continue working in, which is a step towards a better practice. In Wheeler's journey into Greece, a method is mentioned as followed, at this day, upon Hymettus, by which the combs are taken without destroying the bees; the hives are flat, broader above than at bottom; small sticks are fastened across the top; at proper times the cover is raised, and the sticks taken out with the combs attached; the bees are swept back into the hive, and a part of the combs left for their supply: in this practice they are enabled to encrease the number of hives by removing part of the combs, together with the bees, into new

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ones, and thus dividing a hive into two or more; in which case care ought to be taken to remove a comb having the cell of a young Queen bee, which is easily distinguished.

The dry hills of this district covered with heath and scented herbs, are well adapted to bees, and the honey is remarkable for its fine flavour, and often for the deepness of the combs.

All early flowering plants are particularly favourable to bees; M. Conterdi and other French authors have specified the most useful plants; among them they reckon the almond, the cherry, the nut, the apple; from the poplar, the aspin and the sallow, the bees obtain early in the season, a resin of a brown colour, with which they stop the chinks of the hives before they begin to work; the lime and the broom afford great quantities of honey; as also do all the spiræas, borage, cabbages, and most cruciform flowers; echium, cerinthe, beans, and many papilionaceous plants; also raspberry, flax, lucerne, clover, campanulas, traveller's joy; the statice siberica is observed to be greatly frequented by bees, and they are extremely fond of saintfoin.

It is calculated in the Bedfordshire survey p. 54 that every square mile in Great Britain would easily produce in bees wax and honey on an average £100 in value; allowing for the decrease of price, in consequence of the extent of produce.

Sect. 8. *Fairs.*

The best fairs in this county are those of, Kilkenny 28th March, which is frequented by graziers from other counties for early cattle; another the 17th June; the fairs of Bennet's-bridge, 26th August—19th September—21st December—24th February.—Callan, 4th May—12th June—10th July—21st August—10th October—4th November—14th December.—Durrow 21st May—20th August—19th November.—Castlemorres, 12th May—12th August—12th November.—Kells, 13th July.—Newbridge, 13th April—15th June—1st August—15th October.—Rathbeath, 1st May—11th June—2d November—7th December.—Templemartin, 10th and 23d November.—These fairs at Templemartin are also remarkable for the sale of onions, which are brought hither principally from the neighbourhood of Tullow in the county of Carlow; few being raised for sale in this county.

There are other fairs also well frequented both for cattle and pigs, as Fiddown, 25th April—10th June—29th September—30th November.—Ballyragget, 20th February—20th April—22d June—4th September—20th October,—which is a great fair for fowl, and 10th December.—Knockmoyland, 5th August.—Ballycallan, 12th February.—Rosbercon, 19th April—4th May—7th June—10th August—19th October;—these fairs are well attended

because they coincide with those of New Ross.—Granny, 12th April—14th May—4th September—11th December.—Freshford, 5th August—17th December.—Urlingford, 12th May—15th August.—12th October.—St. Canice, 22d October.—Thomastown, 25th May.—Graigue, 22d June—4th November.—Mullinavat, 20th April—3d October.—Inistioge, 9th June—14th December.—the fairs of these four last places are most remarkable for pigs; at the last December fair of Inistioge, were exhibited about 500 pigs, worth one with another five guineas, according to the value of pork at that time. Castlecomer, 4th May—21st August—25th September.—The fairs of Bawn are remarkable for sheep, and being situated in the midst of a district distinguished for the improvement of the breed, ewes of the best sort are often to be had there; there are fairs at Bawn, 27th May—8th September—29th October.

There are several other places which have patents for fairs, but they are either not kept, or only kept for the sake of form; as at Kilmurry, which ought to have seven fairs, Kilmagany, Knocktopher, Powerstown, Stroan, Ballylinch, Burnchurch, Gowran, Churchland, Ballyhibbuck, Ballyhale; there are a few other places mentioned in the almanack, where, however, they are not always set down accurately; in all about 105 annual fairs.

The customs paid at fairs are different; for a dry cow, at some places 6*d*. at others 4*d*.; for a milch cow 6½*d*. for a horse 6½*d*. for a pig 3*d*. or 2*d*

for

a sheep 1*d.* or 2*d.* all sorts of manufactures and other articles are brought to the fairs; frizes and stuffs, &c. sold, pay custom by the piece; 6½*d.* is usually paid for liberty to erect a tent: and from 4*d.* to 6*d.* for a standing.

Sect. 9. *Prices of cattle.*

A good milch cow seldom sells under twelve guineas, the best for £.14 or £.15.; before 1790 their price was from six to seven guineas: the smallest sell now for about £.9, and in some mountainy parts occasionally for less; dry cows £.4 to £.11 and pretty good ones though small from £.7 to £.8: fat cattle from £.10 to £.20, two year old oxen from £.7 to £.10, fat oxen from £.14 to £.20: bad ewes for about 10*s.* a piece, and good ones from 40*s.* to 50*s.*: pigs six weeks old now often for a guinea, and slips for fattening for £.3 8*s.* 3*d.*: fat pigs nearly for 50*s.* a cwt.

The dry cows sold in this county are generally small of about 3 or 4 cwt., seldom 5 cwt., and sometimes under three: the oxen are something larger, but there are few of them: the mountain sheep are from 7lb. to 12lb. a quarter; the pigs are often fattened to 4 cwt.: a good milch cow bought for twelve guineas, may be sold lean at about seven year old for seven guineas in March or April, and may be fattened to be worth twelve guineas in November or December.

Sect. 10. *Green food.*

The use of green food for any species of stock is almost unknown to common farmers. Many of the cattle graze during the whole winter, but some are housed from Christmas to April. In the Welsh mountains waste grass is kept for the store cattle, into which they are turned for the winter, without hay, straw, or shelter; here they verify the account of Ireland given by Bede, "nemo propter hiemem aut fœna secet, aut stabula fabricet jumentis."

The only sort of green food used in winter, are furze tops pounded, which are commonly given to horses, and sometimes to cattle; horses become fat, sleek, and fine skinned upon this food, and can work well: they are prepared and used in this manner; the large branches of furze being taken off with a bill-hook, and carried home, the young shoots are cut into a wooden trough, which has a strong bottom, and is raised about a foot from the ground: in this they are pounded with a mallet, which has a head from sixteen to eighteen inches long, the broader end being about six or seven inches diameter, from whence it tapers gently to the other: the large end is bound with an iron rim, and armed with two blades, sunk deep into the wood, crossing each other in the centre, and projecting from one inch to one and an half; the handle is from three and an half to four feet long, fixed much

nearer

nearer to the small than the large end of the head; with this a man can chop or pound enough for eight horses in a day if the furze are cut for him; or can cut and pound alone for four horses: but the work is laborious; a horse will consume as much as will fill half a barrel. The sort preferred is the large French furze *Ulex Europæus*, as the shoots are more succulent and large; but the small Irish furze will answer. When the plant is in flower it cannot be used, as the blossoms are found to be too purgative; but as the plants flower at different times, they may be had during the whole spring. This practice has not been introduced above fourteen or fifteen years, and at first the furze were pounded upon a stone with a common mallet, or threshed with a flail; in this way one man could only serve two horses: the present mode is said to have been learned from farmers in Fingal near Dublin; and was previously practised in England. The furze breaker with a rolling stone and handle, or with wooden breakers, is more easily worked, and either of them could be moved by water. If furze were cultivated for this purpose, they might be a valuable crop; at present they are only cut from waste fields or ditches. Toomuch should not be given to horses at first.

Headrick says "a Scotch acre of whins is worth from £3. to £5. as winter food for horses and cows, to those who have a stone running upon its edge for bruising them, provided the shoots are not older than from three to four years, and that there are no impediments

impediments to interrupt the scythe, hence in many cases whins are the most profitable crop." On waste lands p. 20. See also Bedford Survey, p. 54, where it is said " French furze are cut on part of Wavendon heath every third year; the faggots cut on a rod of ground amounted to thirty; they were cut in February close to the ground, with sharp tools the edge turned upwards."

It is not unusual to throw potatoe stalks, when they happen to be dug green, to cattle; but it is observed that sheep are remarkably fond of them, and particularly of the apples, which fatten them greatly; and these may be given to sheep as soon as the potatoes are dug, even though the leaves are withered.

The Jerusalem artichoke, *helianthus tuberosus*, has been tried as a food for sheep by the Rev. Doctor Butler; he found them extremely fond of the roots, which agreed well with them; the quantity produced in ground without manure, was calculated to be at the rate of 100 barrels per acre. As they are very hardy plants, will thrive in poor soil without any manure, and are extremely productive, as pigs may be fed with them as well as sheep, and as horses are said to be fond of the tops, it is surprizing that their use in agriculture has not been more general. One advantage attends their cultivation, that they are not liable to be stolen like turneps, cabbages, young rape, and similar plants; they are not more difficultly extirpated from ground than potatoes, though this has been objected to them,

and

and will perish soon when the field is laid down with grass.

When potatoes can be cultivated at a moderate expence, they are perhaps the best food for any kind of stock. Mr. W. Barton has fed cows on potatoes from the first of January to March; they eat eight stone of day, besides hay, of which they took very little; they throve surprizingly, and left him six guineas per cow for the two months feeding. To fat sheep he gives cabbages, with hay, and potatoes when they are cheap; and has for the last three years got three guineas a piece for his two year old sheep. Every animal thrives well on potatoes, particularly if steamed or boiled; and no better food can be given to fatten poultry or pidgeons.

Sir Richard St. George has tried at Woodsgift, a variety of green crops: in 1801 he had carrots sown with Cooke's drill machine, and lucerne sown in the same manner; every other row of the latter was to be transplanted into carrot ground; both were very thriving crops; he had brockoli for winter food for his rams, and also Swedish turneps. He had saintfoin sown with a crop of oats; the plants came up well, but the poorness of the soil, and the dryness of the summer was against their appearance; if they survived the first season, no doubt they would succeed upon such a dry calcareous soil. In the beginning of April 1802, Sir Richard had just finished transplanting one acre and a quarter of lucerne into drills, dunged as for potatoes; it took him about

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two days and an half with twenty men, boys and girls each day. This crop was sown last year, and mowed twice: it is expected to bear mowing four times this season. The roots of the lucerne being above a foot long in general, were laid in the drills extended on the dung and hoed up with the hand-hoe at two feet distance, to admit the hoe plough afterwards. Mr. Robert St. George transplanted some in the same manner, cutting off the new shoots of this year, and shortening the roots to seven inches, they are then laid in the drills nearly upright, the boys and girls pushing them downwards with their hands between the dung and the drill, to prevent the horses displacing them with their feet, as he finds the easiest way of covering them, is by splitting each drill with the plough, that is by ploughing half a drill (or a *balk* which answers as well) against the next drill or balk, in which the plants are laid: they should be four inches asunder in the drills, aud the drills three feet distant, or three feet four inches, except in excellent land.

Mr. Robert St. George had saintfoin sown with wheat and chicory sown with barley together with clover; the plants of the latter were small. The cabbages he cultivates are the drumhead, which is perhaps the same as the flat dutch, the imperial and the common: the imperial is smaller than the common, but sweeter. He cultivates also in his fields and in drills borecole and savoys and a few carrots; he has also some beans: in summer he transplants his drumhead cabbages into rape ground, which had been

been burnt the year before; five boys or girls lay the plants in the rows, and five men with shovels put the dung to each plant, and with two ploughs, they finish three-fourths of an acre in a day, or about an English acre. He sows rape in the latter end of May, to transplant in July under the plough; the plants are laid by boys and girls in the furrow and two sods ploughed at each side to leave room for the plants to grow, and the ground to be drilled. He finds here stubbles answer well for transplanting rape into, as the land is rich, and the crops taken off in time.

He has cultivated the white Norfolk turnep, but prefers the red; he finds drilled turneps the best mode of cultivation, in fallow with dung, or after borecole or potatoes, without dung: "For *fallow sowing*, plough the land into drills two feet asunder, lay the dung as for potatoes, covering it in with the plough or horse-hoe: take a light roller, six feet long, to which fix a drill barrow, as suppose the Northumberland barrow, so constructed that two small wheels run in the furrows at each side of the drill with a cramp or spring hitting against the spokes of one of the wheels so as to keep the seed box in constant motion, dropping the seed regularly through a pipe on the top of the drill, a coulter with two small wings making a little furrow for the reception of the seed, which the roller covers in returning. In a fortnight after hoe between the drills, with a small plough having a narrow mould board,

board, with a skim coulter which prevents the mould falling to the left, to cover or destroy the young plants.

The hoeings should be applied as the state of the land appears, but in the cleanest land four hoeings are required, earthing up the plants again each time with a horse hoe; this is the Northumberland practice; it may be useful to know, that where the turnep land may not be all prepared for sowing in June (when the Swedish turneps should be sown) it answers as well to transplant this kind into drills in a month after, even in the hottest and driest weather, drawing the plants from the first sowing, where they are generally too thick; for this let the drills be rolled down as before mentioned, and boys and girls set to stick or dibble in the plants on the top of the drills, hoeing them afterwards at the usual times."

He has found transplanted turneps to answer extremely well: and has cultivated with success the Swedish turnep, and fed all kinds of cattle with them. He gave them to his working horses in spring twice a day, the manger full, cut small with the turnep cutter, with one feed of oats in the morning; they eat them greedily, as they did steamed potatoes, all the winter, with the same quantity of oats, and they have done their work as well, and are in as good condition to all appearance, but that they seem *a very little* more open in their bodies. His plough bullocks fed upon hay and sometimes sheaf oats, lay down in March in the scuffler,

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but upon giving them plenty of cut Swedish turneps twice a day, they look better, and stand up to their work the whole day. His pigs have also taken to them most fondly, and are doing as well as with the steamed potatoes; so that all the stock on his farm were feeding upon them in April 1802, except some cattle in the straw yard. He and his servants all agree that they are preferable to any other turneps, though the tops are a foot long; and these tops he prefers by far to the field borecole: these facts confirm the judgment of the Dublin Society, in their endeavours to introduce the use and disperse the seed of this invaluable plant. See also Nottingham Survey, p. 24. note. It should be sown three weeks or a month earlier than the common turnep, it may be transplanted as well as rape, and can be kept till midsummer; it is much hardier than any other turnep, and "eaten with greediness by all animals from the horse to the swine;" the method of giving them to horses in Nottinghamshire is, to cut off the tap root, to wash them, and to cut them roughly with a perpendicular hoe, and then to give them directly without drying; it was observed that they did not relax but the contrary; that horses fed on them and straw, worked as well and looked better than before; that one or two affected by the grease were cured by them, as they acted as a diuretic: one English acre maintained fifteen horses about two months, with straw: one man cuts in an hour as much as six horses can eat in twenty-four.

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Mr. Fitzpatrick of Urlingford, had last year six acres of green food: his cabbages were dibbled, which appears not to be so good a way as planting with the plough; they were then earthed twice or thrice: sometimes after the last earthing, he sows rape, which gives a succession in the same ground; his turneps are broad cast, and twice hand hoed. With his green food he gives a little hay to his sheep in a neat shed. He burns the weeds upon his headlands, and sows them with rape; an excellent method of at once weeding his ground, and applying the vacant part of his fields to a profitable use.

Cabbages may be preserved the whole winter in a trench or deep drill in dry ground; the plants should be bound with a twist of hay, and earth placed between each to prevent them touching; they should be covered with soil six inches deep, and will keep better than if turned on their tops.

On Lady Ormonde's demesne at Castlecomer, were five and an half acres of turneps, on ground that had been drained and burnt; they were sown late, and part were intended to be transplanted in September; fifty store sheep were to be fed by them in pens on the ground. The introduction of green crops or improved tillage by landlords is highly commendable; good practices in time diffuse themselves; it was highly pleasing to see three acres belonging to a little farmer, in the very centre of the colliery, sown with turneps; nor should it be omitted, that the same man had also a small water meadow,

meadow, extremely productive, and relieving the eye with verdure, where it was not expected.

Few green crops are more profitable than rape, whether fed or cut, nor cheaper in cultivation; the practice of an intelligent farmer is to skin the ground with a plough made for that purpose; to burn it and sow about the 10th of July, 8 lb. to the acre; to cover it by driving sheep. Sheep may be grazed upon it, twenty to the acre, from October to March, but not kept on at night; and they are thus fattened. If intended for bullocks, he keeps it up till the 1st of December: if they are in good condition when turned in, they will be fat in a month; half an acre is the portion allotted to each. After having been grazed by the bullocks for a month, he puts it up, and expects ten barrels of seed per acre; this latter practice is too exhausting, except the soil is rank. He afterwards gets eight guineas an acre for the land, to plant potatoes in, without any farther manure.

Mr. Garraway of Castlecomer had ten acres of rape in burnt ground, which was to be let afterwards for potatoes and limed; one stone of rape was sown to the acre; after this management these lands produce very fine grass. Rape eaten down by sheep grows up again in less than three weeks, and is ready to afford a second pasture.

Vetches have been very little sown here, though their use begins to be known in the county of Wicklow; four acres on a farm in that county in poor ground not manured, and sown in the middle

of

of November, supported without any economy, for above two months, thirteen cows, eight bullocks, fifteen horses, in all thirty-six head of cattle, besides some that was given to pigs. See moreover Captain Fraser's Survey of Wicklow, p. 155, and the whole section. Mr. Robert Flood sowed a few winter vetches in this county, and found them a productive crop: he failed however in getting them off the ground in time for barley. They may be sown on a wheat stubble, and eaten off by sheep, by the end of May, in time for another crop.

The succession of green food may be carried through the year: See Bedford Survey, p. 21. where turneps are mentioned to be sown broad cast, to last until March; turnep rooted cabbage succeed these until May or June, and after that lucerne comes into use, which is cut three or four times, and continues until turneps come in again.

The lighter grounds of this district, on a dry substratum, seem peculiarly calculated for saintfoin; not only those which have a calcareous bottom, but others; for though Mr. Marshall says this plant will not thrive in a soil which has no calcareous matter, yet I have had most luxuriant plants of saintfoin living these eight years, in poor land, that has not any appearance of calcareous mixture whatever; they were manured with a little sea-coal ashes for two seasons, and with nothing since. Farmers must not be disappointed by the appearance of this plant the first year, when it may appear small and weak;

some

some which at first were thought so thin as to be scarce worth preserving, have soon become the finest fields; and for this reason, that the young plants having room to feed at first, gained strength to send their deep fibres into the lower strata. As the plants are small the first year, some have advised sowing seed clover with them, which will die when the saintfoin grows large, trefoil has also been recommended, but either would greatly rob it of nourishment; and this plant, which will give abundance of green food from the poorest grounds, for thirty years, should be indulged the first season, and well cleaned, after which it will, as well as lucerne, overpower and destroy all weeds.

The difficulty of obtaining seeds in this country is an obstacle to the growth of many of these plants for green food, which might be obviated in some degree by the farming societies giving premiums for the sale of the seeds, or importing them, and having them retailed on their account at a low price; and also by giving them away as premiums or as encouragement to deserving farmers: however rape and turnep seed are to be had cheap, and are little used: indolence and ignorance make more bad farmers than want of money; "operâ, non impensâ, cultura constat," is an old observation. Clover seed, though very dear, is partially sown, but not for its right use, as green food; and it seems to succeed peculiarly well in our lands; as does the perennial clover, or cow-grass, *trifolium alpestre*.

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There are other plants, little tried, which might be introduced into cultivation, as the *lathyrus pratensis*, yellow vetch, common in our best grounds; the *trifolium melilotus, officin. var.* 3 *Linn.* or large melilot trefoil, with a white flower, a shrubby biennial plant growing to a vast size, and that would bear repeated cutting; and perhaps the everlasting pea.

Sect. II. *Pasture.*

Less attention seems to be paid to this object than to any other; pastures in the tillage districts are in general such fields as will no longer bear corn, *let out* without any seeds, covered with a few starved and useless plants, and producing for two or three years, scarce any grass, except *cynosurus cristatus*, whose dry stems are called *traghneens* in this country, and windlestraws in some parts of England. The mountainy pastures are left in a state of nature, unfenced and unimproved: even near Gowran are some sheep walks, perfectly uninclosed, wild, and waste, although limestone lies in plenty near the surface.

Some of the best pasture in the county is a piece of land adjoining Ballyragget, called the grove; it has a fine loam about twelve inches deep over a limestone-gravel, and will fatten a large ox to the acre, or a cow and a sheep. It is in general reckoned very good ground that will feed a cow to the acre: the heaviest stock known on the best lands,

is seven wethers, and that very rarely. A good acre will feed four ewes and lambs till November, and it is accounted not bad ground that keeps three. Farmers in the best parts say, " that they require hay in the winter to make them have good wool, and fatten soon, and that hay was never better applied, let grass be ever so good, and ground ever so sheltry:" on some pastures, however, the sheep refuse hay.

The price of grazing for a cow near Kilkenny, is 2*s.* 8½*d.* per week; for a horse 7*s.* 7*d.*; the price in other parts is 3*s.* 6*d.* a week for a horse, and £.1 : 14 : 1½*d.* for a cow by the year: near Castlecomer, grass for horses is from two guineas to fifty shillings a year, and for cows forty shillings: great part of the inhabitants near the collieries, support themselves by keeping horses, and letting out land for grazing is a common practice: not above half the population being employed in the coal-mines, the remainder earn their subsistence as carriers.

There is a good deal of kind pasturage in the barony of Galmoy, which supports about three sheep to the acre; some lands in the parish of Erke are laid down with white meadow grass, *holcus lanatus*, and trefoil, *medicago lupulina*. To improve mossy pastures in this district, the mode is sometimes adopted of turning the sod lightly over, sowing grass seeds and rolling it. The proportions of a farm in Erke were, 10 acres tillage, 24 meadow, 66 pasture, total 100 acres; stock 100 sheep.

One of the best pasture farms in Galmoy is Kilpeshuran, containing 760 acres; one part of 230

acres feeds 200 ewes, 100 wethers, and 80 cows for six months in the year; for the other six months it keeps about 100 sheep, which have the run of 100 acres in addition: 130 acres, called the bullock park, feed 70 store cattle for six months; 30 acres of this part are called the grass-guard, as this ground used to be let for the horses of the troops at Kilkenny; they have not been here however since 1793: 130 horses were, before that time, kept here for five months, at 2*s.* 4*d.* a week for each horse; after which 150 sheep were grazed on the same ground. The mountain part, consisting of 260 acres, feeds 50 bullocks, 18 heifers, 8 cows, and 8 breeding mares, or horses, for six months: 110 acres of meadowing sold at an average of four pounds per acre; the lowest price £.3:8:3*d.* and the highest for a few acres seven guineas: no tillage on this farm, except the gardens of three cottiers, who have six acres between them, and of two shepherds who have four acres: the tenant resides in the Queen's county. The weight of the cows fed does not exceed 4½ cwt.: the bullocks are not fattened on it, but fed for one season as store cattle; they are bought in at three years old: the sheep are of the common Irish sort, and are not bred here. The grass inclines to a fine close herbage, and is rich in the lower part; it is some of the best natural pasture in the district; and should be compared with that made by Mr. St. George from heathy mountain, or poor land before mentioned; and which is capable of supporting in good seasons near four sheep to the acre. A part of this county, now almost waste,

waste, is capable of being converted into sheep walks equally good: some of this sort of land, in the barony of Fassadinan, lets for two shillings an acre; a farm near Castlecomer, of 200 acres, was let lately for twenty pounds a year, and the tenant said he had a hard bargain.

Near Durrow is some dry sheep walk, which may support in summer three sheep to an acre. Mr. Delany has here made an improvement upon rough and furzy land, consisting of a light soil upon limestone; he first burnt the sod, and planted potatoes; had a second crop of potatoes with dung, and laid it down with barley, and four barrels of grass seeds to the acre, with fourteen pounds of white clover: some he laid down with two crops, having first fallowed it, and afterwards spread dung on the surface. All light grounds should be manured on the surface after they are laid down; in these lands the manure is immediately washed through if ploughed into the soil. On ground with a shingly substratum, I have found no method improved the grass to such a degree as penning sheep; about a square yard is allowed to each sheep, and they may be removed every second night: penning on grass does not appear injurious to them; but ewes must not be penned from the time they begin to be big, till after Midsummer. Having laid down some pasture land in various ways, I found no method answer so well, as sowing the seeds without any corn, in summer, and along with rape; as soon as the rape gets up, sheep are turned in to keep it down, and when they are taken off, it grows again,

and may be made thus by alternate feeding, to serve part of the winter, while the flock manure the land and the young grass at the same time. The ground last laid down in this way, was burnt slightly for turneps, which were fed off by sheep; a crop of oats was taken, the field was well limed, and white clover, rye grass, trefoil, and common hay seeds sown with rape, about midsummer. White clover sown in September perished entirely: land laid down with barley answered better than with oats: lime on the surface did not seem to have much effect; it however slowly killed heath. In some places liming the surface is observed to encourage the growth of rib-wort, *plantago lanceolata*. This plant is the commonest in most of the ground sown with grass seeds in the barony of Iverk; whole fields seem nearly composed of it, that were intended for meadow. In ground manured by penning sheep, *festuca duriuscula*, hard fescue grass, grows up with great luxuriance; it is very common in our dry pastures, much more so than the *festuca ovina*, sheep's fescue, for which it is sometimes taken; they may be easily distinguished, by knowing that the former has a creeping root, and the latter is rather remarkable for the distinctness of its tufts, which never spread in the same way. Sheep seem very fond of yarrow, *achillea millefolium*, as Anderson has observed, and suggested its culture: on observing patches that were eaten very close, I found they consisted entirely of this plant; it has numerous succulent leaves, gives much herbage, and the sheep never suffer it to flower; a field remarkable for fattening

tening sheep had a large quantity of this plant, which grew with peculiar luxuriance near an old lime-kiln.

Mr. Boyce lays down his pasture fields with this course; ley oats trenched, potatoes with lime compost, barley with ten pounds of white clover, and ten barrels of hay seeds: he tried five pounds of clover, and five of trefoil, but found the former to answer better: he plants his potatoes with lime, and keeps his dung for the meadows. At Desart some ground was laid down with bere; the course was, 1. ley oats, 2. potatoes, 3. potatoes, 4. bere, and grass seeds sown in March, and again in April; each crop was manured. At Woodsgift rye grass and white clover were sown, with a little rape, in the beginning of July; and upon light ground this is much to be preferred to sowing them with drilled corn; though the corn may protect the grass at first, it impoverishes the soil. Mr. St. George proposed laying down some ground with turneps, sowing it along with the clover and grass seeds, and eating it down as rape.

On some of the mountain ground four acres are allowed to a sheep: but sheep are banished from many places for want of fences, and the land seems applied to no purpose but the growth of heath. These heaths are very liable to take fire in dry summers by accidental circumstances, and cause some damage; the fire however eventually improves the surface, when not too intense, and sometimes is excited for that purpose. That the hilly tracts of this

this country are capable of assuming a different aspect by culture, may be seen by the small enclosures near mountain villages, where the natural grass by a little shelter and accidental manure becomes surprizingly green. Great injury is done to mountain land by cutting the surface for fuel. The turf beneath is but one spit deep; and if, when this is removed, the tenants were obliged to replace the sod and manure it with gravel or to reverse the sod, and manure the back, sowing grass seeds upon it, the damage would be much diminised.

Improvement is not much impeded in this country by rights of commonage; there are few persons to assert such rights, if they exist, and landlords seem to have an undisputed authority in partitioning lands, which though grazed in common, still confer no legal claim upon the occupier; and it is better that it should be so: the greatest obstacles which we have to improvement in agriculture, are tilling in partnership and grazing in common; and the few real commons which we have, are mere nuisances; but these by encroachments and sufferance have been much diminished. The commons of Callan contained above 1500 acres, but much more than half, have been enclosed by the adjoining landholders at different times: not long since about 70 acres were enclosed by Mr. Val. Smith, an agent to some neighbouring lands, and let again to poor persons at a high rent, without any obstacle or objection being made: it is certainly better that the land should be inclosed, but some deference should be paid to

those

those who may have a title to the property. The two commons of Knocktopher, consisting of irregular swamps, but capable of great improvement, are circumstanced like those of Callan: near Gowran is a small common; and these are the only lands of this description, which are of any consequence in the county.

Plants.—It may not be improper here to notice a few plants, though not all, belonging to pastures or meadows: *Orchis bifolia, maculata, pyramidalis mascula, morio,* grow in moist meadows, and *Orchis conopsea* in limestone soils; **Verbena officinalis,* vervain,

* This plant is regarded with a superstitious veneration, derived from ancient idolatry*, its Irish name is *lugh na grass* (as near as I could take down the pronunciation) and it is esteemed as a sovereign remedy in many cases. When the country doctors among the common people, or old women, pull herbs for medicinal purposes, they always add some superstitious invocation, and most plants are taken up "in the name of the Father, the Son, and the Holy Ghost;" but when vervain is pulled, this peculiar incantation is used,

"Vervain thou growest upon holy ground,
In mount Calvary thou wert found,
Thou cur'st all sores and all diseases,
And in the name of the holy Jesus
I pull you out of the ground."

The superstitions of ancient religions are generally transferred to the present profession. Medicinal virtues are attributed to almost every plant, by those who profess that knowledge among the common people; their knowledge they derive from tradition; in some instances they are very right, holding several powerful plants, as dwarf elder, water-dock, and others, in high estimation for their proper uses;

* See Maurice's Ind. Ant. VI. p. 226.

vain, pastures and road sides; *Valeriana officinalis*, moist ground, both with white and with pinkish flowers.

Iris speudacorus, flagger, in wet grounds, the leaves are given to pigs for litter, are also made into mats, and are said when they have heated in heaps to be eaten by cattle.

Iris fœtadissima, banks of ditches near Bennet's-bridge and in Galmoy.

Borago officinalis, on the ruins of Granny castle and bank of a ditch near the bounds of Carlow.

Lithospermum officinale, near Newbridge.

Hyoscyamus niger, near Kilkenny and in the lime-stone district.

Symphytum offic. Cynoglossum offic. common.

Atropa belladonna, grows on rubbish in the inner court of the ruined monastery of Kells.

Humulus lupulus, hops, this plant seems certainly indigenous, as I found it in several places, some of them very wild, and near which it could never have been cultivated, as in the parish of Roer, on the side of the road to Graigue, half a mile from Mount-garret ferry, and near Glanmore, on the hill in the way to Waterford; it grows in a hedge near Pilltown,

uses; applied by them in a cold infusion, I have known *prunella vulgaris*, Ir. *caraugh beg*, self-heal, cure the most obstinate fluxes: for the same purpose they use *tormentilla officinalis* with sugar: a longer account of their medicinal practice might not come within the object of this work. In some instances they mistake one herb for another; they translate English names into Irish, and Irish into English, and for several plants have no real Irish name.

Pilltown, where it was pointed out to me, together with *Lonicera var. fol. quercinis* oak-leaved honey suckle, by Mr. A. Caldwell; on each side of the road are orchards which have been there from time immemorial: it grows on the banks of meadows near Rosbercon; and near the town of Inistioge, in the latter place indeed there were hop yards many years ago, which generally failed from mildew. Mr. Caldwell observed also that *Geranium lucidum*, grew on the houses of Thomastown, plentifully on the left bank of the Nore, but no where on the right; it ornaments with its red stalks many roofs also at Kilkenny and Ballyragget.

Vinca major, supposed not indigenous, but growing on the side of the road to Carrick, half a mile from the bounds of the county, in a hedge, not near any garden; it is not uncommon in Iverk, though probably not wild, as it is planted by the common people as an ornament at the heads of graves in the churchyard of Owny.

Chlora perfoliata comm:—*Linum catharticum*, Ir. *Viosach* and *lusseigh: Arum maculatum*, Ir. *guirem cuighigh: Conium maculatum*, banks of ditches. *Cancalis anthriscus* comm:—*Malva moschata*, ornaments the banks of ditches, common; *Malva rotundifolia*, road sides, and *M. sylv.* with bluish white flowers: *Artemisia absinthium*, road sides, common near Kilkenny: *Saponaria officin.* meadows, Three-Castles: *Allium ursinum* common, *Allium carinatum*, meadows near Inistioge, on the banks of the Nore; *Poa rigida*, and *compressa*, walls; *Sedum*

reflexum,

reflexum, walls Kilkenny; *Cheiranthus cheiri*, walls common:—*Poterium sanguisorba*, walls, dry pastures; *Aquilegia vulgaris*, Ir. *lugh na gulligh*, pastures Brownsbarn; *Nepeta cataria*, same place, and near Durrow:—*Origanum vulg.* common; *Melissa calamintha*, dry ground near the Nore among rubbish:—*Mentha arvensis*, pasture; *Mentha rivalis* and *rubra* Sole, wet ground; *Mentha aquatica*, water; *Mentha rotundifolia*, church-yard at Tulloherin, and church-yard at Burnchurch:—*Orobanche major*, growing out of roots of ivy, Woodstock; *Orobanche erecta*, under a hedge, same place:—*Anthyllis vulneraria*, Ir. *pishanagh*, dry gravel pits: *Hypericum humifusum*, mountain pasture; *Hypericum perforatum*, road sides, common; *Senecio paludosus*, water; *Centaurea scabiosa*, stubbles; *Sambucus ebulus*, Ir. *malamhorth*, near Burnchurch, and near Skahana; *Veronica serpyllifolia*, Ir. *ghreim phoul*, moist ground; *Veronica arvensis*, Ir. *righm na bollehu*, dry places; *Ajuga reptans*, Ir. *glassar cheile*, common in moist fields; *Vicia cracca*, Ir. *pis teignan*, meadows and hedges; *Phallus esculentus*, morell, grows in fields near Kilkenny; *Agaricus orcades**, grows at Danesfort and near Kilkenny, and is gathered and eaten under the name of champignon;

* This plant differs from *agaricus orcades* of Withering, in having a thicker stem, otherwise it agrees with his description; perhaps it is the *agaricus mouceron* of Bulliard, whose description and figure I have not seen, see IV. With. p. 221. other *agarici* grow in circles, particularly the common *agaricus caspitosus*.

pignon; these, besides the mushroom *Agaricus camp.*, which is very common, are the only fungi that are used as food.

Plants are sometimes met with in a wild situation, which cannot well be supposed indigenous, as *Valeriana rubra*, on walls, and, on a wall near Castlecomer, *Anthirrhinum purpureum*; on the banks of the Dinan, in a gravelly soil, on the land of Inchikyle, belonging to the glebe of Mayne, grows *Satureia montana*, a native of the south of Europe; it is constantly eaten down by sheep, who are extremely fond of it, and will not permit it to flower.

Sect. 12. *Meadows.*

Meadow lands are either those which have been laid down for the purpose, or such as, from situation near rivers, could not easily be tilled. In the upland meadows three tons per acre are reckoned a good produce. Tillage farmers, and particularly in the wheat district, are often without any meadow, and are obliged to purchase hay from a distance, at the rate of from six pounds to eight pounds an acre; from fifty shillings to five pounds is the price of the worst meadowing, and of the best ten pounds. It is common for gentlemen to sell the grass of their demesnes for this purpose; such land is often kept many years without manure, and sometimes gets a coat of compost made from old ditches, or earth and lime,

lime, but seldom any dung: the purchaser generally endeavours to cut the grass as late as possible, and also in cutting to mow the sod as close as he can: both practices are highly injurious to the land; the roots of the grass are not only exposed, but injured: and it is doubtful whose conduct is most to be wondered at, that of him who sells off his ground the produce, which by being used upon it would be productive of much greater profit, as well as service to his farm by manure; or of him, who goes to the distance of some miles to purchase that dearly, which he might have had easily at home for less trouble and expense than the draft may cost him: he is often obliged to draw the hay home very late in the season, the seller keeping it in cocks in his field until it is paid for.

Some small farmers lay down a few acres for meadowing, with common grass seeds saved under their hay stacks, sometimes with a little red clover; and the seeds saved on the farm are not unfrequently mixed with red clover. Near Rosanany a field thus sown had a large proportion of it: it was laid down after nine years tillage; the seed was raised on the farm, from grass seeds bought the year before at Carrick, for 3*s.* 3*d.* a barrel; the soil light, thin, upon red slaty argillite; produce, ten load of hay per acre. The drier lands, on a slaty bottom, are much inclined to produce red clover spontaneously; as those on a calcareous basis are, to throw up the white. In the southern part of the county they often sow white hay-seed, *holcus lanatus*, and in the northern

thern part, rye grass: in the fields thus laid down in Fassadinan, and also near Kilkenny, instead of throwing up rye grass, the whole ground appears covered the first season with *bromus mollis*, which is cut for hay; and the next year it gives a good crop of rye grass. Nothing can persuade the farmers that these are not the same plants; they say the brome grass changes into rye grass the second year, when it is not so strong. The cause, however, of this singular appearance seems to be, that the rye grass, like many perennials, is weak the first year, and is so overpowered by the growth of the brome grass, which is common every where, and whose seeds were probably sown along with it, that it cannot rise high, and makes no shew; while the other, being a biennial plant, is then in full vigour, and perishes when it has shed its seed; the seeds of the bromus too, shed in the mowing, which is always late, are well armed by their hard awned husks, and are preserved in them safe from moisture and insects, until the ground is tilled again. By viewing their structure, it may be seen how well they are calculated for preservation, like the seeds of many short lived plants.

In a meadow at Castlefield, near Gowran, the following plants were the most conspicuous, pretty much in this order as to quantity:—*Dactylis glomerata*, cock's foot grass; *lolium perenne*, rye grass, very rank, and lodged in a part that had been manured by pigeon's dung; *avena flavescens*, yellow oat grass; *bromus mollis; cynosurus cristatus*, dog's-tail grass;

grass; *holcus lanatus*, white meadow grass; *poa trivialis*, rough meadow grass; *heraclium spondylium*, cow parsnep, Ir. *Liengerty na much*; *rumex crispus, obtusifolius*, docks; *urtica dioica*, nettles; *chrysanthemum leucanthemum*, ox-eye daisy; *hypochæris radicata*, large hawkweed; *trifolium procumbens*, and *trifolium pratense*, Ir. *seamair dearg*; *vicia sepium*, hedge-vetch; *plantago lanceolata*, rib wort; most of them, except the *poa*, which was the scarcest grass, and the four last plants, which were the least numerous, either harsh grasses or bad weeds. This meadow was sold for seven guineas per acre; another meadow in the neighbourhood, full of cow parsnep, with *centaurea nigra*, knapweed, and such plants, for £. 8: these prices, received without any trouble, induce the proprietors to sell their grass, which is usually cut in September; the farmer pays besides 4*s.* 10½*d.* for mowing, and draws it home often three or four miles, giving little attention to any other culture, but his wheat and his imperfect fallows.

The farmers regard *phleum pratense*, cat's-tail grass, rye grass, with *holcus lanatus*, *festuca elatior*, and all those that have close heads, as good grasses, probably from their thick appearance; while they hold in little esteem the poas, and all that have open panicles, and therefore appear light: the *dactylis glomerata*, they consider as good for little, and say that cattle in pastures will eat round it, and never touch it willingly. In meadows near Kilkenny grows *lolium arvense*; but the best of all grasses, *alopecurus pratensis*, is not common; it grows on the banks

banks of ditches, and in deep grounds here and there: the *agrostis vulgaris*, grows principally on light grounds; *festuca rubra*, and *f. bromoides*, are not uncommon. Some other grasses have been already noticed, and it is needless to enumerate all the common ones.

Mr. Neville, of Marymount, broke up a meadow as soon as it had been mown, burnt it, and laid it down immediately with grass seeds, which answered well, and improved the quality of the herbage; the ground had been originally boggy, and reclaimed by gravelling.

Mr. Stapleton finds that by not admitting stock on the aftergrass of his old meadows, the ground is enriched, and gives good crops of hay, which improve every year, and that this answers better than the practice many farmers follow, of mowing and grazing every second year. "In Fassadinan, and the north of the county, upland meadows are usually made from land long exhausted by tillage, limed when convenient, sown with barley or oats, (though sometimes without either,) the sowing is finished in broad sets, and common, or white, or rye grass seeds, three or four barrels to the acre, sown under a light harrow: when lime is not used, dung is sometimes spread on the surface after the first cutting; water is occasionally made to run over it in winter and spring. Lime mixed with old ditches, and exposed to the air six months, is often spread on the surface after the first or second cutting. When the grass grows bad, the fields are pastured for a season or two. Low moist land, inclined to coarse herbage,

is commonly enclosed for meadowing, and cut constantly, without being manured, or pastured, above once in twenty years; and the same may be said of many upland meadows."—Mr. Ellis.

Meadows are mostly from old grass land; and are put up in March, or sometimes in April: some are cut in August, some in September, and some not until October, and mown very close. When land is laid down for meadowing, five or six barrels of white hay seed is sometimes sown; but less when it is mixed with a little red clover: the clover exhausts the ground previously injured by successive corn-crops, and perishing in a year or two gives place to weeds; it has rarely been cut twice in a season. Common farmers spread potatoe-stalks on their meadows, in autumn or winter, which when dry they rake off in March: and they find this of great service, probably from the effects of shelter.

Water Meadows.—The system of watering begins to be adopted, though not extensively: above fifty years ago it was practised by the late Sir William Fownes at Woodstock, and was imitated, though on a small scale, by a few of his tenants. On some of the hilly grounds in Idagh, and in other places, the farmers occasionally turn streams over their grass, either for meadows or pasture, in winter or spring, which gives them a very green appearance; but it is done slightly, and without skill or system.

Several persons have tried the practice in a better manner, and all with success. Mr. C. B. Ponsonby, on his farm in Erke, has about ten acres of water meadow on a slope, to which the stream is conducted, when

when wanted, by a wooden trough. Mr. Shaw of Sandpitts, near Bessborough, watered a field for eight years, and, without any manure, found the produce as good the last year as the first. Miss Doyle, near Graigue, has watered the same land for six years, and mows near four ton of hay an acre from light ground: the low land meadows in the same district are less profitable: the value of meadowing in low ground near Ullard, was five guineas, and the grass was much later cut.

Mr. P. Walsh, of Belline, has constructed a water course, from which he has turned the water over some of his ground, though its principal use is to serve his house; this water course runs for a good way on the top of a bank, which is fifty feet broad at bottom and eight at top, and seventeen feet in perpendicular height, and might be applied to watering more ground, by increasing the channel; it is well sodded, and gives a good pattern for constructing water courses where they are necessary, in crossing a valley or hollow. But the hills of this country are so full of springs and streams, that it would be in general very easy to conduct them along the sides of declivities at a trifling expense, and to water most of the lands beneath. In the calcareous district, however, where watering seems most wanted, and would have the greatest effect, streams are more deficient.

Mr. Power, of Kilfane, waters every year some meadow land on the side of a hill; the soil is light, and would not before have produced two ton of hay per acre, but now gives about four ton, and that of excellent quality. The expense is merely

the occasional attendance of one man, after the drains have been laid out and made. He turns the water on it in autumn; the weeds seem rather to be diminished, and the grass to be increased; the field produces trefoil and clover. The substratum consists of gravel to a great depth, and the water sinking through this, rose again at a good distance, somewhat lower, on a neighbouring farm. It is on such soils, which the water quickly sinks into and passes through, that it seems to have the greatest effect; none of it can lodge or remain to damage the ground, which by being wetted and dried alternately, and being loosened about the roots of the herbage, is pulverized, as well perhaps, as by tillage, at the same time that it does not suffer, as fallows may do, by evaporation; the water not only feeds the plants by its own decomposition, but has several chemical effects in assisting new combinations, and preparing vegetable food, while it protects the grass from the effects of frost, and keeps the surface at an even temperature; for these reasons it is obvious, that the flow of the sheet of water over the surface, or panes, should be rapid, that it should be sufficiently copious, that it should cover the ground in hard weather, and that the field should not be too long either wet or dry. Streams taken immediately from their source, are found very efficacious in watering, as the temperature of springs is higher in winter than that of the atmosphere; other streams are favourable from the depositions they leave, as those that flow from calcareous strata, or through woods, or near road sides; and particularly the water in which flax has

has been steeped; water from bogs may sometimes have an astringent quality, which is easily corrected by throwing a little lime into it. Where there is a shingly or porous substratum, as often occurs in this district, the catch-drains for watering sloping fields must not be more than from seven to ten yards distant, which will effectually prevent the water sinking, if it runs as fast as it ought.

Mr. W. Barton is the person who has carried this improvement the farthest; he waters yearly about sixty acres; and has done so these fifteen years, since he observed the effect which a great flood had in a little stream, that runs through his ground, and which takes its rise in a hill, the lower part of which consists of limestone-gravel and marle: he takes advantage of the floods, and by an embankment turns the water into channels furnished with wooden sluices, and spreads it all over his fields. His first mode of stopping the current was by faggots of furze laid across and pressed down, which became very soon filled up and perfectly staunched with mud. He is going to construct a large wooden sluice where the rivulet enters; but the former method will answer as a temporary one, in all muddy streams. He waters for meadow as soon as he can take off his stock; and calculates that it makes three guineas per acre difference: for pastures he turns the water on in February and March, and observes, that it appears to rot the soil beneath the sod, and makes the herbage soft. The grass was remarkably thick on this watered pasture, and the stock it supports in summer is surprising; nor is it injurious to sheep, though it might

if watered in autumn: he has had an ewe, who lived till nine years old, and died fat, having always had twins, and always fed on this ground: he observes that when his meadows grow dirty with knapweed, cow parsnep, or other perennial weeds, they may be made clean for several years, if eaten down very close by sheep.

In some parts of England they plough the main water course, and drag a harrow along it, to carry the soil into the meadows (see Hereford report); in Hants, they shut up in November, water alternately every week till March, feed with ewes for six weeks, water again, and mow twice.—Report, p. 19. In Dorsetshire, the aftergrass is again watered till the beginning of September, and grazed by cows till near Christmass.—Report, p. 34.

Embankments.—There is a good deal of land bordering both on the Suir and the Nore which is embanked, and chiefly used for meadowing. About 200 acres, beginning near the Castle of Tybrachny, extends towards Fiddown, along the Suir: great part of this work was done 150 years ago, and as tradition says by an Englishman. It is probable that the improvement was made or begun by Colonel Axtell, who became possessed by grants under Cromwell, of the estate now belonging to the Earl of Bessborough. General Ponsonby is said to have accepted this estate in exchange for that of Ballyragget, which Axtell afterwards forfeited together with his life. Axtell's son retired to America, and it is remarkable that his descendant suffered there as a loyalist.

loyalist. If Axtell executed this embankment as seems likely, he has left a durable monument, which is more to be admired, as it was probably the first attempt of the kind on these rivers, and set an useful example of improvement. Another part was embanked about sixty years ago. These meadows generally give four tons of hay per acre: on higher ground three tons are reckoned good produce; the meadowing sells from £.4. an acre to £.6. They are often pastured until the end of April, but the usual time of putting up these meadows is the first day of April, and of upland meadows the first of March, at least by the best farmers. Some of the embanked land lower down, between Fiddown and Granny is richer and more valuable. In Portnascully, the meadowing sells for £.8. an acre. There are in all near 600 acres of embanked meadow on the Suir.

There are several embanked grounds bordering the Nore, in all about 400 acres; the most considerable of these is in the parish of Roer, and belongs to different proprietors: the embankment is about two miles long, and the ground of various breadth; some of it is pastured and has formerly been tilled, but the greatest part is constantly mowed; it is intersected by open drains, terminating in a main drain six feet at top and from three to four at bottom, parallel to, and behind the embankment, through which the superfluous water is conveyed into the river by sluices, consisting of a wooden funnel about a foot square, with a proper fall,

placed

placed half way between high and low water mark, and closed at the end next the river by a valve on hinges, which is shut by the flood water, and opens when it ebbs. The bank varies at top from three to six feet, is often five feet above high water, and three feet above spring tides; the base is about ten feet wide, between which and the main drain is an off-set of three or four feet. The top of the bank is apt to crack in dry weather, which renders it liable to be injured by great floods. When a breach is made, the force of the stream directed partially against one spot, tears away the foundation in such a manner, that the new bank is usually constructed within the site of the former one, and a piece of ground is abandoned to the river: the repairs are often expensive, though all the neighbours generally assemble to assist. The worst of this ground is let for 23*s.* an acre; the best for three or four times as much; the hay is generally sold for six guineas an acre, sometimes eight. The pastured part is full of rushes, which are cut for thatch, and sold by the boat load; the soil deep formed from decayed vegetables; in some places very dry, and producing the common plants of a dry soil, among others, *bromus erectus*; on the sides and base of the embankment the plants grow luxuriantly, as *dipsacus sylv.* and *malva moschata*, which is strongly scented. Greater part of the meadows are grazed in winter.

On the opposite side of the river are several smaller embankments; the fields are often very wet, full

full of rushes and *equisetum;* the best meadows are near Rosbercon, belonging to Mr. Lamphier, he puts them up the first of March, and has generally six ton of hay per acre: from one half acre were said to have been mown fifteen loads; twelve loads an acre are reckoned the proportion of some embanked meadows higher up. Mr. Lamphier's meadows though in better condition than any other, are very full of such weeds as are usual in rich ground, as docks, thistles, nettles, wild turneps, and in wet places, flaggers and rushes. His higher ground he lays down with 14lb. of red clover, and 7lb. of trefoil with grass seeds, and these he cuts to soil his horses with as green food, and finds the return very great.

Below Rosbercon the flat grounds on the river partially embanked, are full of flaggers and in a state of great neglect; the same may be said of some ground on the Nore near Kilkenny; and of some on the side of the Barrow near Newbridge: mere weeding would serve these grounds: those below Rosbercon require attention to their banks, and might be made profitable: when intended for meadowing they are put up too late. There is one embankment in this district that deserves particular notice; it is in the parish of Kilcollin, almost opposite to the great island, and was constructed by the late Mr. Devereux of Ringville, twelve or fourteen years ago; between eighty and ninety acres covered every tide, and worth nothing, are now rendered worth £.4. an acre; the embankment is formed by a wall

a wall about sixteen feet high, raised eight feet above the usual tides; it is formed of great stones, and protected to the height of eight feet by a bank of large stones, which are in some parts secured by stakes of oak; these stones have now become covered and bound as it were by fuci and marine plants. Where the foundation was in mud, part of it sunk a little at first, but a single layer of furze tied in bundles and rammed down, made a secure foundation in the softer parts. The wall is five feet broad at the base, and diminishes upwards to about sixteen inches at the top, where part of it is sodded; five feet of the upper part are built with mortar; immediately within the wall are two feet of sods, afterwards stuff from the river side, forming altogether a bank within the wall of about fifteen feet at the base, and eight feet at the top. On this a row of scotch fir and horn-beam are planted, the latter grow best, but neither well. From the bank to the main ditch is a space of eight yards wide: two valved sluices lead from the ditch to the river: the embankment is about an English mile in length. For constructing it Mr. Devereux first agreed by contract with persons from Inistioge for £.1450, but when they had received £.940, they gave it up; and it probably cost him in all above £.2000: which was the same thing as purchasing a fee simple of £.4 for £.25, supposing that only eighty acres were reclaimed: had it cost £4000, it would still be cheap, and shews what great profits may be made by such improvements. In the reclaimed ground

potatoes

potatoes were first planted without manure, and gave a great crop; barley succeeded, and did not answer, the soil not being suited to it, but grass seeds sown with it grew well, and immediately supported sixty cattle the whole year, both with grass and hay: great part is now grazed, and throws up thick and strong herbage.

Opposite to Waterford, near the ferry slip, a small piece of ground was recovered from the river by the simple and unexpensive mode of laying down faggots of furze loaded with stones at low water, which the mud soon filled, and converted into a secure bank; and on the ground thus saved, are now some large stores and buildings.

There are wet lands in some situations that can neither be improved by embankments, nor easily by draining; some in hollows, and some near the edges of rivers: these grounds generally produce many aquatic grasses; in the pieces shut out from the embankments of the Nore, *Poa fluitans*, water fescue, is most luxuriant, and is one of the most nutritive as well as largest grasses we have: swine and water-fowl feed on it greedily; *aira aquatica* is also common, and gives much hay, but inferior in quality; *poa aquatica* is also found, which in Lincolnshire makes the heaviest meadowing, and according to Curtis is cut three times in the season in the vicinity of the Thames: by pulling the weeds in these grounds, and encouraging the useful grasses, and encreasing them by seeds, the most productive meadow might be made in the wettest ground, and

the

the spade alone in dry weather, might render them perfectly even; the hollows might be filled with the stuff from a ditch cut round the ground, and from the risings that were levelled. Near Kilmagany is a large tract covered with water in winter, but easily reclaimed by lowering the bed and raising the banks of a stream that runs through it, and converted into fine meadow, from a bad summer pasture; there are other smaller tracts in the same condition; wherever there is a spring, and consequently a stream, ground is easily drained.

Hay making.—The usual process is tedious, and often ill conducted; if the weather is very fine, it is sometimes shaken out the first day, and made up, if possible, the second; or it is left on the swarth for a day or two. When shaken out it is often merely turned or tossed a little, and not raised up so as to give the air access to every part, and made to dry quickly. It lies in grass cocks for about two days; these are broken out and doubled or trebled into small cocks, of about six to a car load; it is opened again, and re-made until it is supposed perfectly dry, and lastly made into tramp cocks, containing two or three loads, headed, pulled, bound with a hay rope thrown over the top, which is fastened with a stick in the side, or tied to a stone: this insecure protection often slips off, and the cock which remains in the field sometimes for two or three months, is liable to great injury from winds and cattle. In the haggard it is usually made into circular stacks, sometimes into long ones; part of the head is thatched,

thatched, either with straw or sedge: if it is well made, the rim should hang over, which is not always the case: the stack is elevated from the ground by stones, with a passage left through the centre; a hogshead is generally drawn up through the middle of the stack, and side holes made sometimes to communicate with the funnel. In large ricks Lady Ormonde's steward used triangular criels for this purpose.

Hay in very hot and dry weather has been made in three days by some small farmers, being tedded the first day, put up in cocks the second, and made into tramp cocks the third in the haggard: it is a common practice of small farmers not to make tramp cocks in the field, but to draw their hay when made, and tramp it in the haggard; remaking it into a large stack if necessary. The hay is often tedded the first day and brought home in a week.

Some farmers make grass cocks from the swarth, if the hay is dry; or if sappy and the weather fine, ted it, spread, and turn it, and put it dry into cocks and remake it until ricked; sometimes they turn it three or four times a day until nearly saved, before it is put into cocks, which are again broken out. The best farmers cut early, swarth two days, ted two more, make up and double until perfectly saved, which preserves the sap better than by breaking out the hay and remaking it successively. "In new made meadows, the first crop of grass is left uncut, till the seeds shed, for the purpose of thickening the grass roots, which are generally thin, then

it

it is cut, and left in the swarth a day, if the grass is light, and two or three days, if heavy; then it is spread in the morning; and in the evening, before the dew falls, it is made into small cocks of about half an hundred weight: in this state it is suffered to stand a day or two; 'tis then, about ten o'clock in the morning, drawn together and spread into plots about one foot thick, (which when saved would be about one ton weight) it is turned once or twice a day, with pitch forks, or sticks, and then made up into cocks, of about two cwt. or less, in which it remains two or three days; 'tis then again spread out for four or five hours, and turned; by this time, if the weather is fine, it is sufficiently dry to tramp it, or make the whole plot up into one cock, on which a person stands, presses and fixes the hay, so as to secure and fashion it with two ropes, against wind and rain; in this state it is left a fortnight, and sometimes for months before it is brought home into the hay-yard, where four or five of these last mentioned cocks are made into one, and suffered to stand for ten or thirty days; after this it is made into the great rick. If the weather be wet the practice is altered, by frequently remaking the cocks, instead of spreading them out; in wet seasons when the hay cannot be well saved, there are air holes left, or made through the grand ricks, to prevent their heating." Mr. Ellis.

Good farmers advise, to ted out after the mowers, and the same evening make very small cocks, which are to be broken out as soon as the dew is off the ground

ground next morning, and in the evening remade into large cocks; and, if the weather is fine, on the third day, into such cocks as may stand until the whole crop is made, and is ready to be brought home: red clover requires this treatment; but rye grass in hot weather should not be tedded out more than one day, otherwise it loses its sap, and is not better than straw.

The principal faults in the common practice, are drying the hay too much, and exposing it too long to injury in every way; the object seems to be to prevent heating, to accomplish which, the wind and the rain often extract all the nutritive parts of the hay before it quits the field. There can be no doubt, that it is highly useful for hay to heat moderately. If it is cut while the grass is succulent, and permitted to heat, a saccharine process takes place in the juices, which is the beginning of all fermentation; and an additional quantity of saccharine matter, one of the most nutricious substances, is actually formed by combination with the oxygen of the atmosphere; the business of the farmer therefore should be to excite this process, and not prevent it; and his only care should be, not to let it go too far: this will not happen if hay is not accumulated in too great a mass. The common meadows of this district are very dry in themselves, producing much rye grass, oat grass, dog's tail, white grass and other dry plants: the hay cut in proper season, and which after cutting has not been wetted by rain or heavy dew, can hardly be too soon made into

tramp

tramp cocks, where it would not be liable to heat too much; and by heating moderately would not only become better food, but in reality would gain an accession of nutriment by the saccharine process. But to undergo this process, or to form good hay in any way, it must not be cut late; all meadows should be cut when the principal grasses open their flowers, and not, as is usual, when they have formed their seeds, and when the field looks brown: in the first case, the saccharine juices are still in the joints of the stem, prepared to feed the flower; but in the latter, these juices have been either dissipated, or absorbed, and converted into the flour or mucilage of the seeds, and can only be brought back to a saccharine nature again by malting. Hay cut when grass is in seed is therefore no better than straw; by cutting early too, the season of the greatest dews is avoided in hay making, the soil and grass are both less exhausted by not forming the seeds, the after-grass is more productive, and the roots well sheltered before winter. The sooner grass is cut after it begins to flower, the sweeter will be the juices, and the saccharine process more regular and natural. That hay becomes sweet by heating, is well known; that plants not relished by cattle when young, will be eaten from preference when they begin to heat is also known; for this reason frost, by checking vegetation, as well as the scythe, and leaving the juices to an incipient decomposition (or fermentation, which in this case is the same thing,) is said to make sour or harsh herbage sweet. For

those

those who are afraid that hay might heat too much, an improvement in saving clover and hay is mentioned by Captain Fraser in his Survey of Cornwall, (p. 63.) by stacking them when half made, and putting between the layers, old straw, which prevents heating, and which imbibing the juices of the clover, becomes as good as the hay: rye grass may be used as well as straw.

Sect. 13. *Dairies.*

The most considerable dairies are in the district called the Welsh Mountains, in Irish *Sliegh-Brenoch*, and which are supposed to take their name from the family of Welsh or Walshe, by whom a large tract of country was formerly possessed. The first of this family is said to have come to Ireland with Fitzstephen, and his successors to have had afterwards eighteen houses or castles in this district; the remains of these buildings do not shew them to have been any thing remarkable: one of their principal residences was at Inchicarin in the valley opposite to Mullinavat, where the foundations remain of an oblong court, and a square building; a large fosse without could be filled with water by a rapid stream from an adjoining glen. Castlehoyle near Kilmagany, was another chief seat of this family, said to have been a square castle flanked by four round towers; a small part of one only, exists;

ists; appearing in arms here against Cromwell, they were totally defeated by a detachment, many executed on the spot, and their bodies buried in the same place, at the foot of the hill near Castlehoyle; in making the road, the late Mr. G. Reade discovered the bones, and caused a sweep to be formed, which marks the place. Since that time, none of the family have existed as landed proprietors, but the name is frequent among the country people. One of the name is in the list as representative for the county, in the assembly called a parliament by James II. after his abdication.

The district of the Welsh Mountains belongs to various proprietors; and consists in general of dry land, fit for tillage, and inclined by nature to grass, but perfectly unimproved, and almost uninclosed; the soil has a loose substratum well calculated for plantations, and the face of the country is varied by hills, and intersected by small streams adapted to any manufacturing purpose. The principal part is occupied by dairy farms; and some of the principal of these belong to a family of the name of Ellward; this family consists at present of five branches, who hold among them above 2000 acres, including Knockmeilan, Ballybrishan, and other large town lands; their houses are small, and near each other, and till lately were little better than those of the poorest farmers, but they have now slated them, to guard against malicious burning or robbers. The women of the family constantly marry in it, and for this purpose are

obliged

obliged to buy dispensations at a high price, and if a widow marries a stranger, she loses all except what she brought with her. For one farm of 900 acres, they paid a few years ago a heavy fine amounting to more than 2500 guineas, for a new lease of three lives or thirty-one years, and £.600 a year rent: this money was given in hard gold, which lay by them; and this is the mode in which the profits of such farms are applied, instead of being laid out in the improvement of the land, which would procure a constant and encreasing return. They graze all their ground in common, except 300 acres, which is divided equally between the five families: each family employs two servant boys at £.8 a year, and two servant girls at 15*s.* a quarter; they scarce ever want any additional labourers, but when they do, for a particular occasion, they give 8*d.* 10*d.* or 12*d.* and food; these are the only hands required in this tract of ground, on which formerly stood one or two villages. They breed neither cattle nor pigs, but purchase at the fairs of Kells, Castlemorres and others, and are good judges by the eye, of those pigs that will fatten to a great weight. Their attention to pigs, is the most remarkable part of their rural economy; they often fatten these animals to 4 cwt. and upwards; they sell every year about 100 pigs of from 3 to 5 cwt.; the largest which they lately had, weighed 5¼ cwt.: a few years ago they sold in one season 80 pigs at Waterford, that weighed, one with another 5 cwt. The pigs are bought in when slips, and graze in the

fields all the summer, or till they have done growing, when they are put up to fatten in a small house or shed, where they get sour milk and potatoes boiled: a large pig fed with no other food, will consume twenty barrels of potatoes; when fattened to a great size, these animals are latterly sometimes obliged to be lifted up to feed; they are regularly washed every week with a lye of fern or furze ashes boiled in water, which makes their skins sleek and promotes their growth and health; every third day they get a clean deep bed of dry fern, or of straw when it is to be had; the farmers have not themselves a better bed, certainly not so fresh a one; they slaughter their pigs generally at home, and eat the offal, which is the only animal food they usually make use of, living principally on potatoes and some griddle bread; their incomes are probably not less than £.600 or £.700 a year.

Their stock consisted of 270 cattle, 120 of which were milch cows; and 13 horses; each family had five acres of tillage; they plough with two horses; their cattle are neither housed nor fed in winter, but turned into waste grass; the cows only that are calving get a little hay; the horses are kept at grass all the year, and get a very little oats and a few potatoes. Each family puts out about 40 or 50 barrels of lime every year, purchased near Knocktopher, formerly for 10*d*., now from 11*d*. to 12*d*. a barrel; they tried a little marle raised on the farm, but did not find it good: in breaking up ground they generally burn it; their course is 1. oats,

2. potatoes,

2. potatoes, with dung or manure of some kind, 3. oats, 4. potatoes with lime or compost, and 5. sometimes barley: their crops appeared good.

They reckon one cwt. of butter per cow a tolerable return, and expect four pottles one meal with another; they churn every second day, or else three meals together, churning the cream only. The barrel churn is universally used in this district, and will churn one cwt. of butter in an hour, if it comes well; the milk stands in flat wooden coolers (called keelers), which are preferred for coolness; the cooler is well washed with spring water immediately before the milk is put into it; they stand on the ground; the dairies have the natural earth for their floors, no cieling, no window, no table, or shelf; but are tolerably clean; hempen strainers are used, and occasionally tin ones.

The widow Walsh has a large farm in this district, holding near 2000 acres, some of it in perpetuity, and has lately built a slate house; the proportion of tillage in this extent of ground was 12 acres: the farm on which she resides, called Earlsrath, has 258 acres, stock 57 cows, 9 pigs, 4 horses; tillage 9 acres; servants 12, children 6: fattens pigs sometimes with oat meal, generally with milk and potatoes; horses at grass generally and get a little hay in winter: two servants, who are paid by having two acres for potatoes each, do most of the work on the farm. Smaller farms are conducted pretty much in the same manner; each family has about three or four acres of oats, and two or three of po-

tatoes; and a little flax for their own use. The smaller farmers buy wool at Kells or Callan, and make a few frizes, which they sell at Kilkenny or Carrick; this manufacture always trifling, is declining; formerly there were two or three tuck mills in this district, as at Smithstown, and other places, which are all now given up, except as far as they are used for shelling oats; and the frizes are sent to Waterford to be dressed. Small farmers rear some cattle, or buy cows usually for £.10 or £.12; horses get a few furze: course 1. potatoes with baiting, 2. oats, 3. potatoes and dung, 4. oats; some oats trenched in wet seasons; land tilled for twenty years. A potatoe called the white banger is cultivated near Mullinavat, besides the common sorts: a little meadowing laid down with barley and hay seeds, but pasture always let out without seeds after oats: soil often heathy moor, and inclined to rushes. But in this district is found in many places limestone gravel, or sandy marle, with large rolled limestones; this marle is seen in the banks of most of the streams, particularly near Luke's-well, under the land of Smithstown, and along the stream of Mullinavat towards Waterford; on the other side of the valley, there is good brown and bluish marle at Coxtown near Killahey, an inferior sort at Ballytaskin, and various marles may be found through the whole district.

Small farmers churn once a week, keeping cream in two vessels, and filling the keg, which holds one and an half cwt. of butter, gradually, putting two

stone

stone of salt, bought at 14*d* a stone, to a keg; four good cows may give half an cwt. of butter in a week: in winter the cream is set near the fire before churning. In Listerlin some farmers keep ducks and chickens for their own use, others breed them for sale: pigs bought at six weeks old, generally for one guinea, sold fat at eighteen months; bran is often used in fatting them, here and in other places, mixed up with potatoe water; they are killed at home, and the offal eaten with cabbage.

In the barony of Idagh are several dairies of about 40 cows, mixed with tillage farms; and the different pursuits united in some: one and an half cwt. of butter is reckoned a good produce: there are a few dairies near Inistioge, and others dispersed in different parts of the county. *State of one of the best of these dairy farms near Rosbercon;* 48 acres, 20 meadow, 28 pasture: 60 cows; churn every day, the butter of two meals together; milk poured from the pail into the keeler through a hempen strainer; set on a clay floor; dairy with a window, stopped in winter; keelers washed in summer with cold water, in winter with warm, and milk covered: a barrel churn makes three-fourths cwt. in an hour, if the butter comes well; washed afterwards with warm water, and set in the air to dry; 3 pigs; what buttermilk is not given to them, but is sold in Ross; carried in the churn: as soon as the milk is skimmed, it is strained, and the curds are given to the pigs, the sour milk sent to market; butter as soon as made, and the whey squeezed out, is salted, and

seldom

seldom kept many days before it is sent in a cask to Waterford, where the price is higher than at Ross; no cow-house; cows get hay in winter in a field; pigs fattened with boiled potatoes; weigh from two to three cwt.; if in good order at eighteen months when they stop growing, will fatten, if put up for six weeks. *Proportions of a farm near Kilmacow:* 100 acres, 30 cows; 20 barrels of corn, chiefly wheat, sold annually; the dairy from 20 to 50 cows.—In Iverk are some dairies, the average profits are about six guineas a cow; these profits are produced by butter sold in casks, by fattening hogs, and rearing calves; a barrel churn made here but half an cwt. of butter in two hours with hard labour: hogs all sold at Waterford, where a great part of the pork is barreled, and a great part also is made into bacon for the Bristol and London markets; the same trade is carried on at Ross. The practice of letting cows to dairy-men, common in Munster, is little known except in a few farms in Iverk, or the southern part of the county.

In the district of Callan are a few dairies; and some grass farms in Tullaroan and parts of Crannagh; best dairies average one and an half cwt. of butter per cow: calves here suck the dam for eight or ten days, and are afterwards fed with new milk for a week, and then with skimmed milk heated, until weaned.

The greatest part of Fassadinan is occupied by dairies and grazing farms; they vary from 20 to 50 cows; some consist of 300 acres; and their rents in

the

the poorer part from 12*s.* to 16*s.* an acre; the butter is sold in Carlow; the farmers cultivate a little oats for their own use; have bad houses, scarce any fences, and rushy pastures: some use the hand churn, some the barrel; in one dairy the churn is moved by a horse, which does the work very ill, splashing continually, giving a motion too strong and too uneven. The principal objection to the barrel churn is, that it is not easily cleaned, and of course is generally left dirty: the best churn seems to be the pump-churn balanced by a wheel, which can be moved by a child, and has a gentle and steady motion; the churn invented and used by Mr. Ellis, and represented in the figure annexed, is worked with equal facility, and is a simple machine, which can be constructed by any common carpenter, and can be adapted to any number of churns in the most extensive dairy. (See Pl. V.)

State of one of the principal dairy farms in the parish of Macullee. 250 acres. *Stock*, 45 milch cows, 10 yearlings, 5 one year old, 15 calves rearing, often but 6 or 10; 3 horses, 4 pigs. *Culture*, 10 acres potatoes, between 3 and 4 for the use of the family; the rest let from seven pounds to nine pounds an acre, to poor persons, manured by baiting; no corn; cattle in at night in winter; dung put on meadows; eight beer quarts a meal is the average of a cow's milking; the farmer sends out for sale to Kilkenny 18 dozen quarts of buttermilk, four times in the week, three pints to the quart, beer measure; and two days in the week sends out twice that quantity;

tity; sells three pints for 1*d.* or 1½*d.*; not quite 1½ cwt. of butter made per cow; rent £. 1 : 14 : 1½*d.* per acre: the in-calf cows kept all winter upon hay; the strippers sold off, or sent to a separate farm; cows get the bull at three years old; milked to seven, eight, or nine; price nearly doubled since 1790; milch cows cost twelve guineas. In the best ground of this district 1½ acre of grass is allowed for a cow, and half an acre for hay; but in other parts three acres will scarce keep a heifer. The system of the dairies in this district, differs essentially from that in the southern parts; they find it more advantageous here to sell milk than to keep pigs, seldom have more than a sow and her litter, and sell off the slips from six months to eighteen months old, not having the advantage of a convenient market for pork; they rear cattle, perhaps from being less conveniently situated for buying and selling at fairs; and they cultivate meadowing, from being obliged to keep in their cattle, on account of their more exposed and high situation, and more clayey soil. Their dairies are somewhat dirtier than those in the Welsh mountains; the room, which has occasionally a loft, is six or seven feet high; the back of the chimney is often built against the end of the dairy; the floor is uneven, of clay, and damp (which they wish it to be); the keelers are on the ground, piled over each other, often in three or four tier; their strainers are woolen, scarce ever cleaned, often covered with hairs and other dirt; they have seldom a sufficient number of vessels: the dairy above mentioned had 30 keelers.

hay

Hay water is used in rearing calves, with sweet milk for a fortnight, then sour; four quarts at a meal and boiled cabbage mixed with it. They have sometimes a practice, of using allum to make the milk coagulate, and to increase the quantity of cream; which renders the sour milk disagreeable, and perhaps of a hurtful quality. Dairies have no window, except a hole opened in summer, stuffed up in winter; the dust and cobwebs are never cleaned from the walls and roof; the floor never washed; the butter is often made up in a dirty manner; and the quality of the salt perhaps not good. It is from these circumstances that Irish butter, which when fresh is preferable in quality to any in Europe, bears in the London market a lower price than any other.—See Middlesex report, p. 339. "Irish butter is in the lowest estimation (in London), as it is almost always heavily salted, and very frequently tastes smocky, fishy, and tallowy; though sometimes (perhaps one tub in fifty) it is very good." It is said to be consumed only in work-houses, or by the lowest order of tradesmen: if the Irish farmers wish to recover the character of their butter, and consequently to raise its value, and increase the demand, they will attend to the first requisite in dairies, cleanliness. Six pounds a hundred weight was a common price for butter in 1800; it fell lately to four pounds, and has varied between that and seven pounds during the war; fresh butter in 1800 was from 13*d.* to 18*d.* a pound.

It is worth while to repeat from Mr. Middleton, the method of making butter in Holland; "having milked

milked the cow, the milk is not put into the pans till the milk is quite cold; it is then stirred two or three times a day, with a wooden pin, to prevent the cream from separating from the milk; and if it can be stirred till the spoon will almost stand in it, they deem it so much the better. When it is found to be sufficiently thick, it is put into the churn, and beat for an hour; when the butter begins to form, a pint or more of cold water, according to the quantity of the milk, is poured in, to separate the butter from the buttermilk: when the butter is taken out of the churn, it is washed and kneaded till the last water is *perfectly clear*, and free from milk. By this method a greater quantity of butter is made from an equal quantity of milk, and the butter is more firm and sweet; and will keep longer than that which is made by the method commonly used in England; and the buttermilk which remains is thought preferable."

Of the management of butter and milk by Mr. Ellis.—" An experience of many years has afforded opportunities of making observations on, and recommending the practice hereafter mentioned: but it may be necessary first to point out the common way now practised.

" The common way of keeping milk, and making butter, is this: the cows are usually, without cleaning the dirt of their tits, milked into a pail, (perhaps not washed or scalded since it contained sour milk, and perhaps with hands not clean): then the new milk is taken into the dairy, and passed through the strainer, the cloth on which, is commonly a filthy woollen

woollen rag, (a linen one very rarely,) which is seldom taken off to be washed above once a week, consequently it has a smell offensive and quite sour: then a large quantity of the new milk is heaped up in vessels, one over another, which prevents it cooling quickly, as it ought; or it is strained up in one large vessel, (perhaps the churn, full as dirty, and as much neglected as the pail and strainer-cloth,) where it remains, without regard to any given or due time, till the cream is taken off; or altogether thrown into the churn, there to stand four, five, or six days before it is churned. Churning is commonly done by the *dasher*, worked up and down in the milk by sweaty filthy hands, off which a variety of dirt falls down on the churn-lid, and thence into the milk and butter, till it becomes, it may be said, incorporated with both; and sometimes to facilitate the separation of the butter from the milk, (when by mismanagement it is retarded,) some boiling water is poured into the milk in the churn, which commonly turns part of it nearly into curds and whey; hence the butter becomes what is generally called pin-row'd, (this appearance in winter will also arise from not mixing the salt well with it); by and bye, the milk is sufficiently broken, and the butter taken off by hands, hot or cold, which ever chance produces, and put into a tub, where it is worked and pressed with these hands, in order to get the milk out of it, in so much that it becomes oily and greasy; a little water is put on it, to wash the milk out of it, which is seldom done sufficiently; then it is spread out again with the

same

same hands to be salted; the salt, before it is put into the butter, is usually kept in a bag, near or over the fire, till it is quite dry and gritty, or dried in a pot till all the moisture is exhaled; in this state it is put into the butter, which is again worked over and over with the hands, to mix the salt with it, whereby it becomes nearly half melted, and seldom fails of producing a strong and rancid taste; in this state it is packed in a tub to be kept for sale. But there is another practice much in use, which is, when the butter is taken out of the churn, it is left to remain till the next churning, which may not be until a week elapses, without salting, or even sufficiently washing the buttermilk out of it; hence it gets a bad smell and taste, of which it can never be cured. The butter sold fresh is commonly made in the same way: and there is a most prevalent and pernicious use made of alum of late years, in the management of milk and butter; the alum is diluted in warm water, and a certain quantity of it put into the vessels containing the new milk, which certainly has the desired effect of throwing up the cream, or oily particles, in the milk, which it produces by its attenuating qualities; but this practice renders the milk very unwholesome, if not entirely unfit for use.

"There are several other ways of managing milk and butter, now in practice, not very materially different from what has been above stated, although equally objectionable.

"It is of the greatest utility, and even necessity, to have plenty of good running water, and fresh grass,

grass, for dairy cows; in order to this, the pasture for them should be divided into many inclosures, so as to have a fresh one for them every day; by having even no more than four inclosures, but more would be much better, they might have a constant change of pasture, and they ought not to remain, even at night, on the pasture where they spend the day; the advantages arising from this practice are obvious, for any one may know, that cattle feed best on unsoiled grass; and that the above mode of daily changing the pasture, will give time for the soiling, or dirt thrown on the grass by the cows feet, to be worn off by heavy dews, sun, rain, and winds: and that fresh clean grass produces the greatest quantity of milk and butter; and that no other kind of stock ought to be allowed to feed on the same ground with milch cows.

The way recommended to manage milk and butter is this; and it may be proper to mention first the kind of vessels and utensils best calculated and necessary for this purpose: black earthen English pans, well glazed on the inside, are the best, if to be had, to set new milk in to throw up the cream; those that are next in preference to English pans, are vessels made of seasoned oak, or porter hogsheads, and bound with iron hoops; the size to set the new-milk in, should be two feet in diameter, and six or seven inches deep, and a good deal wider at the top than bottom; the milking pails of the ordinary size; the cream tubs two and a half feet in diameter, and fourteen or sixteen inches deep: the size of the

churn

churn proportioned to the number of cows, and to be worked by a machine, like the one represented, (Pl. V.) which breaks the milk in a shorter time, and with less labour, than any of the machines now commonly used; and by substituting it, all the inconveniencies attendant on, and objections to the ways now practised, will be removed completely. The simplicity and cheapness of this machine, places it within the reach of every body that has cows, to obtain it; and this may be a sufficient consideration to recommend it, exclusive of its requiring less labour and time.

"If cleanliness is not strictly attended to, the end proposed cannot be obtained, or will not turn to the advantage that would otherwise accrue: therefore, the greatest attention ought to be paid to keeping the vessels, in which new milk is set, perfectly sweet, and not to let sour milk stand longer in them than may be requisite, as acid of every kind added to new milk, coagulates it much sooner than if kept in its natural state, and thereby prevents the oily, or buttery particles, from rising to the top, to form that part of it called cream; by which, in that instance, the quantity of butter would be much less, than if the new milk had not been prematurely thickened by the admission of acid.

"To keep milk vessels sufficiently sweet and clean, it is requisite to have them filled and scalded with boiling water every time, before they are used; and by all means be suffered to become quite cold before milk is put into them; as heat naturally produces acid in milk: to guard against which, the milk, immediately

mediately after it is taken from the cows, should be cooled as soon as possible, in broad shallow vessels, before it is strained up, or set for cream; the vessels should not be heaped one over the other, as is usual; the milk in them ought not to exceed four or five inches in depth, in any season, but more especially in very warm weather, when a pint of the coldest limpid spring water, may be poured into, and mixed with the milk in each vessel, set in that way; this helps to cool the milk, and keeps it from thickening longer than if without it; and the particles that compose the butter, unite by the admixture of the water, and are accelerated to float on the top, and are the more readily disengaged from the more ponderous parts of the milk, owing to the attenuating and cooling effects water produces on new milk. The cream, or top, in these vessels, thickens much sooner than that which is under, when it has sent to the top all its oily parts; to watch the thickening of this part of the milk under the cream, is essentially necessary, in order to have a great or more than ordinary quantity of good butter; for by the neglect of it, by suffering the milk under the cream to grow as thick as the top, or even to be near as thick, much of the butter it would otherwise produce is irretrievably lost; nor is the milk the better: for when the milk under the cream, or top, becomes as thick, or near it, as the top, the particles that would otherwise become butter, again disperse, and diffuse themselves equally all over the bottom part of the milk, and assume another nature than oily or buttery particles, for they turn into a kind of whey, from which the ordinary process

of

of churning will not produce any butter; hence the necessity of skimming or taking off the cream before this change has come to pass; for when once the cream and bottom become of an equal degree of thickness, or even near it, the whole becomes materially different in quality, to what either of them were before, and not very unlike the effects produced by adding runnet to milk; for although it is not at all mixed with it, yet it will very quickly diffuse the acid it contains through the whole milk, and coagulate it, as if it had been by art incorporated with it. And it is somewhat extraordinary, how small a quantity of runnet, in a few minutes, will have this effect on many gallons of milk; it is produced by a very subtle acid contained in the runnet, which has been changed from that kind of acid peculiar to milk, by the operation of heat and digestion, produced in the stomachs of the calves, from whence it is taken.

"Dairies should always have plenty of air, but not be too open, lest winds, or currents of air, should strike on the surface of the milk, so as to coagulate it; nor should milk be kept very cold, more than hot; to regulate it nicely and skilfully would require a thermometer, as in weather intensely cold, or frosty, a stove or fire should be introduced into the dairy, to make the air temperate; and milk is more difficult to be churned in cold than in temperate weather. The cream, being collected together, which it ought to be, preparatory to the process of churning, in order to facilitate that business, and to render unnecessary the pernicious use of boiling

water

water being poured into it, if the vessel containing the cream was left near a stove, or fire, and turned several times for the space of eight, ten, or twelve hours, before the process of churning began, it would answer every end that pouring in boiling water could produce, and the butter would be nicer and better, and the buttermilk very fit and wholesome for use. Cream, or milk, in hot weather never should be kept more than three or four days from the day of its being taken from the cows, without churning, else the produce of butter will not be so great or good; in cold or temperate weather it may be kept a day longer, but cream, in all weathers and seasons should be attentively watched, that it may not turn into whey, which it will begin to do immediately after it is ripe, or fit to be churned; for by keeping it beyond the period it is ripe, the oily particles that would compose, or otherwise become butter, will assume another nature, from whence they cannot be recovered; consequently the produce will be less, and what is produced not so good. This change of the oily particles into another kind of matter, is occasioned by an acid produced in the cream, by keeping it too long, or beyond the due time; which, by keeping it still longer, would dissipate every atom of butter the milk or cream contained, so as not to be recovered by churning.

" Rules necessary to be observed, in order to make the best butter. Great care to be taken, that the cream be sufficiently churned, or broken, so as to separate completely the milk from the butter, which

in the common practice is often neglected; hence arise the different colours, green and yellow, and the mouldiness that appears in ill-made or ill-managed butter, when kept for any time; for if any of the milky particles remain in the butter, it will soon turn sour, and become fetid, and infuse its bad effects through the whole mass; therefore too much attention cannot be paid to this particular. The butter should be taken off the milk with a hair-sieve, or searce, which will let the milk pass through it, and retain the butter, which, by shaking it smartly in a horizontal direction, backwards and forwards, will connect the butter, and press out the milk; this, in the common way, is done by hands, which is considered unnecessary, and highly injurious, as the less handling butter gets the sweeter and better it will be; not greasy or oily, which are great imperfections. When the butter is thus connected, and the milk reasonably pressed from it, it is to be put into a large vessel of the coldest and best spring water, there to be completely freed and washed from the milk, which is to be done by a skimming-dish, working the butter backwards and forwards with it in the water; it may be effectually done by two washings, or waters; then the water and milk being completely pressed out of the butter, it is to be spread thin on the bottom of a broad shallow vessel made for the purpose, in order to be salted. The best salt for butter is the whitest and finest grained Irish salt; and before it is put into the butter, it should be sprinkled over with as much fine spring water as it will imbibe, if not already replete

plete with moisture; or if it is kept in a temperate cellar, it will attract from the atmosphere as much moisture as will be sufficient. The proper preparation of the salt, is one of the most material things to be observed, in order to have good butter; for when the salt is dry, or dried, it penetrates violently and quickly through the butter, and deprives it of all those fine and sweet oily particles, that are imperceptible to the naked eye, and remain finely intermixed with the more solid or thick parts of butter, which unite with the salt; and by the extraction or employment of these fine particles in this way, are destroyed in a great measure the sweetness or emollient qualities of the butter, which the addition of, or sprinkling of water on the salt effectually prevents, and makes the operation of the saline particles on the butter slow and harmless, retaining all its sweetness, and the emollient qualities peculiar to it. When the salt is prepared as directed, it is to be added to the butter, and carefully and equally mixed with it by the skimming-dish (the use of which will become easy and familiar to a handy woman, in a very short time); after the salt is thus mixed, the butter may be put into crocks, or tubs, and well packed to keep, but the handling of it is to be avoided as much as possible; and if it must be handled at all, it ought to be with *cool hands* constantly dipped in the coldest spring water. By observing the above directions, bad butter can never be made, and the produce, or quantity, will be found more than what is produced by the ordinary ways now in common use, which

may be proved by a single experiment of each of them, to the greatest satisfaction.

" There are several other ways of managing milk and butter, with the same degree of cleanliness, but not with equal produce or profit.

" *Of the profits of Dairies as they are now conducted.*

Dairy Dr.	£.	s.	d.
20 three and four year old new milch cows bought in April 1800 at ten guineas per cow, the amount will be, £.227 10 0			
The interest of £.227 10*s.* for 12 months would be,	13	12	6
Suppose dairy utensils for 20 cows cost, £.10 0 0			
The interest of £.10 for 12 months would be,	0	12	0
Price of a horse and a car to carry milk to market, £.14 0 0			
The interest of £.14 for 12 months would be,	0	16	9½
Fuel for the dairy,	2	5	6
Hire and food for three dairy maids for 12 months,	30	0	0
Casualties, wear and decay of 20 cows in 12 months rating at 8*s.* per cow,	8	0	0
Wear and decay of milk vessels, &c. in 12 months,	0	10	0
For 20 cows 40 acres of land, rent a guinea and a half per acre,	68	5	0
	124	1	9

	£.	s.	d.
Brought forward, . . .	124	1	9½
Shoeing horse and car in the year, . .	0	10	0
Suppose 10 acres of the above 40 were kept up in meadowing and rating the cutting and saving of each acre at 11*s.* 4½*d.* the amount would be, . .	5	13	9
Drawing home the hay and making it up in hay-yard, ...	1	10	0
For contingencies, ...	4	0	0
Expences of the dairy, ...	135	15	6½
Hire of two cow boys for 12 months,	22	15	0
Total expence of the dairy	£.158	10	6½

Dairy Cr.	£.	s.	d.
20 cows make one cwt. of butter each, rating at £.4 per cwt.	80	0	0
20 young calves sold when dropped at 10*s.* each, ...	10	0	0
20 cows to milk 12 quarts beer measure each per day, would make 8 quarts of sour milk for each cow per day; for the 20 cows the whole would be 160 quarts of sour milk per day: this to be rated to continue for six months and to sell for 1½*d.* per pottle, would amount to, ...	91	0	0
	181	0	0

The

	£.	s.	d.
Brought forward, . . .	90	0	0
The dung made by housing or wintering 20 cows would be worth at least, .	10	0	0
	191	0	0
Deduct expense of the dairy as above,	158	10	6½
The net profit on 20 cows will be	£.32	9	5½

Note.—Cows dying or missing the bull are not brought into this account.

Profits of Dairies as they might be.

" By adopting the way recommended each cow of the above description would make near, or about half a hundred weight more of butter than is reckoned in the above calculation, which will be found pretty accurate, and this would be an increase of half a ton on the produce of 20 cows; but to be very moderate let the increase be only at 8 cwt., this would make the profit on 20 cows £.64 : 9 : 5½, and not £.32 : 9 : 5½ as by the above calculation; a difference worthy of notice of £.32".

" No farther explanation of the machine for churning need be given, than that it is calculated to work in one large churn, with two holes in the lid of it, for the shafts of the breakers or dashers to pass through, and work or play in, and that weights may be affixed to the handles whereby it is worked, which will make the labour less; and when put in motion, the handle will swing backwards and forwards of itself like a pendulum several times, if properly balanced, before it stops.

References

Fig. 1.

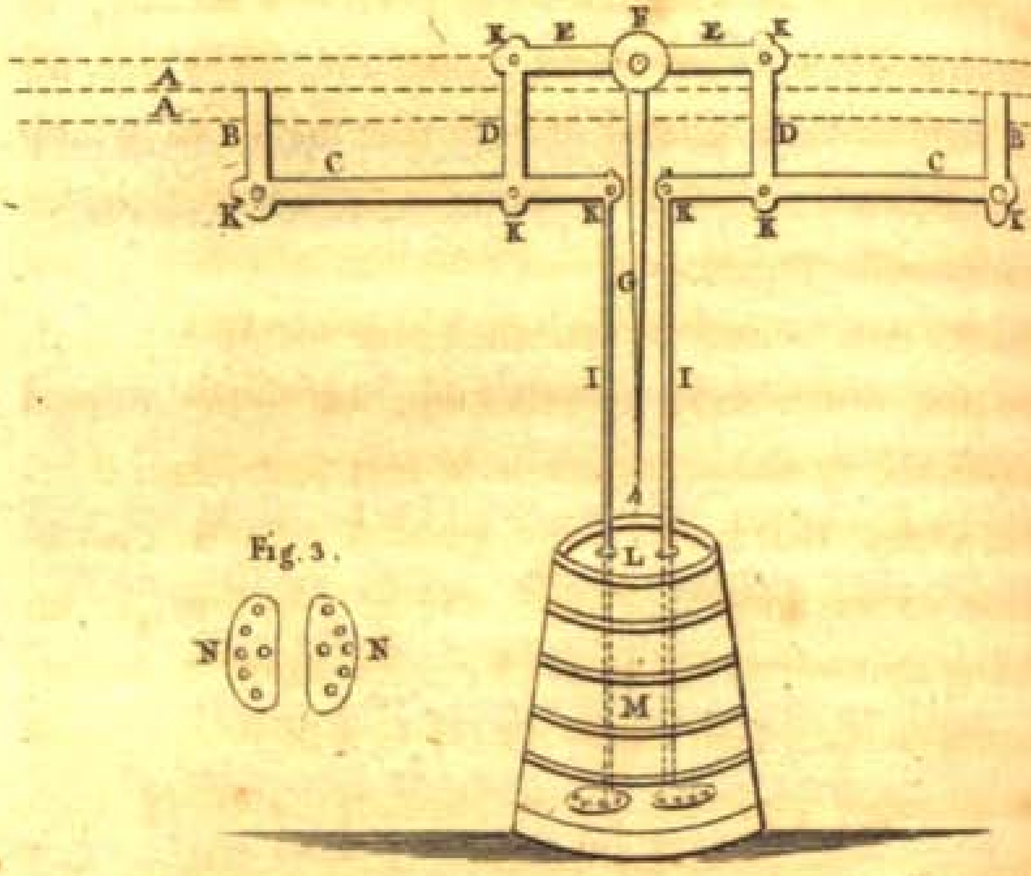
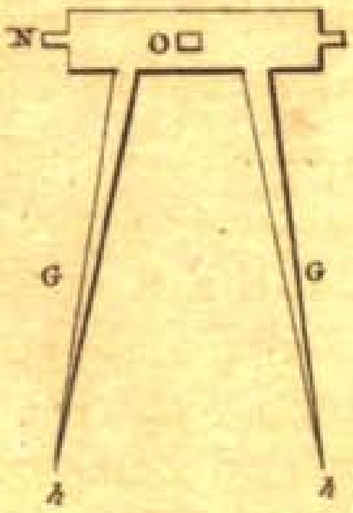


Fig. 3.

Fig. 2.



References to the plate.—Fig. 1. is a section, or the front view of a churning machine, in which all its parts appear plain, except the axis, in which the handles are inserted, and of which a section, or side view, is Fig. 2.

A A, two beams to support the machine; B B, two pieces of wood, 4 inches square, to be inserted in two pieces of wood, each 3 feet long, and 6 inches square, that keep the beams A A three feet asunder at either ends, and fasten them together, in an oblong square; C C, two pieces of wood 3 inches square, and 4½ feet long; D D, two pieces of wood 18 inches long, 3 inches broad, and 1½ inch thick; E E, a piece of wood 3 inches square, and 3 feet long, that passes through the centre of the axis F, a round piece of wood 9 inches diameter, and 3 feet long, with iron gudgeons in both ends of it, to play on the beams A A; G G, the handles (to work the machine by,) two pieces of wood, 3 inches square where inserted in the axis F, and 5 feet long, rounded from the middle down to the ends *h h h*, which are 1½ inch diameter; I I, the shafts (of the dashers) 6 or 7 feet long, 2 inches square, rounded from the middle down to the dashers; K K K K K K K K, joints that play on hard wooden or iron pins, about one inch thick; L, the churnlid, and holes for the shafts (I I), of the dashers to pass through and play in; M, the churn 3½ feet or 3 feet high, and 2 feet diameter at the lid or top.

Fig 2.—N, the axis marked F in fig 1; O, a mortice 3 inches square, to insert and fasten the middle

middle of the piece of wood in, marked E E, in fig. 1.

Fig 3.—N N, the dashers, two pieces of wood 2½ inches thick, with holes to break the milk, and the middle one to fasten the shafts in, marked I I, fig. 1. the shafts are 6 inches asunder, where inserted for the pins to pass through them to play on, at K K in the pieces of wood C C, in fig. 1, and 6 inches asunder where they pass through the churn-lid at L L: the length of the shafts I I may be varied according to circumstances, also the height and size of the churn, &c. &c.

SECT. 14. *Price of Hides, Tallow, Wool.*

Hides in 1790.	In 1800
Ox from 38*s.* to 40*s.* per cwt.	48*s.* to 62*s.* per cwt.
Cow — 30*s.* to 34*s.* per do.	48*s.* to 52*s.* per do.
Calf-skins from 6 to 8lb. per skin, 2½*d.* per lb.	3½*d.* per lb.
Calf-skins from 8 to 12lb. per skin, 3½*d.* per lb.	4½*d.* to 5*d.* per lb.

Most of the ox hides tanned in this district are salted and sold in Waterford and Cork: 42*s.* was lately the usual price: there is little slaughtering in this county.

Tallow, in 1790 5*s.* 4*d.* per stone; in 1800, 8*s.* to 9*s.* 9*d.* and £.3 to £.3 : 5*s.* per cwt. There is not tallow enough in Kilkenny for the use of the chandlers, and they are obliged to bring it from Waterford.

Wool

Wool in 1790	In 1800
Fleece wool 13*s.* 6*d.* to 15*s.* per stone .	16*s.* to 21*s.*
Lambs wool 14*s.* to 15*s.* 6*d.* ——— .	21*s.* to 23*s.*

In August 1800 at the frize fair of Kilkenny were 50 packs of 8cwt. each; dagged wool was 12*s.*, fine wool 18*s.* to 19*s.* per stone. Some of this came from the county of Carlow, and some even from Westmeath. The combers of the Queen's county bring large quantities of cloathing wool to the fair of Kilkenny, being their offal; which is bought by the Carrick clothiers: the price depends on the quality. The wool used to make blankets in Kilkenny, all comes from Dublin, being what is called skin wool: the skin lambs wool is used for the fine blankets, the weavers call it head wool. Some of the wool sold at Kilkenny goes to Cork. Fine wool has been often lately from 20*s.* to 24*s.* per stone: 142 stone sold in 1800 at the fairs of Bawn in the parish of Erke from 18*s.* to 20*s.*; this is the only part of the county in which there are many sheep: in the union of Freshford are said to be from 18,000 to 20,000; the whole county does not contain much more than 45,000.

Sect. 15. *Farms.*

There are many tillage farms of from ten to forty acres, in most parts of the county.

Near

Near Kilkenny a farm of 50 acres is reckoned a large one, on such, the system of fallowing cannot take place to any extent; in the central parts of the county, beyond the liberties of Kilkenny, are many large tillage farms, exceeding 100 acres; and it is not uncommon for the same person, to hold two, or even three such farms; and some tillage farmers have paid £.1000 a year rent; there are a few others who chiefly graze, who pay from £.1000 to £.2000 a year. Upon the whole however, small farms prevail, and in the hilly districts, the lands are usually held in partnership. Variety in the size of farms must be useful, as it tends to introduce a difference of management and of produce; this variety has in some degree been exhibited in the statements already made. The only essential requisite seems to be, that the capital of the farmer should be proportioned to the extent of his farm; in this there is often a lamentable deficiency; a high rent is sometimes offered by persons, who if desired to pay the half years gale when due, would be insolvent, and who build their hopes upon the indulgence of the landlord: but the capital of a farmer should be more than will perfectly stock his ground, put his farm into the best condition, and guard against all exigencies and hazards, or his trade is likely to be less profitable than most others. The character of many common and small farmers is often, when in want, to be rapacious of land, which they are incapable of improving; and when above want, to be tenacious

of

of money, which they are unwilling to turn to advantage.

By a better system of agriculture, a proper distribution of farms would take place; waste grounds and inconvenient thorough fares would be avoided; the tillage would not be brought close to the house, and the stock banished to the distant pasture; circumstances which ought to be reversed. Some improvements however and good practices are adopted by intelligent farmers, and seem slowly to gain ground; a few experiments are tried; but the time is distant, when green food will take place of superfluous pasturage and meadow; and when the manure made by a competent stock, will bring the culture of the garden into the field: perhaps our population is very far from being numerous enough to require such a mode of tillage, as necessarily takes place in the distant countries of the east.

Sect. 16. *Farm Houses.*

Farm houses are generally built of stone, but oftener cemented with clay, than with mortar; some inferior ones are of mud, or of sods, and some few have the foundation or the lower part of the walls of stone, the upper of sods. Some of the best farm houses are slated, and this improvement has encreased latterly; but for the most part, they are thatched; some may be comfortable, but few are neat

neat or cleanly. A decent house let to a common farmer, becomes in a year little better than a pig-stye. The houses of rich farmers are generally far inferior to their means, and are such as exempt them from window tax, and often from hearth money; but the greatest failing is in the offices: the barn is generally a shed to thresh on, with no floor, but the natural soil; the stable a hovel; a cow-house is often not to be found; no yard is appropriated to pigs; the corn stands alone mark the farm: a shed to protect the implements of tillage, was never thought of; the richest farmers always leave the plough and harrow in the corner of the last field they tilled; such part of the harness as may not consist of gads, or sugans, is secured in the house; and with the smaller farmers, if the car does not stop some gap, called a gateway, it may lie against the ditch or on the dunghill. The offices are sometimes covered with potatoe stalks, which form a very bad thatch.

The bad state and deficiency of agricultural buildings, and the unimproved condition of many farms, may arise from various causes; first, nothing is ever built or repaired by landlords; these expences, as well as every other improvement is left to the tenant, who generally comes into a dilapidated holding, without capital enough to stock it, still less to build, to fence or to drain. Secondly, there is often a want of confidence between the proprietor and the occupier; thirdly, there is generally in the tenant a disposition to make that answer again, which

answered

answered in some degree before; and if it fails, to look for a temporary shift, which he thinks will "do well enough." To attempt discussing the primary causes of these two latter impediments to improvement, would be to enter into political, not statistical observations: if the landlord appears sometimes not to give prudent attention, or an intelligent and liberal superintendence, the tenant appears to want settled views and a contented disposition. To despise the goods in his power, may be philosophic; but it is the philosophy of a cynic. True philosophy aims at progressive improvement; without that desire, man becomes brutal, and loses the only good quality of a rational being.

It is but just to some small farmers on the hills of Knocktopher, and borders of Iverk, to say that their houses are well built, chimnies of squared stone, thatch in good order, with a ridge of twisted straw at top; the art of making which is both useful and ornamental; the small bawn, and little inclosures adjoining, are sometimes sheltered by a hedge of broom, and the cultivated grass within smooth and verdant; but of these tenements there are not many. In addition to the twisted ridge, thatch ought to be fastened with hempen twine, well tarred, instead of scollops, or bent switches, which decay soon, and make holes in the thatch; every scollop is a conducter of wet into the roof. It is common to ridge the thatch with a layer of mortar, which the weather soon destroys, or what is worse, to crown it with a layer of mud or earth, which becomes a bed of

weeds,

weeds, that spread over the roof. Some thatched houses in Callan, and in Kilkenny, and in a few other places, have eve courses of brick immediately below the thatch, at the top of the wall; this practice should be always adopted, either by a single or a double course of bricks, not only because it gives a neat and finished appearance to the building, but because it protects the wall-plate, the ends of the principals, and the bottom of the thatch. Roofs of small farm houses have four pair of *principals*, the timbers between these are styled *ribberies*, and are connected by wattles and scollops, to which the thatch is fastened: the largest timber in the house is the mantle piece, extended nearly across the building, over the wide fire-place. Some chimnies, particularly near Rosbercon, are of brick, but they are of a mouldering nature, and not comparable to stone, though far preferable to the common wattled chimnies. Most houses have a porch to the door, which ought to be indispensible; the chimney is often rightly placed in the centre, which warms the whole house; the kitchen being on one side of the entrance, and the parlour on the other, separated by a little passage, the breadth of the chimney, into which the outward door opens. Such are the best farm houses; some of which, in the barony of Gowran, have cut stone door cases, of three blocks, which make a good appearance. Windows that open sideways, half the sash sliding in a groove behind the other, are the simplest, and least liable to accidents.

Such

Such offices as there are, generally form an irregular yard in front of the house; this yard is partially or wholly occupied by the dunghill; that is, by straw, or any other substance, collected and spread out to be constantly trampled and washed into such a state as serves for manure, when it appears sufficiently wet and dirty, or when the season call for it: before the potatoe planting, it is well if the passage to the house can be picked out, without slipping in an artificial quagmire. Mr. P. Walsh has built a neat village at Turkstown, in the parish of Fiddown, for some of his tenants, who are small farmers: the house is in the centre, the stable on one side, the barn on the other, forming three sides of a square, and the gable end of the houses to the road; he could not persuade the inhabitants to make their dunghill in any other place than between the three buildings. Mr. Walsh himself has erected a most admirable pattern for a farm house; it is an octagon of two stories, inclosing a yard in the centre; below is a dairy, a residence for the dairy-man, cow-house, stable, and other offices; above is a loft for corn, extended over the whole building; the yard is perfectly secured, and may be used as a straw yard or a haggard.

Adjoining farm houses are often planted ash trees; on the fence round the bawn, elder, sallow, or white thorn; in some places, particularly towards the borders of Munster, cherry trees: the sallow is the most useful, as it may be cut for kishes, baskets, and various purposes, and ought always to be planted round

the

the small inclosures or garden near the house; elder grows quickly when cut, but its value is little, except to shoemakers and butchers.

Sect. 17. *Tenures.*

The most usual tenure is for thirty-one years, or three lives, which ever shall last longest: this is not a good species of tenure, because the lives are more valuable than the years, and, therefore, the termination is uncertain; the effect of which is, that when one life only is in being, the tenant apprehending, from day to day, the termination of the lease, exhausts the ground, racks the farm, and keeps it in a state injurious to himself, and more so to the proprietor; although a single life may often extend fifteen or twenty years, or more, beyond the expiration of the certain term: and if the tenant or landlord wish to agree for a new lease, the difficulty of ascertaining the value of the life, which one is willing to enhance, and the other to diminish, prevents a renewal at a proper period: the same difficulty does not occur in renewals upon leases for years, and here the tenant will not be inclined to injure the farm, for his own sake, while more than three years remain unexpired. A provision may be made in the lease, for proper cropping, or for not breaking ground during the three last years, which cannot be so well done during the last life, or if done may be attended

attended with inconvenience, from the uncertain term of the restriction; if the parties wish to agree for a new lease, which is the best thing they can do, the value of the three last years, is matter of easy computation, and both being interested that the renewal should take place, the agreement will be soon adjusted.

If leases for lives must be given, a period for years should be joined to them, that exceeds in value the lives, and the more it exceeds them the better; if three lives are given, the years should be at least forty-one; of two lives, thirty-one. If property was the sole qualification for electors, as it ought to be, there would be no occasion for life leases at all; that is to say, if a man possessed of a long term of years, and a chattel property of a certain amount, was upon a footing with a forty shilling freeholder. What sort of property and independence these latter possess, is too well known. When forty shilling freeholders were first established, as the only electors in England, in the reign of Henry VI. it was because no other kind of property existed but that of land: but when regulations are, by bad policy, made to survive their expediency, as is too often the case, they are always productive of evil.

Entails encourage this mode of tenure, by limiting the extent of leases to these particular terms; and among other ill consequences is to be reckoned, the restriction of any renewals during the period of the demise: the tenant in tail should be empowered to make a new demise, whenever a lease has but three

or four years to run, upon a valuation properly made, and recited in the new indenture.

The ill effects of these tenures have been observed by others from experience; by Mr. Marshall, in his I. M. W. Engl. 48; and by Captain Fraser, in his report of Devon; and of Wicklow, p. 51. The system of agriculture, where not only the labour of the year, *redit actus in orbem*, but where the rotation of one year, should be the consequence of the past, and the preparation for the future, ought never to depend upon an uncertain term.

Many other species of tenure exist; as leases for ever, for ninety-nine years, for twenty-one years, renewable for ever at the will of the tenant; the latter made probably in uncertain times; but the three life tenure is the commonest, sometimes without the years, and sometimes the years are given without the lives.

Some land in the hilly district is held at will; but the number of these tenures decrease; the inhabitants of these districts, who generally live in scattered villages, and hold in partnership, obtaining usually a joint lease for years. Holding in partnership is the worst of all tenures; when by lease, each person is liable for the failures and deficiencies of his neighbour; and when without lease, the custom is a premium upon bad farming; a man otherwise industrious, will not manure his share, or till it well, because his neighbours do not do the same; he will not sow grass seeds for the same reason, and he who does least, profits by the labour of his partners: the

consequence

consequence is, that they seem to vie which shall leave the land when *let out* in the worst state; and then they quarrel about the liberty of turning the greatest number of miserable beasts upon it. The custom of these partners, when ground is to be broken for tillage is, to divide it into shares, or what they call *lochs;* and they are so desirous of making the divisions equal in value, that each portion, though small, does not always lie together, but is scattered in fragments according to the quality of the soil; so that a man having two acres of tillage, may have two roods in coarse ground, two in deep, two in stony, and two in wet, if these varieties happen to occur: when the division is made out, with much pains and some altercation, lots are prepared; each man takes a bit of stick, or particular stone, well marked; these are enveloped in a ball of clay, and a child, or stranger, is called to place each ball upon some one of the lots, by which each man's share is determined; this is the usual mode, and even then the occupier is not always satisfied with his share. These *lochs* in tillage are divided by ribs of sod left in the field, called *bones*, and are sometimes marked by stones, which is a better mode, as the ribs are nurseries of weeds: these divisions often produce a singularly striped and patched appearance in small farms. The common farmers are very sensible of the inconvenience of such a mode of culture, but they are so tenacious of every inch of soil, that they find it very difficult to agree upon a division; by degrees, however, they begin to partition their holdings

into halves, and into quarters, though seldom without many debates and revisals, which give a profitable livelihood to country surveyors. If an industrious man can at last acquire a distinct holding conveniently situated, he thinks himself happy, free and at his ease; in accomplishing this object, he should be assisted by the landlord, who when leases expire can divide the holdings with facility, and also should never grant a lease in partnership; and when lands are held at will, the expense of properly surveying would be very trifling to the landlord, and would be quadruply repaid by the immediate encreasing value and improvement of his estate.

Covenants. — Common printed leases, with the usual covenants, merely to secure the rents, are often used. As Lord Bessborough's estate is one of the greatest consequence in the county, and as it has been more particularly attended to, by intelligent and well informed agents, it may be proper to recite the heads of his usual leases; formerly many restrictive clauses were inserted in the tenures on this estate; they have now been reduced to the following:—

The landlord covenants to let the premises, as they are particularly meared, bounded, and described in the map or terrier-chart annexed, *reserving* to himself and heirs, all royalties, mines, minerals, coals, turbaries, quarries of marble, freestone, and slate; and all woods, underwoods, timber trees, and other trees now standing or growing on the premises, with liberty of ingress, egress, and regress, for himself,

self, servants and workmen to search for, dig and carry away the same (except in houses, office-houses, gardens, courts or yards) paying reasonable amends for waste or damage: and also reserving free liberty to hunt, hawk, fish or fowl; and also reserving full and free liberty, leave and license, with his servants, workmen, cars, carts and carriage, at any time to enter into the premises, and to make or run, or cause to be made or run, *a road thirty feet wide*, through the said premises, in any direction which he or his heirs may deem fit or convenient, and to make and erect ditches or fences thereto.

The tenant with these exceptions, is to have and to hold the premises during the natural lives of

paying the yearly rent of

together with two shillings in the pound yearly, for receiver's fees; the rent and fees paid at such place not exceeding miles from the premises, as the landlord or his agent shall direct or appoint, by two half yearly payments of clear rent, over and above all taxes, charges, assessments, impositions or payments whatsoever, ordinary or extraordinary, charged or to be charged on the premises by act of parliament or otherwise, (quit rent and crown rent only excepted.)

Then follow the usual clauses for distraining, if the rent is unpaid for 21 days, and of re-entry, if it is behind for three calendar months; and the tenant covenants truly to pay, and to maintain, repair and keep the premises, and all houses, edifices, trees, fences, hedges, ditches, plantations, inclosures and

and improvements whatsoever, made or to be made, in good and sufficient tenantable repair and condition, and at the end of the demise, to yield up quiet and peaceable possession. It is further covenanted and agreed, that the tenant shall also yield and pay over and above the yearly rent and fees before reserved, an addition or encrease of sterling yearly, to be paid with the former rent, in case he shall set, alienate, or parcel out to under tenants, commonly called *sub-setting*, either by writing or parole, any part of the premises to any person, without license under the hand and seal of the landlord, small holdings not exceeding one-third of the premises let to labourers, or cottagers, or tenants at will, excepted; it being the true meaning of the demise, that the tenant shall personally occupy the premises; provided always, that it may be lawful for the tenant at any time to sell and alienate in the *whole*, every part of his estate and interest in the premises, so that the landlord may have in his room *one single tenant* to charge with the reserved rent; it being the intention of the demise that the farm shall not be divided or split into different farms without the consent of the landlord. It is covenanted, that the tenant shall not sell or carry away, or cause or suffer the carrying away of turf or peat, off the farm, under a penalty of upon the performance of which conditions the tenant is to enjoy and possess the premises without let or hindrance.

In

In Lord Ormonde's leases, the tenants are restricted from breaking up ground during the three last years: in renewals of some of his old leases, clauses still subsist, that if the tenant marries a Roman Catholic he shall pay double rent, and the same if he shall set to a Roman Catholic. The fee-farm leases held under Lord Ormonde, which included a great part of this county, the chief rents of which are now sold, or upon sale, covenanted for the payment of Attales, as a beef, or 30*s.* in lieu, or some fowl, above the rent; for 6*d.* in the pound receiver's salary; and, to do suit and service of court to the manor. The leases of the Castlecomer estate have no particular clauses, except what are required for the free working of collieries; the terms usually are three lives, but the colliery land is held at will. On the estate of the present Archbishop of Dublin, are leases with numerous and severe restrictive clauses.

Restrictive clauses are seldom of use; and happily it has not been the custom of this country, to enforce a bad course of tillage by indenture; the landlord should only require to be well paid, and to prevent damage; among damages may be included sub-division or subsetting; and the safest way to prevent this is, by letting at a nominal rent, inclusive of the penalty, and allowing an abatement on condition of not sub-setting. One of the greatest evils in the country is letting to middlemen, who offer high rents for large tracts, for the sake of extorting rack rents from the miserable occupiers: Several landlords are too sensible to be fond of such

tenures,

tenures, and generally find that it is more advantageous to themselves and their estates, to divide the profit of the middleman, between themselves and the occupiers; in consequence of letting to these landjobbers, some grounds have been depopulated, tenants preferring to become cottiers on other lands, or vagabonds, when they find themselves not capable of paying the demanded rise, which they promised merely to preserve their habitations; and the middlemen generally promise more, and pay worse than any others. A middleman near Kilkenny, bound his under-tenants by an oath, to pay him rent on the day it became due, or to drive their own cattle, and this the wretches performed: illegal oaths being sometimes the most respected.

The times of payment are March and September, or May and November; one half year's rent is always left in the hands of the tenant, and often he does not pay till nine or ten months after the time expressed in the lease; on Lord Bessborough's estate, if the November rent is not paid on the first of May, a whole year's rent is required; which is reasonable and judicious; for it is injurious to the tenant to be in arrear.

Formerly the general time of going out was November, but now the 25th of March is the most usual time for taking land: the tenant going out receives two-thirds of the crop, after leaving the tenth sheaf for the tithe: the clergyman makes his agreement with whichever he pleases. It should appear that the best time for going out would be midsummer,

mer; when the least work was going on in the farm; and that the best times for paying rent would be December and June, which would allow both tilling and grazing farmers a sufficient time to sell off their corn and stock.

Tenants always pay every tax and cess, quit and crown rent excepted: farmers often pay the county cess for their cottiers when the holdings are very small.

The rents of lands in different parts of the county may be as follows; some coarse land in the northern part 2*s*. 2*d*. an acre; colliery land 10*s*. an acre; common farms in Fassadinan 17*s*. and 18*s*.: best ground in Fassadinan £.1 14*s*. 1½*d*. and worth two guineas: town parks near Castlecomer from three to six guineas; ground rent for building about 1*s*. a foot. In the hills of Gowran 16*s*. not uncommon; worst land about 8*s*.; some land has been let here for 23*s*. or 24*s*. which it was supposed the tenants could not pay, but the price of every kind of produce, made them eager to purchase each others interests: better lands of Gowran 17*s*. to £.3 8*s*. 3*d*.; 50*s*. a common rent. Some sheep walks near Gowran 23*s*. other lands near Gowran 50*s*. to £.3; grass land in Gowran and part of Idagh £.1 2*s*. 9*d*. to 30*s*.: best lands, hills of Knocktopher 2½ guineas; worst lands there, and in the hills of Iverk 9*s*.; low grounds Iverk often 40*s*. to £.3 8*s*. 3*d*.; £.3 common near the Suir. A farm at Portnascully of 250 acres, let for £.1000 a year, and 500 guineas fine; it consists of

of some of the best land in the county and is chiefly grazed: the meadowing sold off the farm, if more than necessary. Ground near the town of Callan £.6 or six guineas, £.5 not reckoned dear: parks near Kilkenny six guineas to £.12.: poor land from Bennetsbridge to Kilkenny 25*s.* to 30*s.*: the average rent of the county paid by the immediate occupier may be about 22*s.* an acre.

There is not much land in mortmain. The see of Ossory possesses about 9300 acres in the county, besides a few tenements in Irishtown, and the manors of Durrow and Freshford*. Extending the terms of ecclesiastical leases in England has been a means of improvement: "rapid improvements in husbandry" have been made on the property of the

* The manors of Freshford or Uppercourt, and of Castlewarren were alienated from the see by Bishop Thonery and disposed of to Sir R. Shee, whose son Lucas erected, near the gate of the demesne, a monumental cross to his wife, daughter of Lord Mountgarret, which was removed by the present proprietors to the square of Freshford: on this stone are the arms of Shee and Butler, and the lady is styled, *Maria Butler, pernobilis uxor Lucæ Shee.* Uppercourt was formerly called Bishopscourt, and was a country residence of the Bishops of Ossory, as were at different times, Aghaboe, Durrow, Bishopslogh. The manor of Durrow, was surrendered to the see by the chief of the Fitzpatricks; tradition says, he was compelled to do so, in expiation for having committed violence on a nun whom he found bathing in the river, and who resided in a small convent, dependant on the abbey of Durrow, in a little island in the Nore, called now *Anchorite island*, near Ballynasleigh, and in which some ruins remain.

the Archbishop of York by longer leases, 1 Marshall's York, p. 23. The same author justly observes, that good leases, "or a firm reliance in the tenants on the head and heart of the landlord, are on every estate absolutely *necessary* to improvements in husbandry:" that such reliance has fully its effect, may be seen in some instances; the best houses and most improved places upon the estate of Lord Bessborough in this county, those of Mr. P. Walsh at Belline and of Mr. Osborne at Annfield, are upon determinable leases. Landlords should make liberal allowance for improvements; as is done on the Fitzwilliam estate in Wicklow, where on 21 year leases, tenants improve as much as on perpetuities: in all cases, the proprietors will find their advantage in giving *certain* terms. One evil of ecclesiastical tenures is, the uncertainty of fines, which ought to be converted into rents for definite periods.

Sect. 18. *Enclosures.*

Their *size* in the wheat district is less than in some tillage countries, and varies from about six acres to sixteen; in the hilly parts the enclosures are small and very irregular, and generally from two acres to five: much land is lost by this irregularity, and angles are left untilled: stones are often spread upon headlands, or not picked off

lands

lands *let out:* instances may however be seen in the more hilly parts, of great labour having been employed to clear the ground; the stones, generally pieces of granite, are collected in such abundance as to form large piles, occupying a good proportion of the field. Near Tory-hill a young man had obtained an acre of ground, almost covered by very great stones, some were cracked mill-stones, which in the midst of a hot day he was trying to remove by his own strength, with the assistance of two large sticks; the neighbours had let him this acre, upon which he was to build a house, at a guinea rent, in consequence of his being just married; many of the stones were larger than mill-stones, and of such a mass as few men would have thought of removing; he had hoed between some of them to plant potatoes.

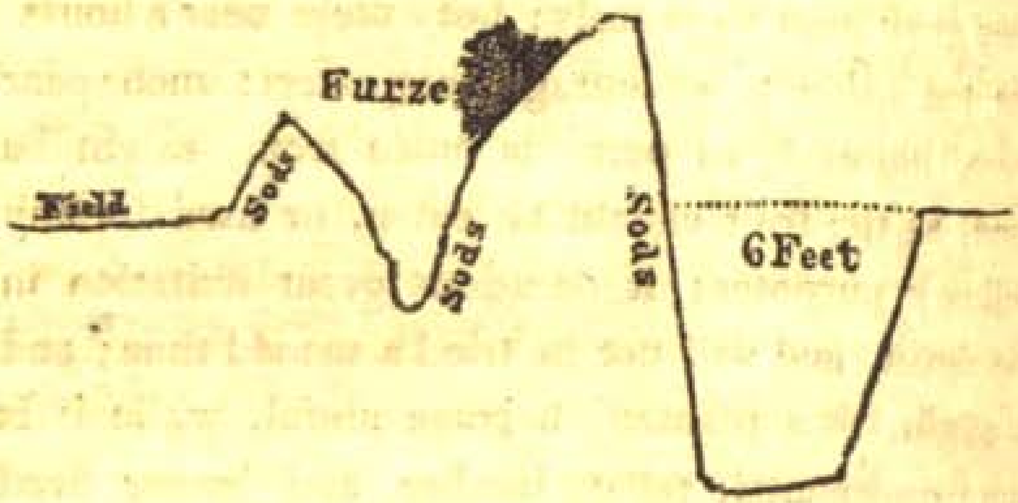
Mr. W. Barton divides his fields in acres by means of trees; the field is first accurately surveyed, and at the intersection of each acre, he plants either a horse-chesnut, timber sallow, birch, or Scotch fir; this may be done though the fences are irregular: one ditch being taken as the base; the fractional parts will be marked on the map, as well as the complete acres, and all equally known by the trees; the angle of every acre at the fence, has also its tree, which must differ from those in the hedge-rows. Elm, and all trees that throw up suckers, are to be avoided, and ash as injuring tillage: horse chesnut is preferred for this use, as being only ornamental, and not likely to be cut down for any purpose, and also from its not injuring

injuring grass; sheep too eat the fruit of it willingly. In these hedges he plants wildings, and grafts them; they grow most vigorously: but except near a house, are too liable to encourage trespassers: such pear trees, however, as perry is made from, might be used, as the fruit cannot be eaten, or used for any culinary purposes; it occasions great irritation in the throat, and will not be tried a second time; and it might, thus planted, become useful, while it is more ornamental, taller, hardier, and longer lived than the apple. In inclosing a field Mr. Barton made a bank by throwing the earth up with a plough, and finishing it with a shovel; no gripe was left, and no spade was used, except just in planting the bank, which is an excellent fence.

The common *fences* are of earth and stones, which ought not to be mixed in the same bank, as the stones always, by their weight, pull down the earth into the gripe, and therefore the fences are continually mouldering: the same may be said of sods and stones, however well arranged. Some are of dry stones only; a well built facing of which to a sodded bank, answers better than most common fences: but the usual dry stone walls are continually tumbling: one of sods only, will last about ten years. The stuff from the gripe, whatever it is, forms the bank, into the middle of the face of which are usually stuck small furze plants picked out of the fields; the back of the bank is often left exposed. Another mode is sometimes taken, and the fence made thus, faced

with

with sods, and with a lower bank of sods to the field.

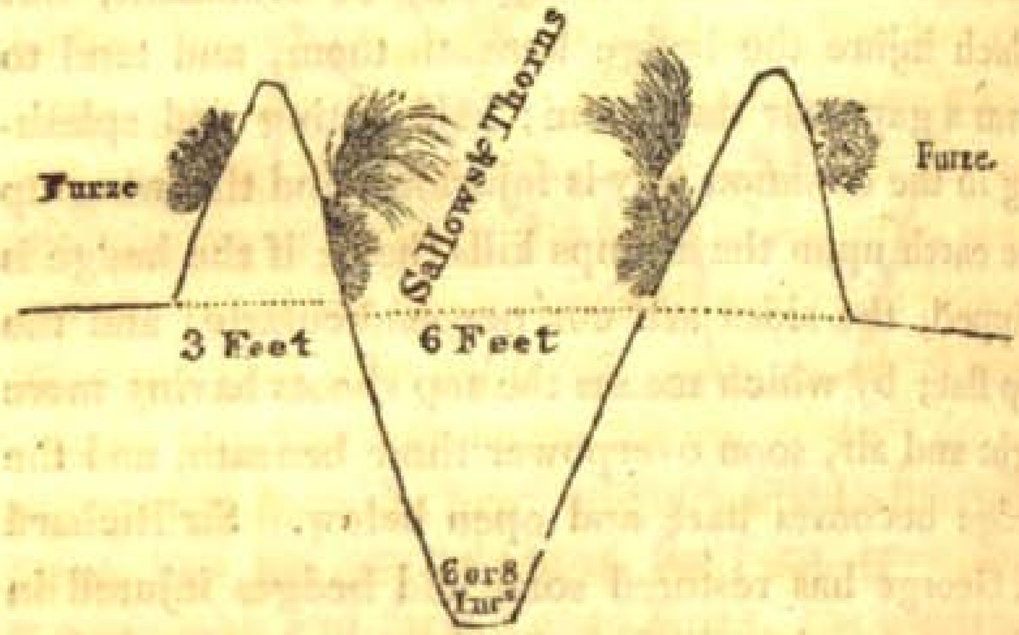


If the land is kept in a course of tillage for a few years, and not grazed, until the furze grow large enough, this will form a good fence; the plants will grow quickly, having room to spread their roots in a natural manner; they afterwards afford shelter, and cannot be killed by cattle. Thorn quicks are sometimes planted, but no attention paid to them afterwards; they should not be mixed with furze, or near them, or they will be destroyed. But to their destruction the farmer pays little attention. The banks of ditches where quicks have been set, are often in a few years but thinly scattered with a few bushes, and often topped for security with briars laid down with stones. In situations where they grow vigorously, good hedges are found, in spite of neglect; there are some near Freshford, and in the northern part of Galmoy, and some in Iverk, old as well as new. The new road made by Mr. Walsh through part of Lord Bessborough's estate, from the Carrick road, towards the mountains, and which has been of material service

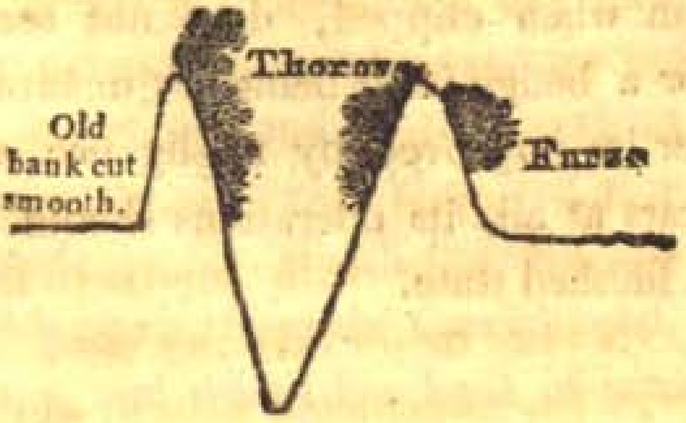
vice in improving the latter, is edged with well growing, close, and handsome hedges. When dressing is attempted, it is generally done injudiciously; standard thorns are left by way of ornament, but which injure the hedge beneath them, and tend to form a gap near their stem; half cutting and splashing in the common way is injurious, and throwing up the earth upon the stumps kills them; if the hedge is clipped, the sides are cut perpendicularly, and the top flat; by which means the top shoots having more light and air, soon overpower those beneath, and the hedge becomes bare and open below. Sir Richard St. George has restored some old hedges injured in this manner, by cutting them properly, in a slant from the bottom to the top, so that the hedge ends in a point; by this means, the lower part, which is necessary as a fence, becomes soon thick and impenetrable; a few branches are laid to fill vacancies, and the whole becomes green and ornamental. Old hedges, to be improved, should generally be cut down, and the new wood trained in this manner; and the cuts should be made with upward strokes. To leave hedges growing in a wild state, from the idea that they are more beautiful in their natural form than when clipped, does not seem a good taste; for a hedge itself being an unnatural object, can never be improved by negligence, and where art appears at all, its operations should appear in the most finished state.

Mr

Mr. St. George makes ditches with double backs which stand better than common ones; his large fences are thus constructed.



The inner hedges of sallows and quicks are perfectly protected when young; the furze sown on the backs of the banks are constantly cut for the use of horses; and one of the banks, may, when the hedges are well grown, be removed. Smaller fences may have a rib to defend the ditch, in the place of one of the banks. In repairing old ditches, he brings them as near as possible to the form of his large fences,



A double

A double row of thorns has been planted on the same bank by some persons, but one good one will grow better. Large double ditches are made to some demesnes, but to give space for timber trees to grow well, the bank must be very broad. When hedge rows are planted, which is not very often, ash are the trees generally used: their spreading roots are injurious; and ash, growing in groves, with straight and clean timber is more valuable; the best trees for hedge rows, are those with long tap roots, as oak, which do not injure the soil and which if well trained when young, will have tall and upright stems. Hedge rows should be planted, not on the bank of a common ditch, or in the line of the hedge, which they will damage, but behind the back of the ditch, and level with the field; if planted while the ground is in tillage, they may soon be out of the reach of cattle, otherwise they may be protected by a little bank for a few years. Beech hedges would give great shelter all the year on calcareous hills, to which the soil they are adapted. Near flag-quarries, flags are sometimes placed on the back of the bank, bending outwards, and make a formidable fence. Good stone walls are much used near towns: a wall with a hedge behind, at the back of which trees may be planted, seems one of the securest fences to a farm; and near the road a sunk wall with a hedge behind, has a good effect: but walls should be well built with mortar; those merely dashed, are little better than dry ones. Sir Richard St. George has constructed walls to small inclosures,

judiciously laid out for his stock, by building them dry of limestone, dashing and pointing well, and grouting with mortar of fresh lime, just liquid enough to run: the wall is then coped, and becomes soon a solid mass of limestone. The durability of mortar, depends on its slacking in the wall, and not being saturated with fixed air before it is used; the less water in it therefore the better, for which reason, wet sand has been recommended, piled in layers with the lime, instead of water. See Marshall's Yorksh. Some walls are topped with sods, one being laid upon its face, and two others to form a coping, propped up by clay in the centre; but these sods soon crack and crumble, and are a bad finishing to a wall.

Besides the white thorn, there are in common hedges, the black thorn, the privet, and near Kells, in one place, *Viburnum lantana*; in a few places *ribes glossularia*, also *rubus idæus*, and the common hedge plants.

Gates, are often wanting, the gaps where they ought to be, are filled with stones, or, in winter, open; the gates that exist are seldom hung back, so as to swing with ease, their wooden latch is usually broken, and they are secured by large stones at the bottom; by not having styles near the gate, it is broken or pressed down, being applied to a purpose it was not intended for. Gates, to be durable, should not be made with morticed timber, but the frame and bars should lie over each other entire, and be fastened by iron pins running through both, the point clinkered

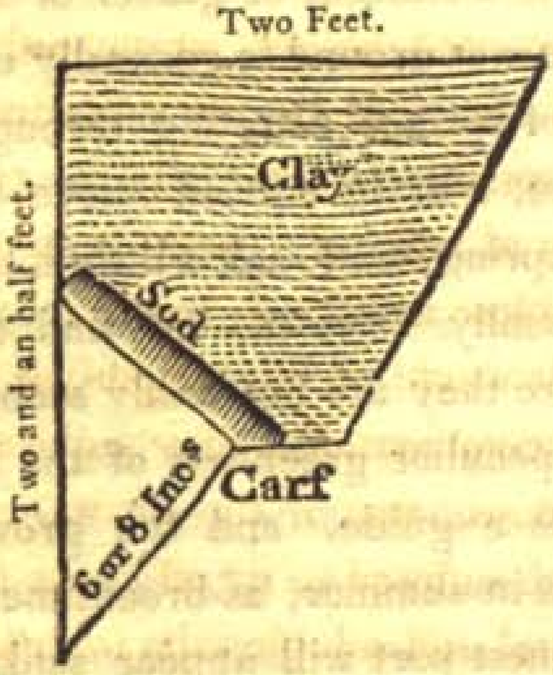
clinkered or clinched upon a small piece of iron: the same is to be observed in all works of wood used in husbandry, as the morticed part is weakest and liable to rot from the wet that insinuates itself.

Sect. 19. *Draining.*

The substratum of this country being generally a rock, the English mode of tapping or draining by a borer, cannot be applied in the same manner, as when there is a stratum of gravel or sand beneath the clay; but wet ground is generally caused by the obstruction of springs filtrating through the rock; in which case, a drain carried above the apparent place of the spring, and sunk a little into the rock at the head, usually dries it. To find the place of springs, where they are not easily seen, in swampy ground, the peculiar greenness of the herbage near them may be a guide, and the growth of some aquatic plants in summer, as brooklime. In clayey soils the thinnest part will appear sunk and rough, and the head should be opened there. Superficial drains are expensive and seldom effectual.

In a clayey soil, where no springs appear, but which is constantly wet, Mr. Boyle, steward to Lady Ormonde, has constructed drains with much labour, though part of the demesne. The main drain is in the lowest ground, or at the end of a

field, and in general 3½ feet deep, at top 2½ feet wide, and at bottom one foot: the bottom made with three large stones. The surface drains fall into it; they are but a foot asunder in stiff clay; they are two feet wide at top, the side next the fall is two feet perpendicular, or 2½ feet; the opposite side forms an acute angle, and has an off-set or carf of six inches, and six inches from the bottom, on which rests a firm sod, leaving a triangular passage open for the water; the sod is from ten to twelve inches square; by forming the bottom of the drain in an angle, he finds the sludge does not impede the water, as it would do if the bottom was square.



The outlet is formed of stones to prevent it from mouldering. Pipe drains made with a rope, which is pulled out of the clay when covered, might be used in such grounds.

Surface water is seldom of much consequence, except in very tenacious clays, and generally may be got rid of, by open ditches made into the subtratum round small inclosures.

Sect. 20. *Manures.*

Dung.—Dunghills should be treated in a manner, usually the opposite, to what they are by common farmers; they should be shaded and protected as much as possible from rain and sun; not too much spread, not pressed down by treading and by cars, not on a declivity, or on a porous or gravelly soil, nor in a wet hollow: they should be on a paved or hard bottom, which should also be covered by earth, sods, or turf-mould, to imbibe the filtrating juices; and a well secured hollow, at one side, filled with sods, or earth, may receive the superfluous moisture: the common practice is generally the contrary to all this. The art of making a dunghill, is to mix all the parts, and to lose as little as possible by evaporation or solution. It would be too tedious, to trace here all the chemical combinations, that ought to take place; but it is obvious, that if the nitric, carbonic, and other acids are suffered to fly off in the form of gases, or if the neutral and soluble salts formed, are washed away, that the dunghills will lose some of the parts most necessary to vegetables; and that others, for want of ammonia, or of salts to combine with, may remain insoluble oils. Dung should be put out in a state of incipient fermentation, for several reasons; the volatile gases will be arrested in their nascent state, and form useful combinations. Dung should be put on

meadows

meadows rather in spring than in winter, and not carried out in wet weather; in winter, frost and too much rain, will impede its effects; and when plants are not in a state of vegetation, manure not only does them no service, but may kill them by rotting the fibres of the roots, as is well known to be the case with clover. Mixed with mould its effects are more permanent. The street dung of Kilkenny is sold at a good price; the sweeping of John-street is rented at four guineas a year, and that of other streets in proportion.

Lime.—A knowledge of the effects of lime, is necessary to farmers who would use it to advantage. Plants are not only nourished by the decomposition of vegetable and animal substances, but also by the solution of mineral ones: whence calcareous earth becomes a constituent part of many vegetables, as iron is a necessary part of all. The partial solubility of lime in water, is but a small part of its office as a manure. Many substances in an unsaturated state not only unite to gases, but seem during that time to part with a portion of them with facility; so lime, during the period it takes, which in the earth is many months, to recover its fixed air, may during that time, part with some of the fixed air it continues to attract, which plants may receive and decompose. Lime also attracts water from the atmosphere, and, in its combination with it, sets at liberty a large portion of caloric, which promotes vegetation by adding to the temperature of the surface of the earth; and this attraction taking place slowly, the caloric is not lost

and

and dissipated, as in the sudden slacking of lime. Nor will lime, saturated and converted into calcareous earth, remain in a quiescent state; for having a greater affinity to most of the acids, that it may meet in the soil, than to fixed air, as to the sulphuric, nitric, oxalic, acetous, and muriatic, it must often form new salts, at the expense of its carbonic acid, which it will give out to be imbibed by vegetables: some of its new combinations being soluble, become the food of plants; or remain to neutralize other acids by new combinations. The property of lime in neutralizing acids, is to be attended to peculiarly by farmers, as it shews the great effects a small quantity may have in boggy earth, or sour ground, where vegetation is impeded by the presence of the sulphuric or gallic acid. It has in some degree a septic quality, by which it contributes to the decomposition of other manures, and might be useful as a top dressing to ground previously dunged. It is supposed to decompose water; and for this reason, as well as that its particles may be diffused and mix with the decayed leaves on the surface, it may with advantage be mixed with water, immediately before it is turned over grass land. A due proportion of calcareous earth, seems requisite to make a fertile loam; and therefore farmers should know the proportion contained in their soil, that they may add a proper quantity to correct the deficiency. Powdered limestone has a very sensible effect; where fuel is expensive, stamping mills might be cheaply worked by water. The experiment would have been made on a large

a large scale in Scotland, had not a violent flood destroyed the mill (see Perth. 33): mild calx would have as good an effect as lime in neutralizing acids, or in composing good mould, but in other cases lime is preferable. A partial effect both of lime and ashes, is to destroy insects and convert them into manure.

Kilns, in the calcareous district, are often built entirely of limestone, the inner surface chips off gradually, and such a kiln will last, without repair, about twelve years; and then may only require new lining: the outside is sometimes built of mountain stone, but limestone is preferred for the inside, probably to avoid vitrification; a common kiln, thus built, costs about £.1 : 14 : 1½ *d.* and contains sixty-two barrels of roach lime. The proper form of a kiln is not the oval shape of the bottle-kilns usually made, but that of a cylinder upon a small pointed cone. Mr. R. St. George built two kilns of the same diameter, and fifteen feet deep; the one was oval, the other was cylindrical for ten feet, and sloped for five feet to a point; the former turned out twenty-one barrels in twenty-four hours, and the latter twenty-five in the same time, with nearly the same quantity of fuel: and the burners found it easier to burn the stone in it, and easier to draw the kiln: in an oval kiln the lime adheres to the sides.

Some kilns are made in Galmoy with clay, or unburnt bricks, and by a coating of sand become vitrified on the inside.

At Woodsgift Sir Richard St. George applies limestone to the use of his kitchen; one barrel of culm

burns

burns in the grate near six or seven of lime, if the draft is good; a few coals are occasionally put in front for roasting. Mr. Helsham applies a lime kiln at Kilkenny to the purpose of his hot-house, for which it is well calculated, and the fire becomes profitable instead of expensive.

In the district of Callan and Knocktopher, the Sliegh-vardagh culm is used: it is bought at the pits for 2*s.* 2*d.* a kish, containing about 3½ barrels: in 1800 it was retailed at Callan for 2*s.* 2*d.* a barrel; in 1801 for 2*s.* 6*d.*: at Kells for 3*s.* 3*d.* a barrel; a car goes and returns in the day. In Iverk some Welsh culm is used, but the Castlecomer is preferred, which is used over the rest of the county: from Leighlinbridge it is sent by water, and comes up the Nore: its price in 1790 was from 2*s.* 9*d.* to 3*s.*, and in 1800 4*s.* per barrel. A barrel of culm burns five or six barrels of lime, according to the quality of the stone.

In Iverk the price of lime is from 14*d.* to 16*d.* a barrel; about 80 barrels are used to an acre, mixed with earth: in Galskill lime is from 13*d.* to 14*d.*: near Kilmagany 13*d.*: near Thomastown it has risen from 10*d.* to 13*d.* within these three years: but here it is usual to sell by the barrel of three bushels, or herring gage, though forbidden by law under a penalty of five pounds for every barrel. At Powerstown lime is sold by the barrel of four bushels for 16*d.*; and the stone, for the sake of a good quarry, is drawn some miles: farmers from the county of Wexford, come here to purchase lime, and draw it home 25 or 30 miles, over mountain roads, and through difficult passes,

passes, as the Scollagh gap near Mount Leinster; the lime on the car is covered by a close mat. Near Gowran 120 barrels are commonly put on an acre, and more by rich farmers.

Limestone is brought up the Nore from quarries above Waterford bridge. An injunction was obtained to prevent raising it near Granny, though the quarry is inexhaustible. Near Kilmacow it is sold for 28 *s.* or 29 *s.* a boat-load of 22 tons: two men quarry the stone, and load the boat with ease, in three days, and with labour in two; and get 6 *s.* 6 *d.* for raising a boat-load; a lighter can come up to the quarry: the strata are here curving and irregular, and dip principally to the north-east. Limestone is brought to Castlecomer from near the cave of Dunmore; a car can make two turns in a day in summer; the stone is blasted, and is raised for 3 *d.* a load

Fine granulated dark grey limestone, from the quarry of Newtown, near Thomastown, digested in marine acid, left a residuum of 7 grains in 100: the solution gave no precipitation with volatile alkali; and but a small one with prussiate of potash: the residuum was black, with small shining particles of mica; one-third of it appeared to be carbon, and was burnt with nitre; the rest silex, with a little mica; so that it contained 93 per cent. mild calx, with a little iron, 2½ carbon, and 4⅔ silex and mica. Another specimen of reddish limestone, from the same place, left a residuum of 6 grains in 100, of a reddish grey colour, containing two grains of carbon, and four of silex and mica; the solution gave a greater precipi-

tation

tation with prussiate of potash; none with volatile alkali: these trials are sufficient for common purposes; it was not thought necessary to ascertain the small quantity of iron, or the proportion of water and fixed air.

Limestone-gravel—is raised from pits in several parts, beyond the limestone district, and at its edges; in the pits it is usually skreened, and used upon mountain ground, where its effect is almost equal to that of lime: eighty loads of from five to six hundred weight, are commonly put to an acre. The stones in the pit are of various kinds: the best limestones are picked out and burnt: the raising these stones is expensive, and lime, near the Nore, cannot easily be burnt from them under 13*d.* or 14*d.* a barrel. For the same purpose it is raised in part of the parishes of Ballycallan and Tullaroan, and is not uncommon in Ballinamara.

Rotten limestone and calcareous sand.—These manures are found in different places, and of different qualities. Before the practice of burning lime came into common use, which is not above seventy years, these formed the principal manures of the county: for which reason great pits and excavations are to be found, from whence they were raised; some extensive ones are to be seen at Kellymount, and in the parish of Powerstown, where some sand of a yellow colour is still used, as it is also, near the abbey of Jerpoint, and in other places. The most remarkable manure of this kind is found in the barony of Iverk, as has been mentioned before; and its application is thus stated by the Rev. Mr. Shaw. "The kind of

ground

ground that this sand is most useful in, is the mountain boggy ground, or heathy moor, and the general quantity used to this ground is, when reclaiming it from bog, 100 loads to an acre; this is capable of loosening the stiffest wet ground, and has the exact property of lime in that respect: they never use this sand again for ground that gets this coat of it, until ten or twelve years; and, in ground, where the tillage has been continued, in giving the second coat, they put from sixty to eighty loads to an acre, according to the wetness or stiffness of the ground; they very seldom use a third coat. In the low lands it is never used, where the soil is rich and deep; nor does it seem calculated for the low land ground, as its principal property is in reclaiming wet, turfy mountain; and nothing that has been used has succeeded so well. By the report of the oldest mountain man, who has been in the habit of using it, they are increasing in the use of it, and there are ten horses employed in drawing it now, for one that did so twenty years ago. This man has been using it sixty years, and, from his observation, they must have been in the habit of using this sand these 1500 years: for there are several large old pits, that he never remembered to have seen dug in; and, for these sixty years, he never remembers any other pits open, than the present ones; and, though they have been increasing in the use of it, yet comparing the quantity raised these sixty years, with what must have been taken out of one of the old pits, it will take sixty years to come, to sink the present pits to the depth of one of the old pits, of which

there

there are fourteen or fifteen: indeed, from my own observation of the little impression ten years have made, and the size of the old pits, it would appear that they have been using it these 2000 years; for the mountain ground was the only part cultivated at that time, for this vale was formerly so completely covered with wood, that there were very few acres of arable land, as appears by the amazing number of roots and stumps to be found in every field."

The pits occupy an extent of about five acres; as Mr. Shaw resides on the spot, his calculatious are probably very accurate, though from the appearance of the pits, a less period might be supposed to have exhausted them. The course of crops with this manure is, potatoes, oats, the gronnd is then dunged: it encourages white clover and corrects the acidity of the soil. The sand is of various colours, some resembles burnt limestone in appearance; the quality of various specimens was very different: some, about three feet from the surface, of a light yellowish brown, and with fragments of calcareous spar, did not contain quite 40 per cent. mild calx, the remainder, chiefly argill, with a little silex and iron. Some, of a light brown colour, friable, rather soft, with gritty particles, contained 49 mild calx, with a little iron, 51 argill, with some very fine silex. Some, which was dark brown, and friable, contained 94 mild calx, and 6 fine siliceous sand: the solution was of an olive colour, gave a slight precipitation with volatile alkali, contained a little

iron,

iron, and apparently some manganese. Another specimen, which was streaked, lamellar, and like rotten stone, lost in marine acid but 21 per cent., the residuum was chiefly argill, some siliceous sand, and a good proportion of iron: part of the same specimen lost in nitric acid but 16 per cent., the residuum, a white powder, of argill and silex, in which some minute pieces of quartz were apparent. As this manure may be had, differing so much in the quantities of its constituent parts, it should be applied accordingly.

A manure, somewhat similar, is raised near Kilmacow, and is in great request under the name of *Kilmacow sand;* it is esteemed as good as lime on mountainy ground, and is put out at the rate of 80 or 100 loads per acre; sometimes, but 60 barrels are used; and it is spread thin; and is said in some places to be preferable to lime, and its effects to remain longer. Though there is plenty of it, yet the raising it was prohibited on one estate; it lies on both sides of the stream, and adjoins the limestone. It was sold for two guineas a boat load of 22 tons, but to the country people who live near, for 4*d.* or 5*d.* a car-load: on the grounds adjoining, however, it is said to have little effect, or on grounds where it has been used before. It has been carried up the Nore as far as Inistioge, and from thence drawn for some miles up the hills.

As this sand was in great request, and its effects much boasted of, even when used in small quantities and spread on the surface, several trials were

were made to ascertain the quantities of calcareous earth it contained, by specimens taken from different parts. One specimen of a pale yellow colour, contained 10 per cent. mild calx, 68.75 silex and 21.25 argill: another specimen lost 14 per cent. in marine acid: another, lost 13 grains in 100, of which 2 grains were iron, so that it contained 11 grains mild calx: another specimen lost not quite 11 grains, the residuum contained 60 silex, 29 argill; the solution gave a great precipitation with prussiate of potash, and a small brown precipitation with volatile alkali. The small quantity of calcareous earth in this manure seems remarkable; but the lands upon which it operates with effect, are either, mountainy grounds, which have much acidity that requires to be corrected, or else thin soils which have a large proportion of argill; in the former case, the calcareous earth is sufficient, and in the latter, the large proportion of silex is probably of use. This sand seems to have been formed from the decomposition of a bad species of limestone, which contained a large quantity of basanite; the pieces of basanite, nearly whitened, are plainly seen, and they contain numerous small impressions of shells, chiefly entrochites, from which the calcareous part of the manure, which is yellow and soft, is mostly derived. Some of it may be little more than decomposed basanite with these impressions. Oxide of iron is certainly not useless as a manure, as it enters into the composition of plants; besides that, in the soil, where it is in different states,

it

it may not only attract, but let loose again, part of its oxygen.

Marle.—Great quantities of marle are found in different parts, generally mixed with fragments of limestone: 200 loads, and sometimes near 300, are put on an acre in some parts of Knocktopher; but lime being the manure chiefly sought for, marle is not generally raised, though it may be found dispersed in most parts. The mode of putting 1000 barrels to an acre, as done in the county of Wicklow, which produces fifteen or twenty crops, is unknown: the marle of this district perhaps differs, by inclining more to gravel, and does not lie in extensive beds, but in hollows at the bottom of hills; nor is it always of a good quality. Besides the common clayey marle of various colours, found near the Barrow, in the hills of Knocktopher, and almost in every part, out of the limestone districts, and also some white crumbly marle in Galmoy (nearly all calcareous), shelly marle is found in different places; it is raised from a stream at Kilrush, of a whitish grey colour; near Urlingford, white, and greyish brown; on the glebe of Mayne, whitish, with shells belonging to the small fresh water welk; this animal is supposed to live but one year, and therefore a bed of its remains might be speedily formed; this last is in boggy ground that appears by the roots of oak to have been once covered with wood, and afterwards with water; this serves as a good surface manure: marle near Urlingford, tried by Mr. Neville, did not answer for potatoes.

River

River sand, often called *sea sand*, is more extensively used than marle: it is raised in the middle of the river, about three miles below Ross, and also from a shoal near the left bank; it is sold, by the boat load, according to the distance it is carried; for 7*s*. 7*d*. in the parish of Roer, for about 50 good car load, or 80 horse load in sacks: at Ballyneale from 10*s*. to 13*s*.: Inistioge, 16*s*. 3*d*. for a boat load of from 10 to 12 ton; which in 1790 cost but 9*s*. 1*d*.

One boat load is usually put out to an acre, and two, or sometimes more, when wheat is to be sown. 24 per cent. was soluble in marine acid; the remainder was fine siliceous sand with a little mica; the solution contained some iron. From the river this sand is usually carried in bags, holding about 20 stone, upon horses backs. It is not accounted a lasting manure; on low grounds, a load of lime is reckoned better than five of sand. At the edge of the river near Ringville, black mud containing rotten remains of vegetables, is raised, and is excellent manure for light ground: some sand is also taken up containing thin broken shells, appearing to belong to a species of *Tellina*: earth of old ditches and from boggy ground is often mixed with it.

Turf mould is sometimes spread in yards, and by imbibing the urine of cattle becomes fine manure; it is also mixed with the river sand from Ross, which is found to answer better in this way than in any other: *composts of lime and earth* are common; this being the usual way of applying lime to potatoes.

Near Castlecomer the scrapings of the roads are found an excellent manure; their effect is almost entirely from the particles of culm or coal, as the roads are made of a broken siliceous stone: this manure is said to be more lasting than stable dung: even culm has been used alone; and some coal smut, which consists of culm and clay, was spread upon grass by Mr. Shekleton of Castlecomer, and produced luxuriant herbage.

Manure is made by spreading furze, fern or straw in lanes and high roads, though the latter is contrary to law. But attention is not paid to preserving the refuse about houses, as ashes, which ought to be kept dry, bones, soap-suds, &c.; river weeds might also be collected and made to rot in heaps, with advantage: nor are any top dressings used, which would be highly useful in light soils, and to forward backward crops.

Salt—tried as a manure for meadow land and potatoes, by Mr. J. Robertson of Kilkenny, was injurious in proportion to the quantity laid on, and prevented vegetation; nor could any difference for the better be observed in the grass next season: the salt used was the scourings of herring casks, which might have been expected to be superior to pure salt, from containing animal matter.

Burning—is the usual way of bringing ground into tillage: some landlords prohibit it entirely; others pay no attention to it; but several judiciously permit it, under restrictions. On Lady Ormonde's estate, it is allowed upon the tenant entering into a bail-bond

bail-bond with a penalty, to put out 100 barrels of lime per acre the second year, to take but two crops, and to lay the land down with grass seeds; upon Lord Bessborough's estate it is permitted to burn rough coarse ground, upon the tenant's certifying that it was never tilled before, to be proved by the oath of a credible person if required; he must state the exact quantity, and obtain leave before he ploughs or graffs the ground; and the quantity after burning, may be ascertained by the landlord's surveyor, who is to be paid by the tenant.

Skinning ground with a hoe, is a kind of trade, which expert persons sometimes go about to perform, and earn 13*d.* a day and diet. When the ground is ploughed but once and the large sods made into great heaps, it is called *great baiting;* which ought never to be permitted; as, in the burning, great part of the carbon, and every thing that can be volatilized, is dissipated by the fire: when the ground is cross-ploughed and harrowed, and the sods shaken with a fork, and made into small heaps, it is called *small baiting.* If the fire is kept close and well covered, as in making charcoal, the soil will receive rather improvement than injury: a quantity of carbon is formed, as well as vegetable alkali, and little can be dissipated except water, which the land soon recovers. Burning indeed adds nothing new to the ground, but it brings into use, all the vegetable food it contained, at once; consequently if successive crops of corn are taken from it, it will be in a few years perfectly exhausted, and

may take a great length of time to recover: but the cropping should always be limited, and other manure should be added the second year; dung, if possible. With small baiting, sea sand or marle is generally added in equal quantities. When the penalty for burning was but £.5 an acre, some farmers have run the risque of doing it without leave, and sometimes paid the penalty.

In boggy and heathy land, it is the best preparation for tillage, if judiciously done, and the ground put into a proper course: in adhesive and clayey soils, it might be very useful. Burnt patches generally remain covered with white clover; and wherever a heap of baiting has stood, the crop is always the best.

PART III.

GENERAL SUBJECTS.

SECTION I.

Population.

THIS county is said in 1732 to have contained 10,755* families; of these 970* were protestant: in 1777 Mr. Bushe stated it to contain 12,680 houses from hearth money returns: and in 1788 the houses were thus numbered;

Of two hearths and more	1,478
Newly inhabited . . .	382
Belonging to paupers .	2,035
Of one hearth	13,409
Total .	17,304 houses,

at six in a house, the population would have been 103,824: the hearth money returns are often incorrect, and six in a house is not too high for the country parts: in a village which I examined, the average was nine, in others seven or eight. By hearth-money returns in 1791, the number of houses was 17,719.

The

* Both these numbers were under-rated, as must appear from the following tables.

The following tables (for 1731) are made from returns preserved among the papers of the see of Ossory, which the Bishop obligingly communicated; they were drawn up in consequence of an order from the House of Lords, with great accuracy by the parochial clergy, with the names of the master and mistress of each family, and the different ages of the inhabitants: unfortunately they are imperfect, or an exact enumeration of the county in 1731 would have been given; the number of protestants is added and compared with the present numbers.

The present population is stated from the best information that could be obtained; where the number of families was not known, the number of houses, from the hearth money books, are stated, which in the country parts is nearly the same; and a mark is affixed to these.

An account was taken in part of the baronies of Gowran and Idagh in 1798 of 1114 houses, and the inhabitants were found to be, males 3082, females 3245, total 6327: not much under six to a house; but as the hearth money returns are inaccurate, that proportion has been adapted, where the actual number could not be obtained.

To some clergymen I am obliged for the return of the population of their parishes: to the Rev. S. Roberts, Rector of Mothell; to the Rev. S. Ball, Vicar of Odogh and Donoghmore; to the Rev. P. Helsham, Rector of Thomastown; to the Rev. A. Hamilton, Vicar of the Union of Attanah; to the

Rev.

Rev. J. Ridge, Rector of Erke; to the Rev. J. Pick, Rector of Fartagh; to the Rev. J. Ker, Rector of Listerlin; the Rev. Edward Carr, Curate of Roer; the Rev. Mr. Carroll, P. P. of the same parish; the Rev. R. Shaw, Rector of Whitechurch; the Rev. H. Hamilton, Prebendary of Kilmanagh; and to the Rev. Mr. Grady, P. P. of Tullaroan and Freshford, for a very accurate statement of part of his parishes.

Note.—In the first tables (for 1731) *Smithstown, Ballylinch, Grange-legan, Garran, Bawn, Monktown, Tamaghchurch,* appear to be included in the adjoining parishes.

In both tables, *Kiltorcan* is included in *Derrynahinch*, and *Alish* in *Rathkyran.*

In the second tables (for 1800) the whole of the hearth-money returns for the county are comprised; and therefore all ancient parishes, whose denominations are omitted, are included in others.

PARISHES.	*Population in* 1731. Inhabitants.	of whom	Above 60.	Under 10.	Protestant families.	No. of Protestants.	*In* 1799 *and* 1800. Protestant families.	No. of Protestants.	Increase since 1731.	Decrease since 1731.
Rathcool,	123		13	33	none	none				
Kilkyran,	98		2	18	none	none				
Mothell,	423		26	113	8	38	38	—	27 fam.	—
Kilmodimoge,	81		6	21	3	12				
Kilderry,	103		11	36	none	none				
Blackrath,	199		9	44	4	28	4	—	same	—
St. Martins,	69		6	13	1	5	none	—	—	5
Ballyburr,	51		6	12	none	none	none	—	—	—
Kilfane,	314		1	71	9	55	4	—	—	10 fam.
Tulloherin,	394		5	106	5	22				
Killarney or West Jerpoint,	44		1	6	2	17	none	—	—	17
Knocktopher,	614		31	97	4	32				
Kilneddy,	282		13	77	3	6				
Aghaviller,	446		19	104	11	53				
Derrynahinch,	263		11	56	3	12	38	145	—	10
Kilmagany,	371		16	79	9	39				
Dunamagin,	330		36	82	2	5				
Tullohoght,	167		6	29	1	8				
Kilkeasy,	355		12	71	3	7	1	—	same	—
Church-Jerpoint,	274		25	40	5	23	*5	—	same	—
Burn-church,	421		34	104	13	69	5	—	—	8 fam.
Dunfart, Aghnamult,	394		16	88	4	34	4	—	same	—
Blanchfieldstown,	46		2	8	3	16	1	—	—	2 fam.
Earlstown,	225		19	47	2	14				
Stomcarty,	178		18	44	1	7				
Kells,	651		40	161	9	40	20	—	—	3 fam.
Kilree,	151		9	28	2	17				
Ballaghtobin,	185		11	32	4	27				
Mallardstown,	168		21	31	5	14				
Odough,	337		5	56	7	39				
Donoughmore, Kilcormick,	645		18	139	2	9	13	—	same	—
Cooleraheen,	157		15	32	4	17				
Freshford,	417		20	112	15	79	20	85	6	—
Ballinamara,	362		5	116	3	5	15	78	67	—
Clashicroe,	155		8	41	1	6				
Cloghmanta,	120		5	40	1	12	15	59	18	—
Kilrush,	37		1	—	3	29				
Tubrid-Britain, Kildrinagh,	264		9	59	9	35	9	31	—	20
Killaghy, barony of Crannagh,	83		3	10	4	16				
Rathbeagh,	299		17	81	7	38	6	21	—	17
	10296		541	2342	166	885	198	Increase of Protestants,		32 fam.

* Present number nearly the same as in 1731: but not reckoned.

PARISHES.	*Population in* 1731. Inhabitants	of whom	Above 60.	Under 10.	Protestant families.	No. of Protestants.	*In* 1799 *and* 1800. Protestant families	No. of Protestants.	Increase since 1731.	Decrease since 1731.
	10296		541	2342	166	885	198			
Sheffin,	496		5	173	10	26				
Clontubrid,	96		3	28	3	12	9	35	—	3
Coolcashin,	40		—	11	none	none				
Ballylarkin,	88		8	30	1	8	—	1	—	7
Acharney,	350		—*	—*	2	4	none	none	—	4
Kilmeenan,	133		10	34	none	none	none	none	—	—
Attanagh,§	136		12	30	1	6	none	none	—	6
Glashare,	164		6	28	8	48	†4	—	—	4 fam.
Eirke,	795		15	64	21	94	10	—	—	11 fam.
Durrow, Kilkenny part,	1015		39	205	32	187	48	—	16 fam.	—
Fartagh,	550		25	80	10	45	11	—	1 fam.	—
Urlingford,	84		8	21	none	none				
Rathlogan,	8		—	1	none	none	none	none	—	—
Callan,	1371		60	258	53	210				
Killaloe,	509		15	91	7	25				
Tullomaine,							41	—	—	37 fam.
Quologh or	399		14	97	1	6				
Coulaghmore,										
Ballycallen,	445		41	89	3	13				
Tullaroan,	677		60	129	14	64				
Inchiwolahan or	73		12	10	3	6				
Castle-inch,										
Grange,	184		21	46	4	11	3	—	—	9 fam.
Tullahanbroge,	189		16	38	5	33				
Outrath,	146		10	35	none	none				
Columkill,	300		28	70	11	45	3	17	—	47
Brownsbarn,	73		2	15	3	15				
Clonamery,	285		1	60	1	8	4	19	11	—
Rosynan,	77		11	18	1	5	none	none	—	5
Killaghy, barony of Knocktopher,	100		7	10	none	none	none	none	—	—
Listerlin,	180		6	35	2	6	none	none	—	6
Rosbercon,	443		23	103	9	46				
Dysertmoan,	549		40	139	4	23				
Shanbough,	192		8	46	2	16	15	—	—	17 fam.
Ballygurrin,	214		4	63	none	none				
Kilmacavoge,	250		—	54	5	23				
Rathpatrick,	490		16	107	12	67				
Roer,	1400		93	361	23	120	8	—	—	15 fam.
Kilmacow,	398		16	66	7	46	7	—	5 amen°	—
Kilcoan,	83		8	27	none	none	none	none	—	—
Kilbride,	75		7	20	none	none	none	none	—	—
Gowran,	688		27	155	21	121	10	—	—	11 fam.
Tascoffin,	173		9	41	none	none	10	—	10 fam	—
	24220		1233	5234	445	2228	381	Decrease of Prot.		64 fam.

* Not mentioned. § Kilkenny part. † Not reckoned, probably 3 or 4.

PARISHES.	*Population in* 1731. Inhabitants.	of whom	Above 60	Under 10.	Protestant families.	No. of Protestants.	*In* 1799 *and* 1800. Protestant families.	No. of Protestants	Increase since 1731.	Decrease since 1731.
	24220		1233	5234	445	2288	381			
Dysert,	472		46	111	2	11	36	—	34 fam.	—
Dunmore,	200		10	48	8	34	none	none	—	34
Kilmodum,	179		15	33	2	12	none	none	—	11
Macullee, or Mucully,	179		7	35	1	8	2	—	1 fam.	—
Kilamety, Rosanany,	247		4	80	none	none	none	none	—	—
Dungarvan,	367		3	85	3	20	2	—	—	1 fam.
Dunkitt,	615		47	77	28	103	14	—	—	25 fam.
Kiltogegan, or Gaulskill,	192		8	19	11	56				
Kilcullyheen,	422		4	82	20	92	6	—	—	14 fam.
Macully, or Mancully, barony of Iverk,	126		9	32	2	9	1	—	—	1 fam.
Poleroan,	697		35	217	7	38				
Clonmore,	217		22	17	8	27	2	—	—	22 fam.
Portnascully,	630		36	136	5	23				
Ullid,	415		15	99	4	18				
Aglismartin,	148		10	4	none	none	none	none	—	—
Fiddown,	1013		18	186	59	236				
Bewley, or Owney,	363		11	83	4	18	72	483	247	3 fam.
Tubbrid,	71		1	14	1	6				
Tipperaghny,	292		3	72	5	40				
Castlane, or Whitechurch,	285		3	68	8	38	2	—	—	5 fam.
Ballitarsney,	201		—	55	5	32	2	—	—	3 fam.
Rathkyran,	445		37	98	8	34	3	—	—	5 fam.
Treadingstown,	20		—	—	1	10	none	none	—	1 fam.
Claragh,	182		25	27	1	3	48	—	—	23 fam.
St. John's,	1826		132	340	70	460				
St. Mary's,	2463		180	279	165	897	70	—	—	95 fam.
St. Patrick's,	799		83	181	28	128	24	—	—	110 fam.
St. Canice, nearly,	2652		232	636	106	395				
	39948		2229	8389	1007	4976	665	—	—	—
*Thomastown,	497		25	113	5	44	23	111	67	—
*Inistioge,	974		77	161	33	183	42	241	58	—
*Kilferagh,	303		13	63	3	29	1			2 fam.
*Kilbeacon,	386		60	55	3	6	none			3 fam.
Total	42108		2402	8781	1055	5238	731	Total Decrease of Protestants,		324 fam.

* The returns for these parishes were not complete, but the numbers are made up by a calculation from the sheets that remain: the number of Protestants in them is accurate. The return for *St. Canice* was slightly defective.

The parishes not mentioned in these tables are, Comer, Dunbell, Grange-Macomb, Kilmanagh, Graigue, Grange-sylvia, Kilmacahill, Shankill, Powerstown, Ullard, Mayne, Abbey-Jerpoint, E. Jerpoint, Kilmocar, Woollengrange, Conaby, Jenkinstown, Grange of Kilree.

Population in 1800.

PARISHES.	Families or houses.	Males.	Females.	Total population.	Increase since 1731.	Under fourteen years.	Above sixty years.	Labourers.	Manufacturers
Rathcool, Kilkyran, Mothell,	132	—	—	714	493				
Kilmodimoge, Kilderry,	350	790	890	1640	1033	1090	100	450	none
Blackrath, St. Martins,	61	—	—	398	130				
Kilfane,	121	—	—	817	503				
Tulloherin,	143	—	—	926	532				
West-Jerpoint,	136	—	—	897	853				
Knocktopher, Kilneddy,	167	—	—	*1002	106				
Aghaviller,	157	—	—	*542	496				
Derrynahinch,	135	—	—	*810	547				
Kilkeasy,	92	—	—	*552	197				
Kilmagany, Tullohoght,	265	—	—	*1590	1052				
Dunamagin,	90	—	—	*540	210				
Church-Jerpoint,	169	—	—	*1014	740				
Kiltraneen, or Burnt-church,	86	—	—	*516	93				
Dunfart,	76	—	—	*456	380				
Blanchfieldstown,	42	—	—	*252	206				
Earlstown,	39	—	—	*234	9				
Stomcarty, Kells,	112	—	—	*672	—				
Kilree,	57	—	—	*342	191				
Ballagh-tobin,	48	—	—	*288	103				
Mallardstown,	54	—	—	*324	156				
Odough,	124	370	374	744	250	267	38	67	none
Coolcraheen, Donoughmore, Kilcormick,	257	773	866	1639	994	—	—	513	
Freshford, Clashicroe, Ballylarkin,	230	—	—	1060	400				
Ballinamara,	129	—	—	545	183				
Cloghmanta, Kilrush,	83	—	—	413	256				
Tubrid-Britain, Kildrinagh, Killaghy, Bar. of Crannagh.	93	—	—	408	61				
Rathbeagh,	114	—	—	605	306				
	3566			20,330	10,480				

Population in 1800.

PARISHES.	Families or houses.	Males.	Females.	Total population.	Increase since 1731.	Under fourteen years.	Above sixty years.	Labourers.	Manufacturers
	3566	—	—	20340	10480				
Sheffin,	150	—	—	856	360				
Clontubrid, Coolcashin,	58	—	—	345	209				
Acharney,	95	340	309	649	299				
Kilmenan,	15	24	19	43	—				
Attanagh (Kilkenny part)	44	92	93	185	49				
Glashare,	75	—	—	392	228				
Eirke,	500	1800	1100	2900	2105				
Durrow (Kilkenny part)	323	—	—	*1938	923				
Fartagh,	276	721	765	1486	936	467	84	74	none
Urlingford, Rathlogan,	280	—	—	*1680	1580				
Callan,	582	—	—	*3492	2121				
Killaloe,	66	—	—	*396	49				
Tullomaine,	27	—	—	*162					
Quolough, or Coulaghmore,	113	—	—	*678	279				
Ballycallan,	159	—	—	730	285				
Tullaroan,	331	1053	1027	2080	1403	717	119	125	none
Inchiwolahan or Castlehinch,	37	—	—	*222	149				
Grange,	71	—	—	*426	242				
Tullahanbroge, Ballyburr,	60	—	—	*360	171				
Outeath,	67	—	—	*402	256				
Columkill, Brownsbarn,	112	—	—	665	292	200			
Clonamery,	89	—	—	523	238	133	25		
Rossinan,	116	—	—	709	632				
Killahey, Barony of Knocktopher,	55	—	—	376	276				
Listerlin,	120	404	375	779	599				
Rosbercon,	107	—	—	614	171				
Dysertmoan,	230	—	—	1377	828				
Shanbough,	40	—	—	262	70				
Ballygurrin,	69	—	—	421	207				
Kilmacavoge,	89	—	—	547	297				arti.
Rathpatrick,	184	—	—	1134	644				none
Roer,	311	792	795	1587	181	535	115	107	44
Kilmacow,§	—	—	—	—	—				
Kilcoan, Kilbride,	51	—	—	300	142				
Gowran,	325	—	—	1730	1042				
Tascoffin,	93	—	—	552	379				
Dysert,	259	610	750	1360	888	800	80	45	none
Dunmore,§	—	—	—	—	—				
	3145			52688	25010				

Population in 1800.

PARISHES.	Families or houses.	Males.	Females.	Total population.	Increase since 1731.	Under fourteen years.	Above sixty years.	Labourers.	Manufacturers
	8145	—	—	52688	29010				
Kilmodum,	71	—	—	448	269				
Macullee, or Mucully,§	—	—	—	—	—				
Kilamery and Rosanany,	158	—	—	*948	701				
Dungarvan,	163	—	—	976	609				
Dunkitt, Gaulskill,	291	—	—	1839	1032				
Kilcullyheen,	170	—	—	*1020	598				
Fiddown,	531	1588	1693	3281	2268	1140	208	—	189
Castlane, or White-church,	63	155	206	361	76	296	23	17	5
Remainder of Iverk,	‖675	—	—	*4050					
Treadingstown, included in the adjoining parish.									
Claragh,†	74	—	—	*457	275				
St. John's,†	645	956	1128	2084	258				
St. Mary's,†	583	1712	1149	2861	398				
St. Patrick's,†	350	399	508	907	108				
St. Canice,†	1344	2384	3062	5446	2794				
Kilmanagh,	135	431	386	817	—	354	28	28	6
Thomastown,	441	—	—	2307	1810	948	—	—	—
Inistioge,	412	—	—	2382	1408	931	89	157	—
Kilferagh, included in adjoining parishes.									
Kilbeacon,	79	—	—	457	71				
Comer,	1470	—	—	*8820	—				
Dunbell,	45	—	—	285	—				
Graigue,	588	—	—	3081	—				
Grange-sylvia,	163	—	—	958	—				
Kilmacahill,	124	—	—	785	—				
Shankill,	171	—	—	1078	—				
Powerstown,	179	—	—	1036	—				
Ullard,	142	—	—	819	—				
	17212			100191					

‖ By hearth-money returns, probably incorrect.

§ Kilmacow, Dunmore, and Macullee, not being named in the hearth-money returns, must be included in the adjoining parishes.

† These were numbered some years ago, and are below the real amount now.

Allowing for the omissions and inaccuracy of hearth-money returns, the total number of inhabitants probably amounts to 108.000.

Number of Protestant families.

. . . . .	160
. . . . .	none
. . . . .	3
. . . . .	3
. . .	about 22
. . . . .	none
. . . . .	12
. . . . .	none
In Grange Maccomb	2
Borrishmore, (not included before)	4
Kilmanagh, .	4
Families	210
Add .	731
Total in 1800,	941

Sect. 2. *Size of Towns and Villages.*

For an accurate statement of the population of Kilkenny, I am indebted to the labour of Mr. J. Robertson.

The city of *Kilkenny*, including St. Canice, or Irishtown, extends from north to south, as far as there is any continuation of houses, about 1500 yards; from east to west by John's-bridge, about 1470 yards, and by Green's-bridge, about 1000 yards; including between these extremities an irregular square space of about 1,852,500 square yards, or 235 acres, one rood, plantation measure, of which about two-thirds is cultivated ground. It contains 2870 inhabited houses; of these there are,

404 of 3 stories high and upwards, at 8 per house, ...		3232
431 of 2 stories, at 6 per house, ...		2586
2035 cabbins, at 4½ per house, ...		9157
2870 houses.	Inhabitants	14975

Of these the corporation of *St. Canice* contains

26 houses of three stories,
80 do. of two stories,
909 cabbins.

Total 1015

404 houses in Kilkenny, and 50 in St. Canice, paid hearth-money in 1799.

368 in Kilkenny, and 51 in St. Canice, in 1800.

355 in Kilkenny, and 46 in St. Canice, paid window tax in 1800.

The population of the cabbins was estimated from that of 306 taken down in different quarters of the city, producing 1409, or little more than $4\frac{1}{2}$ to each: houses of two stories are supposed, with the addition of one servant to each, and lodgers to some, to amount to six each; those three stories high and upwards, to have eight per house. The number of houses was very accurately counted, as far as there was any continuation of them from the body of the town.

The number of houses in 1788 was 2689, increase since that time 181. In 1689 Kilkenny is said to have contained but 507 houses, which perhaps were not accurately returned, as it was for the purpose of a tax, (Ledwich); and in 1777 the number was 2274.

The corporation of Kilkenny are possessed of a large property; their rental in 1688 was £.313:18:8*d*.: in 1794 it was £.1567, taking the tolls and customs at an average of £.500: of this £.700 a year is paid in salaries to its officers, £.300 in paving, and £.300 in pensions and other purposes: the roads are not kept in very good order within the liberties.

St. Canice has a distinct corporation, and is separated from Kilkenny by the small river Bregah.

Corporate

Corporate Towns, lately Boroughs.

Callan,—is the town next in size to Kilkenny, and contains 530 houses, and 2229 inhabitants: it appears to have been formerly a more considerable place, by the remains of its walls, and to have extended towards the east: it received a charter from William, Earl Mareshal, in 1217, with extensive privileges, as may be judged from its commencement; "*Concessi burgensibus meis de Callan omnimodas libertates quas decet burgenses habere, et mihi licet conferre.*" In this, and some other corporate towns, as Thomastown and Gowran, the want of any resident officer of the corporation, as a deputy portrieve, is greatly felt, there being no person to quarter soldiers, to abate nuisances, to regulate weights or markets; though the portrieve ought annually to take an oath, that he will perform these functions: the corporation courts too, if held according to charter, might be of great service, as the cheapest and the most convenient mode of redress, for those within the liberties. As the parliamentary uses of these corporations are abolished, they might be trusted in some other service, or employed according to their original destination.

This town has a distillery, but no trade or manufacture: 34 houses paid hearth-money in 1798, 39 in 1799 and 1800; 46 paid window tax in 1800.

Thomastown,—has about 350 houses, and in 1793 had 300; it is mentioned by Stanihurst as a town of consideration

consideration in his time: it is well situated for trade, forming a kind of depot for Kilkenny, as the navigation ends here, and cars can come from Kilkenny and return in the day. Its trade is increasing; it has a distillery, brewery, and some large stores: 16 houses paid hearth-money in 1798, 14 in 1799, and 18 in 1800: 22 paid window tax in 1800.

Gowran—has about 180 houses; most of them are wretched habitations: 6 houses paid hearth-money in 1798 and in 1799, 7 in 1800; and 7 paid window tax in 1800.

Inistioge—has 110 houses, many of them slated, and a few small stores: its situation at the end of the tide-water, adapts it to trade, but little advantage has been taken of it: 8 houses paid hearth-money in 1798, 9 in 1799, and 10 in 1800; 10 paid window tax in 1800.

Knocktopher—has 91 houses and families: 179 males, 184 females; boys under 14, 60; girls, 52; persons above 60, 20; labourers, 53. The right of voting was vested in all the inhabitants; but its rights did not contribute to its wealth or increase: 6 houses paid hearth-money in 1798, in 1799, and in 1800: and 2 paid window tax in 1800.

Towns not corporate.

Graigue—is the largest non-corporate town, and has about 370 houses; and had in 1793 but 300: all the boats on the Barrow once belonged to it, but it shares the carrying trade now with other places;

from its situation it might become a place of consequence: but 20 houses in the parish paid hearth-money in 1800.

Durrow—has 218 houses; some let in perpetuity, many ruinous; one distillery, but neither trade nor industry, nor encouragement to them: 55 houses in the parish paid hearth-money in 1800.

Ballyragget,—has 214 houses, many of them wretched cabbins; a brewery, and two distilleries: 52 houses in the parish paid taxes in 1800.

Castlecomer—has 211 houses; many of them good and slated; part of this town was burnt during the late rebellion, and has been rebuilt in a handsome manner: the principal part of the town is one very broad street, well built. A barrack for infantry has been begun above the town, estimated at above £.4000, and a new market-house is about to be erected by Lady Ormonde: in 1800, 50 houses in the parish paid taxes.

Freshford—has 207 houses, including some miserable hovels in the out-skirts, without chimnies or windows: there are, however, a few neat houses. It is the custom to dash with white mortar the roofs, as well as walls, here, and in some other places, which preserves them, but is offensive to the eyes: there are two distilleries here: but 32 houses in the parish paid hearth-money in 1800.

Urlingford—has 176 houses, of which four are uninhabited, and five unfinished, a distillery, and a malt-house: in the whole parish 120 houses paid taxes in 1800.

New Bridge, or *Gore's-bridge*, has 60 houses, several of which are slated; it has some stores, and a small trade, likely to increase from its favourable situation. The Rev. Mr. Silletow, lately curate to the parish, favoured me with an exact statement of its population, which was in 1801,—males, 170; females, 155; total 343: of these, there were under 14 years, 136; above 60, 12; labourers, 34; male servants, 7; female servants, 16; artizans and boatmen, 53.

Kells,—once a town of more importance, is sunk into a village of about 10 houses: but 10 houses in the whole parish paid taxes in 1800.

Villages.

Rosbercon—forms a suburb of Ross, on the right of the river; and has 38 houses and 46 families: it has two large stores.

Mullinavat—has 35 houses and 158 inhabitants; of these, 41 were men, 54 women, and 63 children: it has three public houses, and two small mills near it.

Ferrybank—forms a suburb to Waterford, on the left bank of the Suir; it has but few houses, a large distillery with store-houses, and three other good stores.

Johnstown—has been mentioned; it has near 30 houses.

Pilltown—is well situated on a creek near the river Suir; it is populous, and has a good many cabbins; in the parish are two corn and two tuck-mills, and

two slated stores. Other small villages, some with less, and some with little more than twelve houses, as *Kilmacow*, *Newmarket*, *Ballyhale*, *Tullagher*, *Kilmagany*, *Bennetsbridge*, *Glanmore*, *Ballyneale*, are only distinguished from the common farming villages by a whiskey house or a chapel. In the hilly districts are many small scattered villages, composed of farm houses; in the wheat and dairy districts, the population is chiefly in single houses.

Sect. 3. *Revenue.*

In the whole county but 2,813 houses paid hearth money or window tax in the year 1800.

Kilkenny District.

The number of malt houses at work in	1795	60
Ditto, ...	1799	23
Number of spirit retailers, . . .	1795	127
Ditto, ...	1799	112
Distillers who worked	1795	9
Ditto, ...	1799	8
Brewers	1795	11
Ditto	1799	10

		£.	s.	d.
Amount of hearth money paid in	1795	2,383:	7:	9½
Ditto, ...	1799	1,081:	1:	8
Carriage duty paid . . .	1795	668:	17:	9
Ditto	1799	746:	2:	0
Male servants duty . . .	1799	143:	17:	10
Window light duty . . .	1800	3,922:	8:	2

Licenced

Licensed grocers .	in 1795 . .	71
Ditto, . . .	—1800 . .	56
Licensed tanners .	—1795 . .	17
Ditto, . . .	—1800 . .	16
Licensed chandlers .	—1795 . .	10
Ditto, . . .	—1800 . .	12
Tobacco manufacturers	—1795 . .	5
Ditto, . . .	—1800 . .	7

Total receipt in this district in the year 1796,

	£.	s.	d.
Revenue, ...	21,762:	7:	4¼
Loan duties, ...	8,966:	3:	6
Stamp duty, ...	920:	11:	9½
Quit rents, ...	1,969:	18:	9¾
	£.33,619:	1:	5¾

Total receipt in the district in the year 1800

	£.	s.	d.
Revenue, ...	14,384:	3:	10½
Loan duties, ...	24,065:	15:	8¾
Stamp duty, ...	1,934:	4:	10½
Quit rents, ...	1,969:	18:	9¾
	£.42,354:	3:	3¼

Paid to the collection of Ross.

	£.	s.	d.
Quit rent for Idagh, ...	489:	1:	2
Ditto Knocktopher, ...	251:	19:	3½
	£.741:	0:	5½

Spirit

Spirit licences in 1799, . . £.38.
Grocers ditto, ... 10*s*.

38:10: 0

Year ending 25th of March 1800.

	£.	*s*.	*d*.
Spirit licenses, ...	38:	0:	0
Grocers, ...	2:	0:	0
Malt house, ...	15:	0:	0
Quit rents as above, ...	741:	0:	5½
£796:	0:	5½	

Paid

PAID TO THE COLLECTION OF MARYBOROUGH,

An account of the produce of Excise and Licenses in Durrow Walk, for seven years ending 29th September 1800.

Years.	Strong waters.	Malt.	Ale and Beer.	Licenses.	Totals.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Year ending 29th Sept. 1794	1188:12: 0	1229: 7: 0	477:14: 6	89:10: 0	2985: 3: 6
1795	1139: 1: 4	1156: 8: 9	230: 5: 4	78: 0: 0	2603:15: 5
1796	1027:11: 6	1487:11: 9	0: 0: 0	104: 0: 0	2619: 3: 3
1797	1600:13: 6	1927:11: 0	0: 0: 0	108:10: 0	3636:14: 6
1798	1835: 3: 0	1467: 3: 0	0: 0: 0	143:10: 0	3445:16: 0
1799	1897:13: 0	1145:13: 3	0: 0: 0	225:15: 0	3269: 1: 3
1800	1273: 7: 6	691:12: 0	0: 0: 0	257: 0: 0	2221:19: 6
Grand Totals.	9962: 1:10	9105: 6: 9	707:19:10	1006: 5: 0	20781:13: 5

Paid to the Collection of Waterford.

Iverk, 1269 houses,
Exempt, 1216

	£.	s.	d.
53 houses payable, amount for which, is .	52	3	9½
Window lights paid, . . .	126	13	6½
Sixteen servants, ...	14	4	4½
Carriage duty, ...	40	1	90
	234	0	8½

Parish of Kilcullyheen,

Total houses, 170,

Payable, 43, hearth money for do.	33	4	7½
Window lights paid,	96	0	9
Male servants, . .	10	16	1½
Carriage duty, . .	29	6	0
	403	8	2½

The Kilkenny district and the Durrow Walk extend a little beyond the bounds of the county; but hardly any of the revenue here stated is collected beyond them.

Total Revenue in 1800.

	£.	s.	d.
Kilkenny Walk, ...	42,354	3	3½
Paid to Collector of Ross, . .	796	0	5½
Maryborough,	2221	19	6
Waterford,	403	8	2½
Total	£.45,775	11	5½

Number

Number of game licenses in the county in 1799
eighty-four; in the city twenty-six.

Sect. 4. *State of the lower orders.*

State of the poor in Kilkenny, by Mr. J. Robertson.

"The condition of the labouring poor here, appears to me, from the observations I have had an opportunity of making, to be wretched in the extreme.

"Average hire of a day labourer is about 10*d.* as plenty of hands can be procured at that wages, on agreeing to give them constant employment; it amounts per year to £.13. without making any allowance for idle days through sickness, &c.; to which is to be added, the casual produce of the family's labour, which is supposed to amount to more than the hire of two women or £.13; but this is rather over-rated, as in most cases it produces less, in many nothing: from this fund the labourer has to provide his family, which we suppose, including himself, to consist of five, as it is the average number in this neighbourhood, with food, cloathing, firing and house rent,; which may be estimated thus,

Consumption

	£.	s.	d.
Consumption per day of potatoes in a family of five, 3 stone at 2½*d*., or 7½*d*. per day, per year	11:	13:	2½
Six quarts of sour milk, at 1*d*. each, per annum, ...	9:	2:	6
One ton of coals for fuel, ...	1:	10:	0
Rent of a cabbin per annum, ...	1:	14:	1½
Cloathing, ...	1:	10:	0
	25:	9:	10
Cash received for labour	26:	0:	0
Remains to provide for sundry necessaries not mentioned, a balance of . .	0:	10:	2

Admitting he worked every day but Sunday; so that, considering the above articles are indispensible, and rather under-rated, it is surprizing how in the cheapest times, they can struggle for existence, unaided as they are by many little helps they meet with in the country: and in fact we find them, on such wretched diet, curtailed of that necessary article milk, during great part of the year, and using salt in its stead, or sometimes herrings to give a relish to their food; scantily supplied with potatoes, cloathed with rags, and famished with cold in their comfortless habitations: nor can they, though sober, frugal and laborious, which from my own knowledge I assert, provide against infirmity, and old age, any other resource than beggary, or dependance, than the precarious relief of charity; extremities

mities which many are constantly reduced to; none can better tell than the members of the charitable societies here what numbers of wretched, miserable objects, depend on the distribution of their bounty for existence, and how inadequate language is, to convey a just idea of their poverty and suffering. These societies are two, who from annual subscriptions and casual benefactions, supply the bed-ridden tradesmen and labourers, and their widows, if bed-ridden, with a small allowance, barely sufficient to keep them from perishing, and to restore them to their families; yet even this purpose they are scarcely able to effect, in consequence of the frequent failure of the funds, as the objects have more than doubled, within these few years. The inability of the poor to educate their children, has also given rise to subscription charity schools, where both boys and girls receive education gratis, and the most deserving are every year apprenticed to different trades; the funds are entirely supplied by private subscriptions."

State of the poor in the Parish of Fiddown, by Mr. P. Walsh.

"*Price of labour*—The common labourers get in general in this parish ten pence a day, and breakfast and dinner of coarse plain food, from the farmers: when there is a hurry in farming business, they often get from a shilling to fifteen or sixteen pence a day, and victuals: gentlemen who give

constant

constant employment, the year round, to their labourers, do not give them food; and some gentlemen until lately gave only 8*d.* a day for the four shortest months, and 10*d.* a day for the other eight months: but for two years past, they gave 10*d.* a day the year round. When a labourer is accommodated with a cottage, and a small field, which he calls a garden, for his potatoes and oats, with liberty for the running of a hog and poultry, not more than 8*d.* a day is given him, perhaps not more than 6½*d.* by the gentleman or farmer who is his landlord; although the labourer be charged a very high rent for his cabbin, garden and privileges. Few or none of the labourers in this parish have a cow.

"The annual wages of a labouring man-servant kept in a farmer's house, is from five to eight pounds: that of a maid servant in a farmer's house, for thorough work, inside and outside of doors, from three to five pounds.

"*Cloathing of the poor.*—The dress of a poor man of the labouring class, (including a second shirt and second pair of stockings) may be said to cost, on an average, about three guineas, even when it consists of the cheapest articles; this comprehends an outside great coat.

"The dress of a poor woman of the same class (including a second shift and second pair of stockings) may cost, on an average, when of the coarsest kinds, about £.2 : 10*s.*, taking in the price of a mantle or cloak.

"A poor

" A poor labourer or his wife, sister, or daughter, have seldom or never so much money to lay out together; it is only by slow degrees, and by little successive savings, they are enabled to procure new articles of clothing; and it is only by continuing to wear them as long as they can be made to last, by frequent mending and patching, that they are ever able to keep themselves clad: when a poor couple of this description have a number of children, still too young to earn any thing, the difficulties of procuring raiment, as well as sustenance, are greatly encreased, and therefore in such cases, we too frequently see the whole family miserably clad.

" The want of every kind of manufacture in which children of an early age might be usefully and profitably employed, occasions much of the poverty with which poor peasants here, who have young families, are obliged constantly to struggle. Neither the linens nor woollens made here, afford any occupation to children; nor have we any fabrics in which their little hands can find employment: the cotton manufacture carried on by spinning-jennies and other machinery, would supply this defect, if extensively established. By particular attention to the construction of the work houses, and taking care to have a free circulation of air in them; and by a system that would oblige them to take sufficient exercise in the open air, and to use frequent bathings during the summer months, the health of children would not be impaired by being so employed: certainly withont such an arrangement,

sedentary

sedentary occupations would be objectionable for children.

"*Fuel of the poor.*—The poor of such parts of the parish as adjoin the river Suir, had begun to use English and Welsh coals; but, the advances that took place a year or two ago, on the price of all kinds of coal, obliged them to desist from the use of it, and to buy turf like their neighbours: the high price of coals induced those persons, that have turf bogs in this parish, to raise the price of turf to such a degree, that it became almost as dear as coals, even at their late advanced price: the advance on the price of turf amounted to what was considered as a serious grievance, and was justly complained of by the poor; and accordingly the persons that have the local care of the estate of the Earl of Bessborough (the Lord of the soil and proprietor of the whole parish) have taken measures to reduce those charges; and at present turf can be procured for about three-fifths of what was demanded last year, and for about three-fourths of what had been charged before: now it is calculated that the average cost* of what is called a kish of turf, including horse hire, and all expences, may be about two English shillings at the door of the consumer; a kish of turf is a moderate horse load.

"According to the comparative prices of coal and turf in this parish, in any house where a fire must

* Five-pence a kish is paid for liberty of cutting; the expence of cutting and making is high, as it is chiefly hand turf.

must be kept constantly burning, it would unquestionably be cheaper to use the former as fuel than the latter; but, to the small farmers or poor cottagers, turf is preferable, because in their habitations, fires are not always burning, and seldom, except in very cold weather, do they consume more fuel than is necessary for preparing their food; for which purpose a fire is easily and quickly made from turf, which kindles much sooner than coals, and also because it is not necessary for them to make up so much money at once to buy turf, as would be wanted to purchase coals: a considerable portion of the cost of the turf consists in their own labour, at a season of the year that they would not be certain of employment for hire.

"The advantage of water carriage by the river Suir, to all the south west side of the parish, enables the inhabitants of it to have all kinds of coal that can be procured at Waterford, delivered for the same prices paid there by the citizens, as the freight up the river does not exceed what the porterage costs in Waterford.

"*Food of the poor.*—Potatoes, with milk, as often as it can be procured, form almost the whole of the food of the poorer classes in this parish: before the introduction of the kind called the apple potatoe, a great portion of the sustenance of the poor here, consisted of oaten bread and milk; from April to August barley bread was sometimes used, and in the hilly parts of the parish, rye bread: but since the cultivation of the apple potatoes has become general,

ral, the poor continue to eat them until the new potatoes come in. Before their introduction, the cottagers frequently sowed beans and other esculent vegetables, and had little plots somewhat like a small kitchen garden, at the rere of their cabbins, but the apple potatoe has superseded every thing of this sort.

"It seems odd that our cottagers do not sow onions; they would add a relish to the potatoe, that is too often swallowed dry, with only a grain of salt; a herring is considered as a luxury by a poor peasant; one would think that an onion would be as grateful with potatoes as a herring, and surely it would be more wholesome.

"*Lodging of the poor, and rent.*—Like too many of the peasants of the south of Ireland, ours are miserably lodged; there are numbers of them that have not a bed-stead, nor even what is called a truckle bed frame: a pallet to sleep on, is a comfort unknown to them; a wad of straw, or perhaps heath laid on a damp clay floor, forms their resting place; but very few of them have any thing like sheets; their blankets are generally wretchedly bad; in short, their bed cloaths are ragged and scanty: they put their coats and petticoats over them in aid of their blankets in cold weather; too often these are still damp, having been but imperfectly dried by a miserable fire, after they were worn at work in the rain. Hence, and from the damp of the clay floor on which their beds are laid, these poor people are frequently afflicted with rheumatisms, and are subject

ject to pleurisies; of which from the manner they are constantly exposed to cold and damp, they have often successive relapses. Even through the scanty thatch, the rain sometimes descends upon their beds, and bringing down the sooty substance lodged there by the smoke of the cabbin, wets and stains the bed itself and those who are stretched upon it.

"The rents of cabbins vary from one guinea to two guineas a year: the land with a cabbin, or garden, as it is called, where the cottager has potatoes and oats in two equal divisions, generally half an acre in each, in alternate succession, is commonly set yearly from £.2: 10*s.* to £.4 per acre."

These statements may be applied more or less to all parts of the county; the *habitations* of cottiers are generally wretched; those of small farmers tolerably good. In the parish of Dungarvan, a labourer paid 35*s.* a year for a strip of ground of a few perches, taken from the side of the road, on which he had built a cabbin; he earned 6½*d.* a day from the farmer, but worked for others occasionally; had no fuel but fern. In the same parish a cottier had two acres at 30*s.* and paid 31*s.* for grazing; was paid till lately but 5*d.* in winter, and 6½*d.* in summer, and two meals; threshes and ploughs: a cottier in the parish of Kilmacahill held near two acres at a guinea per acre; got 6*d.* a day the year round and no diet: a cottier, parish of Mothell, had a cabbin and near an acre for 40*s.* a year, and 8*d.* a day the year round: for cabbins in Iverk and an acre of ground, from 3 to 4 guineas: cabbins in

Pilltown 30*s.*; poorer houses have in many parts no division but a mat, no chimney, and a hole for a window; for such a house and a little garden, in the parish of Ballycallan, was paid 30*s.*; and for such houses in general, a guinea a year is the usual rent. In the wheat district the cabbins are the worst; in the hills the best. In general they are dirty, often damp; the moisture of the soil mounts up the mud walls, which are made of the earth upon the spot. Wooden platters are mostly used in cabbins with some earthen ware.

Fuel.—In the south west parts of the county, the Slieghvardagh culm is burnt in balls with one third of clay, as the Castlecomer is in the north: in some farm houses near Kilkenny, a pair of bellows is often used with a chain, which is worked easily by a child, to save fuel, just coal enough being employed to boil the potatoes, which is done in about 15 minutes: in most places that are not close to bog, which is scarce, the poor are much distressed for fuel, and often pick cow dung out of the fields for this purpose, or even pull crows nests down with labour to supply the fire. The average price of turf is about 2*s.* a kish, it is seldom lower than 15*d.*, or 2*d.* a kish for liberty of cutting; but neither the turf nor liberty to cut can always be procured; and the poorest persons use no fuel but what they can steal from hedges, or the few woods that exist; the daily employment of most of the children is collecting *brasnas* or sticks for fuel, to the great injury of fences and trees.

Food.

Food.—Potatoes alone are the food of the poorest; generally, but not always, with salt: sometimes a herring; and often buttermilk or milk: oat meal is not generally eaten, but sometimes used in Iverk; oaten cake is taken by workmen going to a distance where potatoes could not be brought hot. They sometimes bake on a chaffing dish with straw. Cottiers often prefer buying milk, to keeping a cow, even when they may have grass for little; as they cannot afford to feed it in winter: the cheapest potatoe ground was three guineas per acre, being a boggy waste, which was to be skinned and burnt by the tenants, the farmer ploughing it afterwards: the dearest potatoe ground ten guineas manured. The quantity of cabbages in the gardens of cottiers and small farmers is trifling: they sometimes lay the stalks for early greens, but pay little attention in general to the culture: some raise cabbage plants for sale upon burnt ground; in a year of scarcity, they sell from 6*d.* to 1*s.* a hundred. When the body of a cabbage is cut out, if all the large leaves are left on the stem, a second, and even a third crop of small cabbages may be had from the same plant. If cottagers sowed beans among their potatoes, particularly in drills, the two crops would not injure each other; or if rape was transplanted into potatoe ground, their gardens would not remain useless great part of the year, and the poorer sort be compelled, as is often the case in hard seasons, to feed in spring upon charlock, *sinapis arvensis*, and a few other weeds: their indolence, however, makes

them depend solely on potatoes; and when they fail, they have no resource but the charity of their neighbours. In times of scarcity, beggars, who receive a few potatoes, make a profit by selling them again. The use of tea has happily made little progress among the lower orders.

Cloathing.—That of the poorest is frize and flannel; they are often warmly, and not ill-clad: the women have in general left off frize petticoats for stuffs, which are manufactured at Waterford and other places: straw hats made at home, are not uncommon; and are worth from 6*d.* to 1*s.*: the value of the dress of the poorest labourer, at the lowest prices might be,

	£. s. d.		£. s. d.
A great coat for 3 years, . . .	0 : 14 : 9	per annum about	0 : 5 : 0
Coat, vest, and breeches for 2 years, . .	1 : 2 : 9	Ditto	0 : 12 : 0
Hat for 2 years,	0 : 4 : 0		0 : 2 : 0
Brogues and soles, ...			0 : 12 : 0
Shirt and repairs, ...			0 : 4 : 0
Stockings, 2 pair, ...			0 : 4 : 0
			1 : 19 : 0

Dress

Dress of a Woman.

	£.	s.	d.
Cloak for 4 years, at £.1.	0 :	5 :	0
Gown for 2 years, stuff or camblet, at 10*s*.	0 :	5 :	0
Petticoat of linsey, ...	0 :	3 :	9
Do. of flannel, ...	0 :	3 :	3
Brogues, soles, and nails, ...	0 :	9 :	0
Shift and repairs, ...	0 :	3 :	4
Apron of checquer, ...	0 :	2 :	2
Coarse apron, ...	0 :	0 :	10
Cap, ...	0 :	2 :	0
	1 :	14 :	4

Dress of young Children.

	£.	s.	d.			
Linsey for coat and petticoat,	0 :	4 :	0			
Linen, ...	0 :	2 :	0			
Brogues, ...	0 :	3 :	4			
				0 :	2 :	0
Pins, thread, needles, &c. . . .				0 :	2 :	0

State of Labourers in Galmoy, by Mr. R. St. George.

" The labourer at present receives from 8*d*. to 13*d*. a day, such as is termed *spalpeen*, who does not live on the employer's land, but lives from the bounds to two or three miles distance, and generally rents a cabbin, with one or two acres of garden, at a rent of from 30*s*. to 50*s*. per acre, paying at the rate of from two guineas to 50*s*. for the grass of his cow on the adjoining lands, if the grass is set. Those living

on

on the lands of a few gentlemen in this parish, have a cabbin, and from one to three acres, at from 10*s.* to 30*s.* per acre, and grass of a cow from 30*s.* to two guineas per annum, being obliged to procure half an acre of meadow at three guineas, about six loads of hay, for the support of the cow in winter with their straw: these labourers are paid from 6*d.* to 7*d.* in winter, and 8*d.* in summer, coming to work at seven o'clock, having one hour to go home to their dinner at twelve, and work 'till seven in summer.

" Wages of men living in the farmers houses, from four to five guineas a year, and food, such as potatoes and milk, with meat, as pork, or bacon, once or twice a week.

" *Food of the Poor*,—is chiefly potatoes and milk, but there are many poor labourers who have not the latter, as some have not money sufficient to buy a cow, and others are not able to procure the grazing.

" *The clothing of the Poor*—is frize, bought at the fairs, and in Freshford and Kilkenny shops, at 2*s.* 8½*d.* per yard, to 3*s.*; some have a bad kind of corduroy, at 3*s.* or 4*s.* per yard, for breeches, bought in these towns; linen at 2*s.* 2*d.* per yard. Some gentlemen in this neighbourhood buy frize in Connaught, at 20*d.* to 2*s.* per yard, and sell to their labourers at prime cost; also procure leather on the cheapest terms, in Dublin, for their shoes, and get them made at home: this is an assistance to the poor, and shops for this purpose, regulated by the gentlemen of a neighbourhood, would be useful and meritorious.

" *Fuel*

"*Fuel of the Poor*—is cheap in the parts adjoining to the bog, near Johnstown and Urlingford: two perches of bog answering a cabbin for the year, price 3*s.* or 4*s.* per perch, with the trouble of cutting it, producing about thirty-two kishes of about 6 cwt. each. Near, and about Freshford, they burn the Castlecomer coal bought at the colliery at 9*d.* per cwt. besides the expense of bringing it home; and some get the Slieghvardagh coal, at 13*d.* per cwt. with the same trouble, but a shorter draught, being about six miles; the former eight to twelve. Some use culm pounded into dust, mixed with water, and rolled in their hands into balls, the size of a goose-egg: this is the cheapest fire of all, but requires a grate and chimney, which all the poor have not.

"Cottagers, or labourers, should have as much land as would support their families, with the grass of a cow from the farmer, or their employer, at such a rate as the rent of his farm would enable him to admit of; but they should not have so much land, as to take up too much of their time, and render them otherwise than useful to their employer. The houses should be so built, as that one chimney should serve two, a cow shed, and pig-stye at the rere, a door backwards where the dirt of the house should be taken out, and the dunghill made altogether from pigs, cow, ashes, &c.: each family consisting of man and wife, with four or five grown children, or youths, to the age of from five or eight to nineteen years old, should have an acre and a half adjoining their cottage,

tage, on which a succession of crops should be adopted for their maintenance. It will take two years, if the land is in ley, to bring about this succession, by first year burning it all, for potatoes one acre, and for bere half an acre; second year, take bere out of half an acre, potatoes out of half an acre, and oats out of the other half, with ten pound of red clover harrowed in with it: the third year you have established the succession of crops, by potatoes drilled in the bere stubble, manured with the dung made by the cow, of the half acre of straw; half an acre of oats in the potatoe soil, with clover seed as before; and half an acre of clover meadow, to mow for the cow; which is to be always ploughed up in September, the aftergrass, in rich gardens, being cut green for the pigs, but in poor soil ploughed in to assist the manuring.

1st. year.	½ *A.* Potatoes.	½ *A.* Potatoes.	½ *A.* Bere.
2d. year.	Oats and Clover seed.	Bere.	Potatoes.
3d. year.	Clover.	Potatoes drilled.	Oats and Clover seed.

The drilling of the potatoes, and ploughing for oats, should in some places be done by the employers, with their cattle and ploughs, charging a reasonable price for it; but it would be better, if two families would join their two cows, and do each

others

others work, and as the cows should have but about ten days in spring, and ten days in harvest to work, with such food as the half acre of clover and half of straw for litter afford, it would not injure them in the least for milk; and poor people's cows easily take to labour, as they are docile from constant handling. The poor people will naturally object to any system from laziness and ignorance, but they should be bound down in an article to follow the regular plan: by this means, they would have about 70 barrels of potatoes, of 20 stone each, for the maintenance of their family, and 10 barrels of oats; the cow would have plenty, and the offals of the house, &c. would feed two pigs in summer, and two pigs in winter, leaving a profit at an average of £.12 on the four pigs in the year. The employer would have the constant use of his labourer, except about twenty days in the year at the utmost, and the pleasure of seeing an industrious poor family thriving under him, and their land (instead of being racked, as is usual, in a few crops) improving by every crop, as would be the case for ages, if tried in this succession. The labourer would not have the trouble of looking through the country one day for potatoe soil, another day for meadow, but by this convenience could give up his time to his employer, so necessary to every tillage farmer; a plough and tackling would be necessary for the mutual use of two families, of the most simple construction.

"I find a difficulty in getting men to do the necessary work of the farm at this season (April 1802),

as my labourers are farmers of from four to twenty acres of land: I think their time, from the irregularity of coming some days and staying away many, is little worth to me, and that their time would be better laid out in ploughing their farms, which are all covered with weeds, in making manure of their head-lands, scouring ditches, &c. and making inclosures; and therefore think of getting half a score charter boys apprentices for seven years, to diet and lodge in the house of my steward, who will attend them day and night, to put them to all kind of work on the farm they are able and fit for; and as they grow up have them instructed by practice in the day, and at leisure hours to read and write on the subject, and in time I should expect they might become useful members of society, as stewards, &c."

Mr. St. George improved a small farm, which he divided in tenements to his cottiers, giving them £.5 each, and timber to build, and also clover seed; they pay from 20*s.* to 24*s.* rent, and one 10*s.*; he employs them with cars at 2*s.* 2*d.* a day; or drawing limestone at 4*d.* a load of 7 cwt. and six turns in the day.

On Shrove-tuesday, at Christmas, and at Easter, the poorer people always procure meat, but scarce ever use any animal food, except a little salt fish, on any other occasion: those who live worst are poor tradesmen. The high price of leather, salt, and iron, in consequence of duties, is generally complained of: in good policy the articles of necessity ought to be kept at as low a price as possible; not only because

all

all the produce of labour is affected by them, but because they fall heavily on the poor, who must purchase at the dearest rate, and at the most retailed prices. In most parts of Dorsetshire (Rep. p. 22.) it is a settled point between the labourer and farmer, that all workmen employed in agriculture shall always have a sufficient quantity of wheat at a certain standing price. Besides keeping the provisions at the same price, as might be done at a moderate expense, by the richer farmers, village shops should be established for all other articles of necessity. For want of manufactures to employ superfluous hands, labour is always too low, and employment cannot be had for all; but raw materials for work might be given out, at no great loss, by the richer orders. Candles and soap are articles little used; a bit of stick often serves for the former, and wood ashes for the latter. The land of cottiers is often the worst in the farm, and they pay at the rate of about double what the farmer may do to the landlord: the cottiers labour is taken in return; the usual agreement is, to work only when required; but sometimes, to be paid every day, holydays excepted.

Gentlemen differ in their agreements; some engage all their tenants to labour, even those who hold ten or twenty acres, or more; some of these small farmers engage to labour from forty to fifty days. The union of the two occupations of labourer and farmer, is injurious; for neither one nor the other can be performed well. But great part of the hilly districts are held by small farmers, who labour abroad, and consequently

consequently lose the best times for cultivating their own ground.

Sect. 5. *Price of labour, provisions and other articles.*

Eight pence a day is nearly the average price of labour in the county; 13*d.* and food is common in harvest, or 2*s.* 2*d.*; at Gowran and other public places, workmen offer themselves on a sunday with a reaping hook; the farmer if he agrees, takes the reaping hook, but sometimes disputes the hire afterwards: 6*d.* a day is often given in the north of the county: the price has risen in a few years at Durrow from 7*d.* to 10*d.*

Price of labour and of other articles at Kilkenny in 1790 and in 1800.

	a day in 1790			a day in 1800		
	£.	s.	d.	£.	s.	d.
Labouring man the year round,	0 :	0 :	8 to	0 :	0 :	9
woman do.	0 :	0 :	5	0 :	0 :	6¼

Servants wages have encreased 33 per cent. in this period.

Carpenter, Mason, or Slator, per day,	0 :	1 :	8	0 :	2 :	2
Quarry-man, . . .	0 :	1 :	6	0 :	2 :	0
Thresher, ...	0 :	1 :	7½	0 :	2 :	2
Mason by the perch, .	0 :	1 :	0	0 :	1 :	4
Slator by the square, .	0 :	4 :	0	0 :	6 :	0
Bricklayer by the perch,	0 :	1 :	0	0 :	1 :	4

Hire

	in 1790			in 1800		
	£.	s.	d.	£.	s.	d.
Hire of a car and horse, per day,	0 :	1 :	7½ to	0 :	3 :	3
Hire of a saddle horse,	0 :	3 :	3	0 :	5 :	5
Hire of a plough, . .	0 :	6 :	6	0 :	11 :	4½
Grazing of a cow per week,	0 :	1 :	1	0 :	3 :	9½
Do. of a horse per do.	0 :	3 :	9½	0 :	7 :	7
Blacksmith work per lb.	0 :	0 :	5	0 :	0 :	8
Do. do. per day,	0 :	1 :	8	0 :	2 :	2
Price of iron per stone,	0 :	2 :	4	0 :	4 :	4
Fencing per perch, .	0 :	0 :	8	0 :	1 :	1
Turf per kish, . . .	0 :	2 :	8½	0 :	5 :	5
Sea coal per barrel, .	0 :	6 :	6	0 :	8 :	8
Kilkenny coal per cwt.	0 :	0 :	10	0 :	1 :	7½
Culm per barrel, . .	0 :	1 :	6	0 :	2 :	8½
Furze per thousand, .	4 :	0 :	0	6 :	16 :	6
Heath per faggot, .	0 :	0 :	1	0 :	0 :	2
Charcoal, per barrel, which is necessary to light the stone coal.	0 :	3 :	3	0 :	5 :	5
Oak per foot, . . .	0 :	2 :	6	0 :	3 :	0
Ash per do.	0 :	1 :	4	0 :	2 :	8½
Laths, ...	0 :	2 :	2	0 :	3 :	3
Bricks per hundred, .	0 :	2 :	2	0 :	3 :	3
Lime per barrel, . .	0 :	0 :	10	0 :	1 :	7½
Dung per cart load, .	0 :	0 :	10	0 :	1 :	1
Sand and gravel per load,	0 :	0 :	4	0 :	0 :	5
Price of plough timber,	0 :	5 :	0	0 :	11 :	4½
Do. of a car mounted,	0 :	15 :	0	1 :	10 :	0

Price of other implements and iron work increased as 5 to 8.

Bran

	in 1790 £.	s.	d.	in 1800 £.	s.	d.
Bran per barrel, . .	0 :	2 :	6	to the immense rise of	10 :	4
Potatoes per stone, .	0 :	0 :	2½	to	0 :	1 : 1
Butter, salt, per pound,	0 :	0 :	8		0 :	1 : 2
Do. fresh per do. . .	0 :	0 :	10		0 :	1 : 6
Hay per ton, . . .	1 :	10 :	0		4 :	11 : 0
Straw per load, . . .	0 :	6 :	0		0 :	12 : 0
Whiskey per gallon, .	0 :	5 :	0		0 :	18 : 0
Malt liquor, ale per quart,	0 :	0 :	2		0 :	0 : 3½
Beef per pound, . .	0 :	0 :	2½		0 :	0 : 5
Mutton per do. . . .	0 :	0 :	2½		0 :	0 : 5
Veal not sold by weight, but encreased in price double.						
Pork per pound, . .	0 :	0 :	2		0 :	0 : 5½
Lambs from 5s. to .	0 :	8 :	3	from 8s. to	18	0
Eggs six a penny in summer,					2d.	each
Cheese per pound, .	0 :	0 :	6		0 :	0 : 10
Bacon per pound, . .	0 :	0 :	7		0 :	0 : 11
Cloathing.						
Frize per yard, . . .	0 :	1 :	1		0 :	1 : 10
Stuff per do . . .	0 :	0 :	5		0 :	0 : 6
Linen an increase of 30 per cent. ad valorem.						
Broad English cloth 15 per cent do. } at the lowest						
Cotton goods . 20 per cent do. } estimation.						
Hats woollen, . . .	0 :	3 :	3		0 :	4 : 10½
Brogues per pair, . .	0 :	4 :	4		0 :	6 : 6
Shoes per do. . . .	0 :	6 :	6		0 :	8 : 8

Leather

	in 1790 £. s. d.	in 1800 £. s. d.
Leather per pound, .	0 : 0 : 10 { do. average. }	2 : 2
Salt per stone, . . .	0 : 0 : 6½	0 : 1 : 4

The rise of house rent, parks and lands near the town is computed at one third nearly.

Furze are cultivated for fuel in some places near Kilkenny, and sold principally to bakers, sometimes as high as £.7 : 10*s.* per thousand faggots.

Price of labour and different articles in other parts of the country.

	in 1790	in 1800
Yearly wages { Man,	5 : 0 : 0	6 : 0 : 0
Yearly wages { Woman,	2 : 10 : 0	3 : 0 : 0
Slaters per day, . .	0 : 2 : 2	0 : 2 : 8½
Mowers, ...	0 : 1 : 1 and food	0 : 1 : 7½ and food
Drawing boats, . .	0 : 0 : 10	0 : 1 : 4
Quarrying, ...	0 : 1 : 4	0 : 1 : 7½
Blacksmiths work the weight,	0 : 1 : 2 per stone	0 : 1 : 6 per stone
Mowing by the acre,	0 : 3 : 3	0 : 4 : 4 and drink
Hire of a plough by the day,	0 : 5 : 5	0 : 6 : 6 and diet
Hire of a car and horse,	0 : 3 : 0	0 : 3 : 6
Slating by the square,	0 : 5 : 0	0 : 5 : 5
Timber { Oak per foot,	0 : 2 : 6	0 : 3 : 0
Timber { Housetimber, Norway,	1 : 15 per ton	4 : 11 : 0
Timber { Longsound,	1 : 18 : 0 do.	6 : 16 : 6
Bricks per thousand, .	0 : 12 : 0	1 : 2 : 9

Slates

	in 1790 £. s. d.	in 1800 £. s. d.
Slates per thousand,	0 : 11 : 6	to 0 : 16 : 0
Timber for a four horse plough,	0 : 9 : 0	0 : 13 : 0
Car,	2 : 0 : 0	3 : 0 : 0
Kish,	0 : 3 : 3	0 : 3 : 9½
Spade,	0 : 3 : 3	0 : 4 : 0
Shovel,	0 : 2 : 0	0 : 2 : 8½
Iron Swedish,	19 : 0 per ton	34 : 0 : 0
Iron Russian,	17 : 0 do.	32 : 0 : 0
Leather Soal,	0 : 1 : 5	0 : 2 : 8½
Leather Buff,	0 : 1 : 3	0 : 2 : 4 to 2 : 6
Shoes,	0 : 5 : 6	0 : 9 : 6
Brogues,	0 : 3 : 3	0 : 8 : 1½ to 7 : 7
Narrow stuffs, Waterford,	0 : 0 : 6 per yard	0 : 7½
Sea coal per barrel at Waterford and Ross,	0 : 3 : 0 and 4 : 0	0 : 4 : 0 and 5 : 0
Culm, delivered on the Nore,	3 : 6	0 : 4 : 9
Lime,	0 : 0 : 10	0 : 1 : 1
Dung,	0 : 0 : 5 per load	0 : 6½
Fishing net,	0 : 10 : 0	0 : 16 : 0
Flax undressed,	0 : 4 : 6	0 : 10 : 10
	to 5s. per st.	to 11 : 4½
Land carriage from Kilkenny to Dublin per cwt.	2 : 6	0 : 3 : 6 to 4s.
Hay per ton,	2 : 0 to 2 : 5	2 : 5 : 0 to 2 : 10 : 0
Straw per cwt.	0 : 1 : 1	0 : 2 : 6
Pork per cwt.	1 : 5 : 0	3 : 8 : 0 to 3 : 10 : 0

Beef

	in 1790 £. s. d.	in 1800 £. s. d.
Beef per pounds . .	0 : 0 . 2½	0 : 0 : 6
Mutton, ...	0 : 0 : 3	0 : 0 : 6½ and 7
Fowl per couple, . .	0 : 0 : 8	0 : 1 : 4 to 1 : 6
Turkeys, ...	0 : 2 : 2	0 : 3 : 3 to 4 : 0
Eggs six for	0 : 0 : 1	two for 0 : 1

The first column will shew the usual prices for some years, and the latter the rise partly produced by a year of scarcity. The encrease in the price of labour does not bear a due proportion to the price of provisions; the latter has in many instances doubled in twenty years; during the same period the average of day labour has risen from 6*d.* to 8*d.*: but the food of the poor, potatoes, has not so gradual a rise as other provisions; they are chiefly affected by seasons, and fall nearly to the old value again, in favorable years.

Potatoes in 1790 were 4*s.* 4*d.* per barrel, in 1800 £.1. but in the present year they are fallen to their former price.

	in 1790 per bar. £. s. d.	in 1800 £. s. d.
Wheat, ...	1 : 5 : 0	3 : 8 : 3
Barley, ...	0 : 12 : 0	2 : 0 : 0
Oats, ...	0 : 8 : 0	1 : 12 : 0 to 1 : 14 : 1½
Malt, ...	0 : 12 : 0 to 0 : 14 : 0	2 : 0 : 0

	in 1790	in 1800
	£. s. d.	£. s. d.
Flour 1st. per cwt. . .	0 : 13 : 0	all goes to the Dublin market.
Do. 2d.	0 : 9 : 0	from 18s. to £.2 : 4 : 0
Do. 3d.	0 : 9 : 0	from 15s. to £.1 : 15 : 0

In May 1802.—Wheat 28*s*., barley 12*s*., oats 8*s*., potatoes 1½*d*. and 2*d*. per stone, pork 30*s*. and 36*s*. per cwt.

The market of Kilkenny is well supplied with every article, with sea fish in plenty from Dungarvan, and with all kinds of garden stuff and fruit in the season; even peaches, melons, grapes, pine-apples; as the produce of several gardens are sold besides that of Mr. Robertson's hot houses and nursery: the cultivation of vegetables by market gardeners, has encreased three or four fold, within these twenty years. No regular meat market is held at any other town, though meat is occasionally sold.

Price of other Articles in Kilkenny in 1800.

Labour in harvest of hay and corn, 1*s*. 1*d*. to 2*s*. 8½*d*.
Day labour of children, 3*d*. to 6½*d*.
Yearly wages of a man, £.6 to £.10 per annum.
——————of a woman, £.3 to £.6.
Masons work, 10*d*. to 1*s*. 1*d*. per perch, finding the labourer.
Masons work, 1*s*. 7½*d*. without labourer.
Mowing, per acre, 3*s*. 3*d*. to 5*s*. 5*d*.
Thresher, per barrel of wheat, 1*s*. 1*d*.

Wet slating, per square, 4*s*. 10½*d*.

Dry do. per do. 6*s*. 6*d*.

Quarrymen 3*d*. per load, finding neither powder nor tools.

Thresher, per day, 2*s*.

Blacksmiths work, 4*s*. per week, and diet.

Deal { White, 10 feet long, and 2 inches broad, 2*s*. 6*d*.
Red, do. 2*s*. 8*d*. other lengths in proportion.

Hoops, from 1*s*. 10*d*. to 2*s*. 8½*d*. per dozen, as per quality, increase of price one-third since 1790.

Oziers, from 4*s*. to 6*s*. per hundred, whole, increase of price one-third since 1790.

Malt liquor, ale, £.1 : 15*s*. per barrel of 40 gallons.

Cheese, English, 1*s*. 4*d*. per pound.

———, Waterford, 6*d*. to 4½*d*. and £.1 : 17 : 4*d*. per cwt.

Live turkeys, 2*s*. 8½*d*. to 3*s*. 3*d*. per couple.

Geese, the same.

Fowl, 1*s*. to 2*s*.—Chickens, 10*d*. to 1*s*. 6*d*. per couple.

Rabbits, 1*s*. 1*d*. per couple, skinned.

Pork cheek, 4½*d*.

Butter, in 1796, 10*d*. to 13*d*.; in 1800, 16*d*. to 18*d*.

Salt, 1*s*. per stone.

Milk, in 1796, ¾*d*. to 1*d*. per quart; in 1800, 1½*d*. to 2½*d*.—Buttermilk, 1½*d*.

Turf, usual price, 3*s*. 3*d*. a kish, drawn seven miles.

Fish.—Rush ling, 5*d*. per lb.; Dungarvan do. 3*d*.; salt hake, 4*d*.; salt cod, 4*d*.; herrings, 8*s*. per hundred; salmon, 4*d*. per lb.

Land carriage, usually 7*d*. per mile.

Bleaching, 3*d.* per yard; weaving, 5*d.* to 8*d.* per yard; spinning, 4½*d.* to 8*d.* per dozen yarn.
Oak bark, from £.11:7*s*:6*d.* to £.12:15*s.* per ton.
Round balk, in Ross and Waterford, in 1790, £.1:10*s.* per ton. Porterage, 6*d.* per ton.
Square balk, £.2:15*s.* per ton.
Freight and carriage to Kilkenny, 10*s.*
Ten feet double deals, £.1 per hundred.

Galmoy.—3*s.* an acre mowing hay and corn; ditching 2*s.* a perch, ditch and double bank; 16*d.* a simple ditch; 3*d.* to 6*d.* a perch work of dry walls; 5*s.* 5*d.* a perch, highest price of walls. Cabbins without land £.1:2:9*d.*; land with it, 20*s.* to 50*s.* Harrow, £.1:14:1½*d.*; car, £.2:5:6*d.*; plough, 25*s.*; ash, per foot, 1*s.* 7½*d.*

Durrow.—Labour, 6*d.* to 8*d.*; frize, 2*s.* 4*d.* a yard; cabbins, £.2:5:6*d.*; gardens, £.5; potatoe ground, 8 guineas; spade, 3*s.* 3*d.*; shovel, 2*s.* 6*d.* to 3*s.* 3*d.*; turf, 2*s.* a kish.

Erke.—Labouring boys, 11*s.* 4½*d.* per quarter; grey frize, for inside clothing, 2*s.* 2*d.*; blue, for surtouts, 2*s.* 8½*d.* to 3*s.* per yard; have turf in general for the cutting.

Fassadinan.—Cabbins, Castlecomer, £.4 to £.6, with one rood of garden. Dysert and Mothell, hired labourers, 10*d.* to 13*d.*; wages, £.2 to 6 guineas a year; potatoes, 2½*d.* to 3*d.*; coals, 13*d.* to 14*d.* per cwt.; cottiers ground, 10*s.* to £.2:5:6*d.* an acre: they use a narrow plough for drilling potatoes sometimes.

Kilmennan

Kilmenman and *Acharney*.—Labour, 5*d*. in winter, 6*d*. in summer; potatoes, 8*d*. per stone; frize, 3*s*. to 4*s*. per yard; coals, 8*s*. per barrel, or small coal, 3*s*. to 4*s*. per kish. Cabbins with an acre, 40*s*.; ground, from 40*s*. to 2 guineas; four-horse plough, 2½ guineas; harrow, £.1 : 10*s*.

Mucully.—Labour, 6½*d*. per day; wages, £.6 per annum.

Crannagh.—Kilmanagh, day labourers in 1800, 13*d*. and diet; servant, 6 guineas per annum; frize, 3*s*. to 3*s*. 3*d*. and 2*s*. 8½*d*. if manufactured at home; culm for fuel, in balls, at 2*s*. 8½*d*. per load, which may last a cabbin for a week. Single cabbin, one guinea; ground with it, from £.2:10*s*. to £.2:5:6*d*. per acre: rent of land varies from 7*s*. to 40*s*. per acre; spades and shovels, 4*s*. 4*d*. each; ploughs and harrows, 2 guineas.

Union of Odogh.—Labourers, with garden and grass for a cow, 6*d*. a day; otherwise, 10*d*. to 12*d*. and at harvest, 1*s*. to 2*s*.: fuel, dry dung and brushwood in summer; in winter, culm from Ferodah, or coal from Castlecomer at 30*s*. per ton: the culm, at 3*s*. a kish; made in balls, lasts as long as half a ton of coal: house and garden, 35*s*. to 40*s*. and grass of a cow at the same price.

Kells.—Labour, 8*d*.; coarse frize, 2*s*. to 3*s*. 6*d*.; coal, 1*s*. 8*d*. per cwt.; turf dearer than coal; ground of cottiers, 40*s*. to 2 guineas; spade and shovel, 3*s*. 3*d*.; bill-hook, 2*s*. 8½*d*.

Callan.—Day labourer, 10*d*.; woman, 8*d*.; harvest and spring, 13*d*. and diet; sometimes 19½*d*. and

2*s*.

2*s*. 2*d*.: get wheaten or oaten bread for breakfast; potatoes and milk, and sometimes meat and butter, for dinner.

Knocktopher.—Day-labourer, 10*d*., harvest, 13*d*. and diet; food, principally potatoes and milk; oatmeal, stirabout, and oaten bread, sometimes used: salt herrings in the season, retailed at a halfpenny a piece: potatoes, in 1800, rose to 1*s*. 1*d*. per stone, as in other parts, and oatmeal to 5*s*. Turf sells in the bog for about 2*s*. a kish; it stands the man who makes it, for his labour, about 1*s*. 7½*d*. per kish; sold at Knocktopher from 2*s*. 8½*d*. to 3*s*. 3*d*. a kish; costs 8*d*. to draw turf from Brownstown bog to Newmarket; 1*s*. drawing home to a greater distance.

Gowran.—Labour, 8*d*., or 6½*d*. and diet; threshers and thatchers, 1*s*. 1*d*. and diet; seldom done by the barrel; spring corn sometimes threshed for 6*d*. or 7*d*. a barrel, and a few years ago for 4*d*.; wages, from 4 to 6 guineas; a few years ago 3 to 4 guineas. Cottiers house and garden, 30*s*. and running of a pig or two comes to about £.5 a year: farmer tills, draws home turf, and assists in any work that requires horses, and sometimes changes the cottier's ground when worn out: 30*s*. for the grazing of a cow, or it costs 2 guineas a year for milk for a family, which is only to be had in the summer half year; reaping hook, 13*d*.; hat, 4*s*. to 5*s*.; brogues, 7*s*. 7*d*. a pair; a man uses two pair in the year, and three pair of soles, at 2*s*. 2*d*. each; leather, retailed at 4*d*. an ounce, or 5*s*. 5*d*. per lb.; mowers, 1*s*. 7½*d*. to 2*s*. per day, or 3*s*. 9½*d*. to 4*s*. 4*d*. per acre; 5*s*. 5*d*. has been given,

but

but it is generally done by the day: labouring servants, per annum, £.6 to £.8; servant girl, 15*s.* per quarter; haulers of boats, 14*d.* to 1*s.* 7½*d.*; potatoes, 2½*d.* to 4*d.* per stone; oatmeal, 9*s.* to 12*s.* per cwt.: many farming servants were turned away in 1800, on account of the high price of provisions. Barley-meal, 1800, 6*d.* per pottle; herrings, 1*d.* each; salt, 16*d.* to 18*d.* per stone; turf, 1*s.* 7½*d.* to 2*s.* 8½*d.* per kish; cabbin and small garden, in or near a town, £.2 to £.3 a year: farmers charge cottiers about the same for a cabbin and an acre of garden, which they pay in labour at 6*d.* per day, sometimes 8*d.* Ploughs and harrows, 18*s.* to a guinea; car, 2 guineas to 2½: iron, 3½*d.* per lb.: making brooms, 4*d.* a dozen.

Thomastown.—Labour, in 1800, 10*d.* to 12*d.*; near Gowran, 8*d.* and three meals in summer, 6½*d.* and diet in winter, for cottiers who have constant work; threshing, 5*d.* a barrel for barley, and diet; 6*d.* to 7*d.* for wheat, and diet; 4*d.* for oats, and diet; ditches, 9*d.* a perch, eight feet wide, ditch and bank; 6*s.* 6*d.* a day, and diet of two men, given for a plough and four horses, but the plough seldom begins to work before nine o'clock in the morning; horse and car, 2*s.* 2*d.*

Idagh.—Wages, about 5 guineas a year; labour, in 1800, 10*d.* to 13*d.*, or 6½*d.* to 8*d.* with two meals; potatoes, in 1800, 8*d.* a stone, and sour milk 2*d.* a quart; frize, 2*s.* 2*d.* to 3*s.* 3*d.* per yard; linsey-woolsey, 1*s.* 2*d.* per yard; worsted stockings at 2*s.* 2*d.* a pair; linen, about 6*d.* a bandle; turf, 1*s.* 4*d.* a kish;

a kish; cabbins, one guinea without land; average rent of land in the parish of Roer, £.1 : 14 : 1½ *d.*

Iverk, Whitechurch.—Labour, 10*d.*; wages, 4 guineas; food, potatoes and milk; large farmers, some oatmeal; potatoe ground, 10 guineas an acre, or let for manuring; one-fifth of the cottiers have no milk; eat potatoes dry with salt; 3 guineas yearly for a square perch of turf-bog: potatoes rose in 1800 from 4*d.* to 1*s.* a stone; oatmeal, from 6*d.* to 10*d.* frize, 3*s.* 6*d.* to 4*s.* a yard; labourers get old clothes, and are badly clad; children under 14 almost naked; not able to earn any thing before that time; firing, generally bushes stolen; for house and half an acre, 2 guineas; for house and acre, 2½ guineas to 3 guineas; plough, for about 15*s.* or 16*s.*; harrow, 10*s.*; scythe, 4*s.* 4*d.*; reaping-hook, 1*s.* 1*d.*; spade, 2*s.* 8½*d.*

Sect. 6. *Use of Spirits, and Habits of Industry.*

The high price of spirits lately, was of service; but the labouring poor seldom drink them, or malt liquor either, except at fairs, patrons, wakes, weddings, and christenings; on the latter occasion they often distress themselves to procure meat in plenty, as pork and geese. Of all meetings, wakes and funerals are the most liable to drunkenness, and promote unnecessary idleness more than any other: as soon as a body is supposed to be dead, the neighbours assemble

semble to wake it, and the widow and family are obliged to supply them with entertainment; the feasting continues until the funeral begins, and one person from each family at least in the village, must attend it: the body is often carried many miles, to whatever place the family formerly resided at, and were buried; it may be supposed, that from the eagerness for the wake, and sometimes from the precipitancy of the funeral, the unfortunate body is stretched, if not buried, before it is quite dead.

Unlicensed tippling houses have much decreased in number; there were for instance, about 25 years ago, 28 *sheabeen* houses in the town of Inistioge, and no license paid; there are now five houses that pay spirit license. No sheabeen is made in the county, and but little spirituous liquor is sold privately: that the number of licenses do not increase, may be seen from section 3.

The number of *holy days* too, is somewhat diminished; but those that are kept are a great impediment to industry, and very injurious in harvest and in spring. Farmers complain of their men keeping holy days by the desire of the priests, leaving their ploughs idle, and their work in confusion. One gentleman hires his ploughman, on condition of not keeping more than four holy days in the year; if this practice was general, Sunday might be solely and truly allotted to rest, according to the Divine institution: if the parish priests were paid out of the treasury, and not by gratuitous gifts from their flock, this and many other abuses would cease, and

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the religion and the morals of the people soon improve.

Women, if disencumbered of children, often gain $6\frac{1}{2}d.$ a day by field work, as reaping, and every sort of harvest work, hay-making, planting and digging potatoes, saving turf; they perform almost every kind of field labour, and often work as well as men: girls above fourteen earn $5d.$ or $6\frac{1}{2}d.$ in the same manner; but women would in general prefer work at home, and express their wishes for spinning wheels or employment. They spin, when necessary, for family use, and sometimes for sale. Boys, above eight years, get occasional labour; but children are bred up to steal firing, and every kind of idleness; which might be prevented, if the materials of manufacture could be given them, and fuel afforded at a low rate.

Some *spalpeens* come for labour into this county from Munster, in time of harvest; but no kind of emigration takes place from hence: enlisting either in the army or navy, is almost unknown in the country parts; going to America, is a case extremely rare; some, who are adventurous, however, go to Newfoundland from the southern part of the county; where, independent of what they endure, shut up in the close cabbin of a small vessel, with the breadth of their box to lie upon, they must undergo the labour of many years, and live with economy, to bring back a moderate sum of money. If the Nymph bank, extending parallel to the southern coast, should ever be fished with spirit, a field of industry will be opened

opened to the people of this district, of which they are well inclined to avail themselves.

The spirit of industry seems only to want excitement: for themselves, the labouring poor can make great exertions; but for others, or when not closely overlooked, they work in a manner the most languid and indolent; their mode of living perhaps, totally on vegetable food, produces a general debility, which must have powerful motives to overcome it; their habits disincline them for any species of task work, though they might gain double by it; and their labour, though nominally cheap, is in fact dear, from the tedious and slovenly manner it is performed: a gentleman, who was making a bounds-ditch in conjunction with a farmer, employed eight labourers on his side, the farmer employed three, and the work of the latter, who overlooked it himself, advanced beyond the other.

Sect. 7. *Schools.*

Pierce Earl of Ormonde founded a school in the church-yard of St. Canice, on the site of the present library; in this school Stanihurst was educated, who dwells with pleasure on the merits of his master, Peter White, who had been a fellow of Oriel, Oxford.

This foundation was superseded by a new one in the time of James Duke of Ormonde, who establish-

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ed the present school, under the title of a *grammar school*, and framed statutes and constitutions for its government; in latter times this foundation has been styled a *college*. For its maintenance, the Duke granted a house in John-street, with an adjacent park or meadow of about three acres; in addition to this, the master now rents a piece of ground adjoining; he granted also for its maintenance, the tithes of several parishes, in trust, to pay £.140 per annum to the master, for his maintenance, that of his ushers, and the repair of the school-house.

The house having gone to decay, was rebuilt some years ago, upon the application of the late master, Doctor Ellison, by parliamentary grants, amounting to £.5064: the house is a handsome one, and able to accommodate 80 boarders in single beds: In 1788 there were 36 boarders and 29 day scholars: during the late rebellion, the number declined; but the school has recovered by the attention of Doctor Pack, the present master, though the number of boarders at any time, has scarce ever exceeded forty.

The statutes have been printed by Ledwich, and need not be repeated: according to them, upon failure of the male issue of the founder, or attainder, which was the same thing, the patronage devolved in 1715 upon the provost, fellows, and scholars of Trinity College, Dublin. The master is to instruct in poetry and oratory, as well as latin, greek and hebrew; the latter language is not now taught. Provision is made for the instruction of scholars upon a

charitable

charitable foundation, under the name of Ormonde scholars, who were afterwards to be admitted to Trinity College; and if the crown should make it a free school and incorporate it, the trustees may convey the premises to such incorporation; but these foundations never took place: the founder's idea was, that the establishment should be modelled hereafter on the plan of the great schools in England. The children of inhabitants of Kilkenny, are by the statutes to be admitted at half price. The Bishop of Ossory, the Bishop of Leighlin and Ferns, and the Provost of Trinity College, Dublin, for the time being, are appointed visitors: and the majority of them are enjoined yearly on the last Thursday in June, or oftener if they shall see occasion, publicly to visit the school, between the hours of eight and twelve in the morning; they are to cause the statutes to be read, to examine the scholars, to enquire into the conduct of the master, and to choose those on the foundation, if there are any, for the University. On this day a fat buck from his Grace's park is to be given to entertain the visitors; who are after dinner to inspect the house, and order all necessary repairs at the expence of the master. No part of this visitation takes place, except the gift of the buck from Lord Ormonde; but the school is nevertheless well conducted and with much reputation by the present master. A book is kept with the names of all the scholars; many men of eminence have received their early education here, and the scholar will deem that classical ground, which gave the first

rudiments

rudiments of knowledge to a Swift, a Congreve and a Berkeley.

Near the Cathedral of St. Canice is the Roman Catholic Seminary: the education of the priest-hood is completed here; it is usually attended by about sixty scholars, and is said to be well conducted.

There are besides, three private schools in Kilkenny; in one of which latin is taught. The curate of the parish of Callan keeps a latin school, which has about six or seven scholars; there is another latin school at Durrow, which has generally about twice that number.

There is no *Diocesan school* belonging to Ossory: the salary of the school-master is levied on the clergy, and was given as a sinecure to Dr. Pack, while he was usher of the college, and is continued to him now that he is master; the salary is 36*l.* a year.

The *Charter-school* at Kilkenny has at present 59 boys; the number of the establishment is sixty and was full, till one died of the small pox. Mr. Nagin is the master, and his wife mistress, at a salary of £.6. per annum each: $3\frac{1}{2}d.$ per day is allowed for the maintenance of each boy, but of this sum there is one halfpenny a day deducted for the labour of each. The house and twenty acres of land with £30. per annum, are the gift of the corporation of Kilkenny, for the purpose of educating and apprenticing sixty protestant boys. The schoolmaster rents the land at 10*s.* an acre, and keeps six cows; he feeds the boys on common days with oatmeal, potatoes and milk; on Sundays they have a meat dinner: £.2 : 4*s.* is allowed

lowed for the clothing of each, annually: for firing £.16. per annum: for soap and candles £.7: 10*s.*: for windows 7*s.*: 6*d.*: there are fourteen beds in one room, nine in another, and five in the gallery adjoining the school-room: the usher has £.11: 10*s.* a year.

The local committee meet four times a year, and consist of the Bishop of Ossory, the Dean, and the resident clergy, with the Mayor and Aldermen of Kilkenny: the curate of St. Mary's is catechist, with a salary of £.10 per annum; the children are taken into the school at from seven to ten years of age, and apprenticed at fourteen: the boys appear very healthy and are well taken care of, and the master and mistress capable and attentive.

A new charitable foundation has been established at Kilkenny, under the form of a *Nunnery*, of the order of the presentation, for which a large sum of money was given by a native of the city, originally a taylor, afterwards a button manufacturer, of the name of Murphy; and in which twelve boys and twelve girls are to be instructed: the house is a handsome building, and under the patronage of the Roman Catholic Bishop: there are but three or four professed nuns as yet; the convent can contain eighteen.

There are not many regular *parochial schools* in the county: the Roman Catholics, prefer schoolmasters of their own persuasion; of these, most parishes have one or two; and the school is not unfrequently kept in the chapel.

The

The clergy are enjoined by different statutes, under penalties of deprivation, to keep parochial schools, and 40*s.* a year has usually been limited to that purpose: landlords are empowered to grant land for the same use; but in some cases, it is difficult to get either master or scholars.

The common schools are not badly attended: by a few notes relative to different parishes, the relative number of scholars may be compared with the population, and the prices of tuition seen.

Union of Kells, four schools; about 50 children attend each: in the parish are about 300 fit for school; price 2*s.* 8½*d.* to 5*s.* per quarter. Whitechurch, one parish school; from 50 to 60 boys; 20 to 30 girls.

Union of Fiddown, five schools; one protestant licensed school-master, to whom the Earl of Bessborough pays £.7 a year, and the Rector two guineas (in 1799), price per quarter 2*s.* 8½*d.* to 6*s.*

	Boys.	*Girls.*	*Total.*
Parish school, ...	85	14	99
Pilltown school mistress, .	35	79	114
Templeorum chapel school,	42	13	55
In the three schools,	162	106	268

Callan, five schools; one a free school: a school was established by Dr. Knox; was neglected by the late incumbent, and has been revived by Doctor Stevenson; the girls in it are taught to spin; there were 28 wheels at work; Lord Callan is the principal subscriber.

Parishes

Parishes of Ballycallan, Tullaroan, Killaloe, each one school.

Parish of Kilmanagh, 1 protestant Sunday school; 11 boys and 9 girls. One Roman Catholic school; 21 boys and 10 girls.

Union of Inchiholohan and Outrath: one school only in the Union of Outrath.

Prices.	*s.*	*d.*	
Reading and spelling, . . .	1 :	7½	per quarter.
Writing, ...	2 :	2	
Arithmetic, ...	3 :	9½	
Book-keeping & Mathematics,	11 :	4½	

usually 70 scholars; in the Union were 153 boys and 131 girls, from four to twelve years old, fit to attend school.

Union of Mothell, 3 schools, 100 boys, 80 girls.

Dysert, no regular school.

Durrow, Latin school, 18 boys; 1 girl school.

Erke, 2 schools, 89 boys, 30 girls.

Fartagh, 1 school, 30 boys, 8 girls.

Kilmennan and Acharney, no school.

Union of Odogh, two schools.

Castlecomer.—Lady Ormonde has set a laudable example, by establishing a school for girls, in which they are not only taught reading and writing, but spinning, and plaiting chip for hats: the girls, 32 in number, are cloathed, fed, and receive 1*d.* a yard for the chip, as an encouragement for industry. Sallow, lime, and deal, are used for chips: Lady Eleanor Butler, and the young ladies of Castlecomer, preside alternately.

Lady Ormonde gives besides, a house, garden, and 20 guineas a year to a school-master; and is about to build a new and handsome school-house.

Mr. Irwin, the Curate of Castlecomer, not being able to procure a proper school-master, besides his constant application to spiritual duties, attended himself at the colliery one day in every week, to instruct the children: he found it difficult to get a school-master, because any person who is expert at accounts, may find employment readily at the collieries as a clerk.

Union of Rosbercon, 4 schools: one kept by the clerk, who is licensed: price of tuition 2*s.* 8½*d.* per quarter; about 8 children in the protestant school: from 30 to 40 in each of the others. No residence for a school-master.

Kilbeacon, a school, 60 boys, 20 girls; price 1*s.* 7½*d.*—2*s.* 2*d.*—and 3*s.* 3*d.* per quarter.

Roer, 5 schools (in 1799) from 1*s.* 7½*d.* to 3*s.* 3*d.* one protestant school-master, received five guineas from Lord Callan, four guineas from Mr. Foote, and five guineas from the Rector; the scholars varied in one year from 25 to 127: in summer the attendance considerable, in winter small: in 1800 in this school 24 boys, 15 girls.

Inistioge and Clonamery, 4 schools; 2 are free schools; 40 to 60 children in each of these; 63 in another school,

Prices.	*s.*	*d.*		*s.*	*d.*	
Spelling and reading,	1	7½	to	2	2	per quarter.
Writing and cyphering,	3	3	to	4	4	

25 in another, the master of which is allowed four guineas

guineas per annum by Mr. Barnes, who established it on his own estate: in the parishes about 633 children fit for school.

Ullard, 1 school, 26 boys, 10 girls.

Powerstown, 2 schools; in one 70 boys, 20 girls: price 1*s.* 7½*d.* reading; 2*s.* 2*d.* writing; 4*s.* 4*d.* arithmetic: in the other 30 scholars.

Education is often in hands little capable of it, for want of a proper establishment for providing school-masters.

Sect. 8. *English Language.*

English being taught at all the schools, it is understood by most of the younger part of the lower classes; but there are many persons, and particularly women, in the hilly districts, who cannot speak a word of English: in the hills of Idagh, Irish is said to be tolerably well spoken. The common people seldom speak any other language among themselves; but Irish is more prevalent about Kilkenny and near Munster, than near the county of Carlow. The priests often preach alternately in Irish and English; but always in Irish, if they are desirous to be well understood.

Sect. 9. *Charities.*

Monasteries and religious donations were usually intended as establishments for the poor; and it is often so recited in their grants;—John's Abbey, at Kilkenny, was founded by the Earl of Pembroke "for the relief of indigent persons." After monasteries had been abolished in England, and their funds perverted to private use, it was thought necessary to provide for the poor by a new institution; but in Ireland no such establishment took place; the aged, the infirm, the orphan, depend on casual assistance, and private charity.

The only public institution is the *Infirmary;* it was opened in 1767: its establishment consists of a surgeon, superintending physician, house-keeper, two nurse-tenders and a porter.

The salary of the surgeon on the books is £.100 per annum, but it is divided between him and the physician, the latter receiving £.60; at first there was only a surgeon and an assistant.

House-keeper £.12 per ann.

Two nurse-tenders, at £.3 per ann. each, and 2*s.* 4*d.* weekly subsistence.

Porter £.6 per ann. and 2*s.* 4. weekly subsistence.

Fund

Fund for support of the Infirmary.

	£.	s.	d.
From the Treasury, per ann. . . .	100	0	0
County Presentment, ...	100	0	0
Mrs. Garnett's bequest of £.500, ann. intr.	30	0	0
Six Government debentures, at £.5 per cent., annual interest	30	0	0
From Sir Wm. Fownes's bequest, . . .	8	0	0
Doctor Butler, sen. annual legacy . . .	2	5	6

The remaining fund arises from benefactions and annual subscriptions chiefly of three guineas, which sum constitutes the subscriber a governor for the year; twenty guineas, for life.

List of Benefactors and annual Subscribers.

Countess of Ormonde,
Lady Elizabeth Kavanagh,
Lady Eleanor Butler,
Earl of Ormonde,
Lord Viscount Clifden,
Lorenzo Nickson, Esq.
Rev. Mr. Monck,
Mrs. Catherine Wheeler,
Rev. Doctor Pack,
John Power, Esq.
Rev. Trav. Madden,
Captain S. Madden,
Captain C. Madden,
Rev. Dodgson Madden.

Annual Subscribers.

Lord Bessborough,
Bishop of Ossory,
Dean of Ossory,
James Bryan, Esq.
Robert St. George, Esq.
Rev. Doctor Butler,
James Kearney, Esq.
Rev. H. Hamilton,
Anth. Pack, *Treasurer.*

Number

Number of patients admitted on the books from the month of August 1795, to January 1802, six years and four months.

		Interns.	*Externs.*	
To August	1796	101	300	
	1797	134	230	
	1798	169	290	
	1799	210	292	
	1800	220	394	
To January	1802	220	184	
		1054	1690	——Total 2744

Persons with disorders not contagious, or suffering from accidents, and venereals, under certain restrictions, are admitted: there are twenty-six beds, which is as many as the funds can support: formerly the medicines were supplied by an apothecary in the town; but the drugs have lately been procured from Dublin, and compounded in the hospital, by which they have better medicines at less expence. The prevailing disorder with the poor of city and country, is the low putrid contagious fever. The building could contain more beds, but its funds are very inadequate to what such an institution requires; and very few of the resident proprietors in the county, subscribe to it. It is extremely well attended and conducted by Mr. R. Pack, the present surgeon; but no medical person resides in the house, which is a cause of inconvenience.

There

There is no place of confinement for lunatics; who usually wander about, till they commit some breach of the peace, and are then consigned to the *county gaol,* and often kept in dungeons. The inspector of prisons, in his report, 1797, says, when he visited the county gaol, " two lunatics were confined in it; they were chained in a most cruel manner to the wall:" and " there was no apartment for the sick: the mixture of felons and insane persons, is liable to the worst abuses; the inspector observes, that in the gaol of Kilkenny, " a man was confined five years and eight months on a trifling charge, and without any committal whatsoever to justify this monstrous oppression;" and it was falsely alledged that he was out of his senses. A new county gaol is now about to be built, on a plan given by Mr. Robertson, architect, of Kilkenny; the modern improvements for ventilation are attended to; it will have a separate infirmary, distinct cells, and a detached wall.

In the present gaol, the dungeons for felons, are near twenty feet under ground, and are descended to by a ladder through a trap door; there are no flues, and the air of course offensive and dangerous; the grates are towards the street, which renders it impossible to prevent the admission of spirits; the same fault occurs in the city gaol, which is also on a bad plan; and both are under the court-houses.

Private

Private Foundations, Bequests, and Charitable Societies.

1. William St. Leger *granted* the church of St. Nicholas, of Thullachbrock, (now called Tullahanbroge) in the diocese of Ossory, with all the lands there which Tancardus Brun held, and all the tithes, and ecclesiastical benefices belonging to that church and the church of Attenach (Attanna) "*in pure and perpetual alms*," with five carucats of land in Tullachbrock, and six in Roscomin, rendering one marc of silver for all services, at the feast of St. Michael; which grant his son confirmed. Archd. Peer. VI. p. 93. Of this grant there are no traces.

2. Near the cathedral is an *alms-house* in a tottering condition; it was founded by Bishop Williams: Bishop Otway, who died 1692, left an estate called Fermoy, worth then £.40 a year to this institution; but by the fraud of his executors, and perhaps the inattention of his successors, it was conveyed away, and never recovered: its value now would be considerable. Eight old women inhabit this house; they receive trifling annuities from different estates of the family of Waring: three have 40*s.* a piece; four 15*s.*; and one £.3 : 5*s.* per annum, from the estate of Mr. Waring of Springfield.

Adjoining to this house is a public library, instituted by Bishop Otway, who left his books, £.200, and more if necessary, and £.297 : 10*s.* for fitting up the room, which was the upper story of the old school-house,

school-house, and providing £.5 for a librarian, and £.5 a year for coals: his executors built the library, and room below for the librarian, but did no more. Bishop Maurice, who died 1756, left his books to it, and £.20 a year to the librarian, out of his estate of Milltown, which is regularly paid by the present proprietor, Sir Robert Staples. The library is useless, scarce ever entered by any person; the books are ill-kept and in disorder; the room damp, never having a fire. Bishop Maurice empowers the Bishop, for the time being, to sell his books, and apply the money to finishing the steeple: but if a power was obtained to sell the whole of the books, and lay out the money in repairing the almshouse, it might be of more utility. (For these legacies see Ledwich.)

3. There was a *poor house*, called an hospital, founded in the coal market, pursuant to the will of Thomas, the tenth Earl of Ormonde; he left to it the impropriate rectories of Drominberran and Bewley: his son procured an incorporation by charter, in 1630, under the name of the Master, Brothers and Sisters of our most holy Saviour Jesus Christ. Another charitable appropriation of the tithes of Inch and Drumboth, in the diocese of Cashel, was made by an Earl of Ormonde, who obtained an incorporation from Charles II. for a master, brethren, and sisters, of a large house in Kilkenny. The house was suffered to go to decay; but a smaller one was afterwards built by the present branch of the family, upon one-third of the ground; both the former endowments were lost; these latter tithes are supposed

to

to produce now between £.200 and £.300 a year. The present house, or Ormonde poor-house, is under the superintendence of the mayor; it was repaired about seventeen years ago, by the present Countess of Ormonde: it consists of two stories, four rooms on each floor, and contains eight widows, some of whom have families living with them: they must be natives of the city of Kilkenny, and are allowed £.5 a year each, together with the ground rent of two houses adjoining, amounting to £.1 : 6 *s.* to each widow: the house is kept in a dirty state, but in tolerable repair, and contains at present twenty souls.

4. *Shee's Hospital.*—The armorial bearings of the founder in the front, with eight quarterings, have this inscription, which shews the date of the foundation, "Insignia Ricardi Shee Kilkenniensis armigeri, qui hoc xenodochium fieri fecit, 1581." The building is in Rose-inn-street; the family arms at the front and back are kept in repair by the descendants of the founder.

Sir Richard Shee built the house in his lifetime, and endowed it at his death; these are the words of his will and codicil; "Item, for that I have great desire and speciall care of the hospitall built by myselfe and my wyfe att Kilkenny, that the poore men and women there, and their successors, shall be well mayntayned from tyme to tyme, I will and bequeath unto the saide poore, and their successors, *the parsonadge of Butler's woodes and Kilmocahill,* in the counties of Kilkenny and Catherloghe. And for as muche as I cannot as yett make a perfect estate unto them

them thereof, for that theye are not incorporated, and want a mortmayne; my will is, and doe chardge my sonne Lucas upon my blessinge, or curse in doeinge the contrarie, to use his best endover, to obtayne a charter to make them a corporation, by the name of Fratres et Sorores Hospitalis Jesu Christi in Kilkenniâ, and to procure a mortmayne and corporation for them and their successors accordinglie for ever. And doe desire and request my said sonne Lucas, and his heirs, upon my blessinge, and my feoffees and their heirs, and the survivor of them, from tyme to tyme, to perfect a sure estate thereof to the said hospitall, accordinge my meaninge herein. And doe will, that my feoffees and their heires, and the survivor of them, shall stand and be seissed of the profytte of the said parsonadge yearlie, to the use of the saide poor men and women, and their successors of the saide hospitall: and pay the master and his successors of the saide hospitall, viz. five pounds sterling of the profytte of the said parsonadge, to the master and his successors yearlie, who shall have care of my newe chappel and monument buylt in our Ladies Quyre, and shall order and dispose the saide poore men and women in the feare of God, as becometh, and the rest of the profytte of the said parsonadge to be converted yearlie to the use of the saide poore men and woomen of the said hospitall, and theire successors for ever, prayinge my wyfe for the love shee beareth unto me, to give competent meate and drinke att her own table to the said master; and after her death my sonne and heire to doe the lyke, prayinge

inge my wyfe, my sonne James Walshe, my brother Matthew Shee, Thomas Browne, and my sonne John, to have care of the execution hereof. Item, I will also, that from tyme to tyme, the house of the saide hospitall and theire successors for ever, and my newe chappell to be buylded, to be repayred and kept upp upon the profytte of the tythes of Kilmacahill and Butler's woodes afforesaide; the rest thereof being converted to the uses as before."

Codicil.—" Item, and whereas by my last will I have appoynted my wyfe to have a speciall care of my hospitall, mayntayne a master that shall attend the poore there, buylde and make up a chappel; my will is, and I doe require my sonne and heire, as he will looke to avoyde my curse, to looke carefullie to my hospitall, and mayntayne a master to attende them and praye for me, buylde and make upp a chappell, and to do all other good works, which I appointed my saide wyffe and others to doe. Item, forasmuche as with speciall trust and affiance reposed, I have infeoffed and made estate of all my land to suche of my friends as accompted and reputed trustie unto me, with suche limitations and to suche uses as thereupon is expressed and declared, I therefore heartily desire my said *feoffees*, as theye will dischardge the saide trust, and *answer the same before the tribunall seate of God, not to give consent* to anye of my sonnes, to *sell, alien, dispose, or doe awaye* anye of the saide land soe past unto them, other than as my intent has byn and is declared."

Lucas

Lucas Shee executed the trusts, and obtained the charter: but the founder's curses did not preserve the bequest; although he provided, that "*if the allocated revenue was by any means stopped, an equivalent should be disbursed from his estate.*" At first twelve poor persons, male and female, were supported in it, and each had an annuity of 40*s.*, besides which, a chaplain was kept, and mass regularly said at an altar, which still remains. In 1685, the poor petitioned Dr. Phelan, titular bishop, against Edmund Shee, who they said defrauded the community (see Ledwich). The chaplain was paid for a long time, but no mass has been said these forty years. The tithes allocated to this hospital, have long since been detained by lay hands. An attempt was made to sell them in 1752, when the following caution was issued from the ecclesiastical court of Ossory.

"Whereas Edmund Shee of Cloran, in the county of Tipperary, Esquire, has declared his intention of selling the house or tenement in the city of Kilkenny (commonly called Sir Richard Shee's Hospital), as also the parsonage of Butler's woods and Kilmacahill in the counties of Carlow and Kilkenny; and whereas the said Sir Richard Shee, by his last will, bearing date December 24th, 1603, and by a codicil to the said will, dated December 31st, 1604, (which will and codicil were proved in the Prerogative Court of this kingdom, in 1608), did devise the said hospital and parsonage to and for the use and maintenance of the poor men and women of the said hospital, and their successors for ever, and did thereby enjoin his

son

son and heir, Lucas Shee, Esquire, to use his best endeavours to obtain a mortmain and charter to make them a corporation; and whereas at the request of the said Lucas Shee, and in pursuance of the said will, a mortmain and charter bearing date the seventh day of November, in the sixth year of his reign, was granted by King James I. to make the said poor and their successors a corporation, and to vest the said hospital and parsonage with the glebe, tithes, &c. thereof in them for ever; which will, codicil, mortmain, and charter, are on record in the proper offices; this is, therefore, to caution all purchasers how they treat for, or purchase the said hospital, or parsonage. Dated this ——— day of May, 1752."

The property, however, was never recovered for the hospital, or compensated out of the estate of Sir Richard. This hospital had some property vested in the French funds, bequeathed by General St. Ruth; it produced about £.20 a year, which sum was paid through the hands of the titular bishop; when there were eleven women, they received about 30*s.* a year each, and less when the house was repaired: since the beginning of the revolution the interest has ceased, but the property may now be restored.

The house contains thirteen poor women; six live in the lower story, where there is also a kitchen; and seven in the upper, which is on a level with the lane at the back, and where there is a plain altar and a crucifix. They receive no money, except occasional gratuities from the family of Shee, by whom the women are nominated to supply the vacancies; and what

what is collected at St. Mary's Chapel, on the day of the exaltation of the cross.

The tithes of the parish of Kilmacahill, are at present divided into three parts; one part is paid to an alms-house in Waterford, another part is in lay hands, and a third is received by the minister of the parish: it appears that the rent of these tithes was paid for the use of the poor to the first of November, 1741.

Not only the heirs of Sir Richard Shee are appointed trustees to this charity, but the mayor of Kilkenny for the time being: but it has been neglected by civil, as well as ecclesiastical authorities.

5. *A large house, gardens, &c.* being the house in which Doctor Ellison kept school in Patrick-street, while the new college was building, was formerly the property of the famous General St. Ruth, who *left* it to pay £.12 a year in some mode of *charity* not known at this time: he left it to Thady O'Dunn, whose brother left it in trust. The profits have never been accounted for, and the house was lately let for a barrack.

6. A charitable *bequest* of John Cramer of the city of Kilkenny, leaving a concern in the coal-market in said city, *for the purpose of apprenticing* two or more poor boys to protestant masters every year, as also for distributing bread to a certain number of poor people every week, out of the profit rent of said concern. The mayor and recorder of the corporation of Kilkenny, and the minister and churchwardens of St. Mary's parish in said city, all for the time

time being, were appointed trustees for executing Mr. Cramer's will; but the chief landlord having brought an enormous bill for fines not paid, as he alledged, and by accumulating fine upon fine, and interest upon interest, which the fund intended for a charitable purpose was not able to bear, and which, although unwarrantable, none of the trustees, but one, would venture to controvert, an ejectment was brought, and an habere obtained, so as to give entire possession of the whole to the landlord: the fine stipulated was six pounds upon the fall of a life, and as there could be no certainty when any of those lives dropt, one of the trustees offered one hundred guineas as a compensation for all; and while the said trustee was waiting in hope of a favourable answer, which was never sent, the time elapsed, so as to entitle the landlord to bring the habere; but as it is alledged, that he has not a power of perpetual eviction, the mode of future recovery seems to lie open.

7. Turnpike debentures, producing an *annual interest* of £.7 : 10*s.* *left* by the widow of Edward Cramer, formerly a baker in Kilkenny, for the purpose of supplying *the poor* in the church-list of the parish of St. Mary's, with a certain quantity of bread throughout the year; it is regularly paid by the treasurer of the road from Carlow to Dublin, and applied by the curate; bread being distributed to about thirty persons.

8. A *bequest* of the late Mr. Nicholai, of High-street, in trust to the wife of Mr. Mark Prim, for the poor of St. Mary's parish, which is duly paid to the curate,

curate, and distributed by him *to the poor* on the list.

9. In the year 1784, Mr. Lewis Chapelier, of John-street, *bequeathed* a sum of £.520 in trust for ever, which producing £.25 per annum, he willed to be given every second year in a sum of £.50, as a *marriage portion* to the daughter of a reputable tradesman of Kilkenny, who should marry a tradesman of character of said town, both being protestants, and the children of protestant parents; this money is out at interest, on private security: the bishop, dean, and parish minister, are trustees, and the charity is well attended to.

10. The late Sir William Fownes requested in his will, that his heirs would apply the *rents* of two tenements, that belonged to him in Patrick-street in Kilkenny, to such *charitable purposes* as they pleased for ever: they produce at present £.32; £.8 of which is given yearly to the county infirmary; the rest, in charitable pensions.

11. The *Lintown factory* was established by Bishop Pococke, whose will runs thus; "I do leave all my estate, real and personal, to the Incorporated Society in Dublin for promoting English Protestant schools in Ireland, in trust for the uses following, first to my sister, &c. then for founding a school for papist boys from twelve to sixteen years old, who shall become protestants, and to be bred to the linen weaving, and instructed in the principles of the protestant religion; said boys not to have been at any school before, of any public legal foundation, and particularly in none

of the charter schools, to be apprenticed to the Society after they are fourteen years old, for seven years, desiring that my manufacturing house at Lintown, Kilkenny, if not disposed of by me, be applied for that use; and if the Society shall think better to sell any of my leases, I desire the produce may be disposed of in some government security. And if any other religion shall at any time be established, than the present protestant religion, I do then leave the whole for such time to St. Patrick's Hospital in Dublin, for lunatics, under the direction of the Archbishop of Dublin, for the time being, and of the other governors of said hospital, to revert to said Society, whenever it shall be re-established, for the purposes above mentioned."

The estate produced twelve years ago £.279; but has risen since; part of it consists of leases under the see of Ossory, of the lands of Loughnacash, Coolershalbeg, and Ballygub, with three tenements called the mitre land, in Green-street, some of which Bishop Pococke recovered for the see. There are 24 boys, and as many looms now employed: the establishment is in a thriving way. Andrew Neelands, the master, carries on the business on his own account: he contracts with the trustees for the maintenance and instruction of the boys, at £.7 a year each, and they are apprenticed to him for seven years. The curate of the parish is catechist at £.10 a year.

12. Two charitable associations exist among the trades people of Kilkenny; the first called *The Charitabl*

Charitable Society, was formed in the year 1740, by the tailors of the city of Kilkenny, for the relief of the bed-ridden of their community; the utility of the institution in a short time became very apparent, and it was at length extended to those who had served their apprenticeship, or had worked seven years at any trade, or their wives, without any distinction of religion. The fund is supported by a quarterly subscription of 2*s.* 2*d.* from each member, by an admission fee of 5*s.* 5*d.* from a city member, and £.1 : 2*s.* 9*d.* from a country one; by charity sermons and occasional assemblies. There are about forty objects relieved every week, and about £.5 distributed; the sum given never exceeds 5*s.* 5*d.* nor is less than 1*s.* 7½*d.* to each individual: the president of the night distributes for the following week, and makes his report on the succeeding night of meeting; the Society meet every Monday evening.

Bed-ridden objects relieved by the Charitable Society from 5th August 1799 to 5th August 1800—3380. Money expended £.375 : 7*s.* 6*d.*

13. The other called, *The Benevolent Society*, was formed in the year 1785, for the purpose of relieving bed-ridden objects which did not come within the description of those relieved by the Charitable Society: its fund is supported by an admission fee of 1*s.* 1*d.*, and 2*s.* 2*d.* per quarter from each member, charity sermons from both church and chapel, and by occasional assemblies. The objects are relieved by a weekly distribution; the Society meets every Sunday evening.

14. *A Charitable Loan* was established in Kilkenny 1st April 1792, according to Act of Parliament, for the purpose of lending out small sums to indigent trades people, interest free; and to be paid in at the rate of six-pence in the pound weekly: not more than £.5, or less than two guineas, to be lent to any one claimant at a time.

From April 1792, to January 1800, the sum of £.5415 : 10*s*. has been lent out to 2208 claimants, and not one shilling lost by bad debts.

In times of distress, the citizens of Kilkenny have not been wanting; in 1799 a *subscription* was opened for the poor; the first subscription amounted to £.353 : 3*s* : 2*d*.; at which time it appearing to the committee selected for the management of the fund, that as the extraordinary price of fuel had placed it beyond the reach of the poor, who severely felt the want of it, that the most efficacious relief they could then afford them, would be, the supply of it on reasonable terms: the purchase of coals was resolved on, and 1598 cwt. bought, and disposed of at a loss of £.57 : 11*s* : 3*d*. to 6120 poor families. Some time after, a soup house was also established, at which were distributed to them, from the 15th of April to the 30th of August, 10,000 gallons of soup at 4*d*. per gallon, relieving about 40,000 persons, during that period, at one quart each; or about 440 each day, for five in the week that they received it, the Catholics not being permitted to use it on Fridays and Saturdays; but the encreasing distresses of the poor rendering the necessity for a further subscription apparent, it was made

made to the amount of £.837 : 8s : 11½d. with a third of £.310 : 4s : 3½d. the two former proving inadequate to the purpose, and applied to the purchase of 100 tons of oatmeal, which was delivered out to them at a reduced price, at two sales each week, during a space of 16 weeks, relieving, each delivery, 4800 persons with a quart each. The entire subscription, forming the sum of £.1502 : 16s : 5d. was expended for their benefit, and scarce any expence was incurred in the distribution, as it was chearfully undertaken by the citizens, and had the most unremitting attention paid to it, and to the selection of proper objects during its continuance.*

In the year 1800, a large sum was also subscribed, and the soup establishment was continued until it became unnecessary.

15. Soon after the promotion of Dr. Hamilton, the present Bishop, to the see of Ossory, *A Society for bettering the condition and encreasing the comforts of the poor*, was formed under his auspices, who, together with his family, has tried to advance every charitable institution.

The Society had two Presidents, the Earl of Ormonde, and the Lord Bishop of Ossory; six Vice Presidents, and an acting committee, composed of twenty-six members, to be annually chosen. They resolved at their first meeting,

"That the object of this Society be, to inform themselves of the real circumstances and situation of the poor in Kilkenny, Irishtown, and their vicinity,

* For these particulars, as well as for much information under other heads, I am indebted to Brigade-Major Kingsmill.

nity, in order to apply the most effectual means for meliorating their condition, which appear to be, the encouragement of industry, sobriety and cleanliness.

"That for this purpose, the acting committee shall apply such portion of the funds as may seem expedient, for the purpose of giving premiums half yearly, to such of the lower orders of the people in Kilkenny, Irishtown, and their vicinity, as shall keep their persons and habitations in the best state of cleanliness, and exhibit the best examples of industry, sobriety and honesty.

"That in order to carry the above rule into effect, the cabins in Kilkenny, Irishtown, and their vicinity, be divided into districts, and an inspector be appointed to superintend each district. Such inspectors to be chosen from the body of the subscribers.

"The duty of an inspector is,—to have the dunghills removed from the doors and streets; the hollows where water may lodge, filled up with stones, and covered with coarse gravel, and to see that before the door is kept constantly swept; that in case any person should refuse, or after having been frequently warned, should neglect to have the dunghill removed, the inspector may apply to the civil magistrate, and have it removed as a nuisance:—to prevent the people from spreading straw or dirt in the street, and then scraping up the pavement for the purpose of making manure: to see that houses are well white-washed within and without: to pay particular

particular attention to the dwelling house; and, if possible, prevent the admission of pigs: to observe carefully how the inhabitants are generally employed, and to excite a spirit of industry among them: to find out what kind of work they are most capable of, particularly the women and children.

" To be regular and constant in making the reports."

By the exertions of the Rev. Hans Hamilton, the society at first did much good, but latterly it has been totally given up.

16. In the town of Gowran, near the gate of Lord Clifden's demesne is an *alms-house;* a square building ornamented with black marble; on a white slab is inscribed, " The foundation of this poor-house, and a perpetual annuity of twenty one pounds per annum was begun and instituted by James Agar, Esquire, deceased, in the year 1733; finished and completed by Mrs. Mary Agar, his widow, in the year 1735." Four widows are maintained in the house; each receives £.5 per annum, and 20*s*. is appropriated to repairing the windows: the widows are appointed by Lord Clifden, and the money divided as he pleases; the rooms are vaulted; two are in front, and two in the rear: the women keep their children with them: three of them are protestants: the house has a plot of ground at the back, open at one side, walled at the others, which contains about a third of an acre, and affords three ridges of potatoes to each room: the house is not kept very clean: it is said there is a power given

to

to the poor of this house by the will of the founder, to distrain the kitchen of the castle of Gowran, if their stipend is not paid.

17. In the town of Inistioge is an *alms-house* of two stories, containing seven poor women, and supported by a weekly donation; each woman has two small rooms and sufficient subsistence: an eighth apartment is appropriated to a school for girls. The house was built nearly on the plan of an alms-house at Ross, to which house belongs the wood of Glansensa on the banks of the Nore in the parish of Rosbercon.

18. The Rev. Joseph Robinson late rector of Listerlin, after a few legacies, *bequeathed* the residue and remainder of his property, "*to the poor* of the parishes of Listerlin and Rosbercon; the entire thereof to be placed out at interest on good security by his executors, one half of such interest to be paid to the poor of Listerlin quarterly, and the other half to the poor of Rosbercon:" for this purpose he devises one bond of £.700, another for £.124 : 10 : 4 and another for £.170, besides the residue of his other property, and he desires his executors "to distribute the money among the poor of these parishes, as they shall think most advantageous for them, recommending them however to apply to the clergyman of the said parishes for their advice and assistance for the appropriation and distribution thereof". This bequest has not yet taken effect, as the will has been contested.

19. No

19. No friendly societies exist in this county; but some *associations* were formed a few years ago in Thomastown and other places, *for* supporting *sick* members, and *for burials* and *masses;* they were not confined to any sect: the money was chiefly expended in scarfs, palls, and funeral decorations:—the members were fined for not attending funerals: these societies ceased at the time of the rebellion: the *Institutes* of one established at Inistioge, is given in the Appendix No. VIII.

The prevalence of malignant fevers, strongly requires houses of recovery: these disorders, induced by dirt and bad food, can scarce ever be banished from a village without removing the patient from his house and family; for when once the fever commences in a cabin, by contact and want of free air, it goes through all the inhabitants, and sometimes two or three times over, as they have not the means of stoving their cloths or furniture; white washing the inside of houses is the best preventative; and the fumigations of marine or nitric acid in the houses of recovery might destroy the infection totally.

A house of industry, or means of affording work to all, at all times, is wanted in every district; the least that every individual ought to expect from society, is a proper subsistence, merited by his labour.

Sect. 10. *Manufactures.*

The *woollen manufacture* has been long established, but has never risen to any importance in this district. It owes its introduction to the principal persons in the county. Pierce Earl of Ormonde, who died in 1359 and his wife Margaret, brought artists out of Flanders, who worked in tapistry, diaper and carpets; some tapistry made by them is still in the Castle of Kilkenny: James Duke of Ormonde, about the middle of the 17th century, set up and encouraged, at great expence, both linen and woollen manufactures, the latter principally at Carrick.

Mary Viscountess Duncannon, often called the *good* Lady Duncannon, encouraged manufactures in an eminent degree upon the estate of her Lord, and in the district around: the fruits of her labour have not been entirely lost; the people in the hills of Iverk, are remarkable at this day for being the best weavers in the county; and are distinguished from their neighbours, by superior industry, cleanliness, and decency of manners: an active and benevolent mind is able to leave an impression, which time can slowly wear away, and which successive changes are incapable of effacing. It is said she established in her neighbourhood some Flemish artists who were wreck-

ed

ed on the coast of Waterford; and that some of their works remain with the family.

The woollen manufacture of Carrick, gave employment for many years to the poor of Iverk; but its decline has produced great indigence among them: this decline is entirely owing to the fraudulent practice of stretching the woollens to augment the measurement, until the Dublin merchants refused to buy them. The deputy alnagers neglected their duty; but now provisions are made by an act passed in 1800 to ascertain the number of beers, and length of the pieces, which perhaps may be of service; it provides against various frauds, of putting flocks, chalk, flour or starch into the cloths, and keeping instruments for stretching. The manufacture was principally carried on by large farmers, who employed their sons, and some journeymen, in weaving, and scarcely allowed time for the cultivation of their ground; they were formerly rich, but now suffer from the want of sale of their pieces, which being stretched almost thread-bare, lie upon their hands, and the workmen who lived by the manufacture only, were almost starved last year.

State of Manufactures in Fiddown by Mr. P. Walsh.

"In the hilly parts of this parish, there is a constant and tolerably extensive manufacture of frizes carried

carried on; the ratteens and frizes made here, except what are used for the local consumption, are sold at the fairs of Kilkenny and Enniscorthy. These fabrics are wrought in the houses of farmers, who employ their daughters, and other females in spinning the yarn; males and females are both employed in carding the wool, some of the farmers have their sons bred up weavers, who work in their fathers houses: sometimes the pieces as they are called, are woven by hired weavers, brought into the houses of farmers to perform the work: there are different tuck-mills in the parish to tuck the frizes.

"*A manufacture of linen* was very successfully established here, on an extensive scale, towards the close of the 17th century, and continued to prosper about fifty or sixty years. It was fostered in its infancy, by the attention of the Bessborough family, who continued their kindness and protection to it during the period of its existence: within the last thirty years, it has so died away here, that no vestiges now remain, of the bleach greens, or the different mills employed in finishing linens: indeed this manufacture has dwindled so much, in this part of the country, that there never is a single piece of linen made in the present times for sale, except an odd one now and then, by some weavers that remain scattered up and down in different villages; and who, when not employed by some industrious house-wives, sometimes buy thread, and weave it into webs for sale: they always sell such pieces in their green state unbleached. Several linen weavers

from

from the decay of this manufacture in this parish, have become day-labourers, and work for the farmers all the year round in the fields.

"It sometimes happens when the thrifty housewives, who are the only employers the linen weavers have here, are making up for their families a greater quantity of linen than usual, the demand for weavers being then a little brisk, that they who had gone to work in the fields, are recalled to the loom for a while. Such of this description as have not looms of their own, work in the looms of others, either as journeymen at so much a day, or at so much a yard; the weaver getting two thirds of the price paid for weaving, and the owner of the loom the remaining third for the use of it."

About 1750 a bleach-yard was erected at Greenville, and patronized by the Linen Board (see enquiry into Linn. Man. 1757) it had an excellent buck-house, mill and apparatus, and the highest colours and best finished linens were then found there: in 1751, 650 pieces were bleached there, 250 of which were manufactured by Mr. J. Green the proprietor; in 1752, 1230 pieces; in 1753, 1850 pieces; in 1754, 1380 pieces; and in 1755, 520 pieces were manufactured, and 1150 taken in to bleach, total 1670: the manufacture is gone, but the bleach yard remains, and bleaches only a few linens for the use of the country, none for export: the decrease after 1753 was attributed to the concurrence of three new bleach yards erected that year, none of which now exist;

exist; one was near Waterford, one in Iverk by Mr. Briscoe, provided with a water-mill; and one on the Nore near Maidenhall, erected by Mr. Griffith, where much was expended on buildings that were soon abandoned: previous to these, about 1715, a bleach yard had been established near Bessborough by Mr. Shaw, with a horse-mill and all apparatus; he was one of the first that introduced any thing better than a bandle linen manufacture into this country; in 1754 there were bleached here 960 pieces, 125 of which were of his own manufacture; in the same year, he sowed five acres of flax, which produced one ton eleven hundred and fourteen pounds clean scutched: the bleach yard and manufacture, have both been long abandoned.

At Kilkenny, Alderman Colles raised great quantities of flax; he invented a water machine to take off the bows of flax, and break them at the same time, which was attended by children, without any danger of damage; and also an engine into which he threw the broken bows, and separated the light chaff from the seed, which was brought out finished and perfectly clean for sowing: these machines were plain and simple: he used a Dutch oven for drying flax; and had it dressed by hand, instead of a mill, which he found injurious and wasteful. At present there are two bleach greens near Kilkenny, which are employed for the use of the country only. The common people manufacture part of the coarse linens which they use, but above half of them come from the North. The management of flax is little understood;

derstood; it is badly scutched; flax breakers are scarce, and lent about when wanted, from one house to another for a pound of flax per day. American seed is chiefly sown; the price has varied latterly at Waterford from 50*s*. to five guineas per hogshead.

In most of the towns are a few looms; the women spin flax at the rate of 4*d*. a dozen (two dozen thread from a pound of flax) some are able to draw three dozen; they understand tolerably well to wash and clean the thread, and prepare it for the loom, and there are a few good weavers; the kind of linen they generally weave is two dozen thread, three quarters and a half wide; for this they get 5*d*. per yard; they can weave finer and broader linens. Little flax is sown in the *old* tillage grounds; they buy it *rough* at the fairs, at the rate of about 10*s*. or 11*s*. per stone. Some is bought hackled at Ross and Waterford, as 15*d*. or 16*d*. per lb. to draw three dozen to the lb. and is generally cheaper at Ross. Tow is sold at 6*d*. per lb. In the hilly districts every farmer has a little flax for his own use, and generally bleaches his own linen; and often has a little hemp to make sacking, sown in burnt ground in the angle of a tillage field; flax in potatoe ground. There is no yarn market in this district.

The people of this county seem better inclined to the woollen manufacture; the principal branch of it, is *the blanket manufacture* in Kilkenny: the following account of which was drawn up by Mr. Shee, an eminent

eminent manufacturer. "In the reign of Charles II. the frize manufacture was carried on here very extensively both in town and country for many years, though it at last declined gradually, in consequence of the exertions of an enterprizing Dutchman of the name of Wolfe, the ancestor of the family of that name now settled near Carrick. This man began the frize manufacture there, under the name of ratteen, and succeeded so well, as to make a fortune for his family, and be the original cause of establishing that business there, and of its removal from Kilkenny; after the frize trade was lost here, that of the wool-combing and worsted succeeded in its stead, and was carried on extensively for many years, the combers converting their coarse offal wool into blankets occasionally, as it was not fit for worsted: but the business was not systematically conducted, until the Dublin merchants who frequented the frize fairs here, bought them up on finding their goodness; and encouraged the manufacturers to enter more fully into it, though with no great effect, until Government or the Dublin Society, I dont know which, came forward, and gave premiums from the year 1740 to 1750, to encourage it; this had the desired effect, set enterprize and emulation afloat, and the blanket manufacture became the principal business of the city, pushing out effectually the combing trade, in consequence of the spinners earning more by the cloathier than the wool-comber, and of course giving the former the preference, to the prejudice of the

the latter, who then declined here, and removed to the Queen's county. Another circumstance which greatly contributed to extend the blanket trade, was the shock it met about the close of the American war, at which time being at a dead stand, without the smallest demand for the stock of goods which lay on hand, the workmen were completely idle; but what appeared a misfortune eventually proved an advantage, for the manufacturers thus circumstanced, without any market for their goods, hawked them to all parts of the kingdom, and thus spread a knowledge of their quality, which before lay unknown, and though the trade, as at present fell, on account of the badness of the times, it will in all probability revive, and extend, when the war is over, as our goods have a decided superiority in point of quality, over those of the English of the same price. Home consumption only being supplied by us, very little would be done, not even the looms kept at work, did not Government give a decided preference to Irish blanketing for the army use at present.

" Gross calculation of the broad blanket business in 1782.

	£.	s.	d.
Amount of wool per annum, . . .	5640	0	0
Carriage of ditto from Dublin, . .	110	0	0
Customs of do. in Dublin and Kilkenny,	3	15	0
Spinning, ...	1200	0	0
Oil, ...	300	0	0
Size, ...	80	0	0
Weaving, ...	1200	0	0
Milling, ...	150	0	0
Dressing, ...	180	0	0
Soap £.140, brimstone £.50, . . .	190	0	0
Sealing or alnagership, ...	70	0	0
Custom at 1*d.* per piece, ...	5	0	0
Carriage to Dublin for 1,000 pieces, .	125	0	0
Winding and spooling, ...	85	0	0
Twine for packing at ½*d.* each, . .	2	10	0
Teazels for each piece 8*d.* . . .	45	0	0
Whiskey to the millers, ...	7	10	0
Expence of going to Dublin, supposing each manufacturer to go twice a year, at £.3, ...	90	0	0
Factorage for 1000, ...	50	0	0
Storage £.25, porterage, £.8 : 6*s.* 8*d.*	33	6	8
Total, . .	£.9567	1	8

Spinning jennies have lately been introduced, which curtail the manual labour at least two-thirds; those worked by water are found most effectual; one of them is near Black-mill bridge: each water jenny employs eleven hands, and does the work of thirty-six;

thirty-six; two only have as yet been introduced in town within these two years.

"State of the broad blanket manufacture at Kilkenny, 10th May 1800.

Number of working looms, which are supposed constantly in employment, as some are generally idle, ...	50
Two journeymen weavers employed at each loom, amount to	100
Master weavers, ...	30
Number of hands, men and women, employed in other parts of the manufacture, . . .	600
Total, . . .	780

	£.	s.	d.
Average number of pieces wove in the year, at one per week, 2500; which, selling one with the other at £.13 each, produces £.32,500, of which the raw material of 22,500 stone of wool, amounts to, ...	21,000	0	0
7500 gallons of oil, ...	2250	0	0
12500 lbs. brimstone for bleaching,	260	0	0
20,000 lbs. soap, ...	588	0	0
Journeymens wages at 20s. per piece,	2500	0	0
Spinning the yarn of each piece, £.1 : 2s : 9d. each, for 2500 yards, makes	2843	15	0
Milling and dressing at 8s. each, comes to	600	0	0
Leaving a profit to the master manufacturers of about 20s. a piece, or	2458	5	0
	£.32,500	0	0

"The work is done by the piece, two workmen sit at one loom, and might manufacture a piece and a half each week, if constantly at work, but they generally do no more than one.

"There is also a manufacture of coarse blankets or cadows, carried on here, but it is on the decline, employing at present about one tenth or twelfth of the hands the broad blankets do; they are about from 27 to 36 inches wide, and are used in barracks for the army, and by merchants for packing fine goods with."

The greatest capital supposed at any time to have been employed in woollen manufactures at Kilkenny, is £.36000; and to have supported between 200 and 300 families, or about 800 persons. The wool-cottoners cultivate the teasel, *dipsacus fullonum*, in the suburbs of the city, for their own use: some years ago the teasels were brought through Dublin from the county of Wicklow, but the cultivation having been given up there, it was introduced here. From 7 to 8 acres of it are usually grown every year, chiefly in gardens near the town wall; the rent of which ground is about four or five guineas for half an acre: a good acre produces 50000 or 60000, worth 15*s*. per thousand.

About Easter the seed is sown in beds; they are transplanted into potatoe ground, as soon as the potatoes are dug; and if the soil is not very rich, fresh manure is added. The plants are managed like cabbages, and placed in rows, 18 inches from each other in every direction: a plant bears from

sixteen

sixteen to thirty heads, which are cut off as they ripen, that is when the flower drops, which is about the latter end of August. The head on the leading stem is called the *king teasel;* and as many of these as are necessary are left for seed. The others are termed according to their size, *seconds*, *thirds* and *buttons;* the last are very small, and used only to fill vacancies between the large ones in the handle: the heads when cut, are tied in bundles ten together, and put on sticks to dry in the sun. They are an uncertain crop; for dry weather in spring, or at the time of transplanting, injures the young plants, which however might be obviated by watering; and a wet season at the time of flowering, rots the heads. The stalks are used for wattling beneath the thatch on the roofs of cabins; and the stalks of half an acre sell for a guinea.

Dressers work by the piece, and can earn by hard labour, from 2*s*. 2*d*. to 2*s*. 8½*d*. a day. From 15*d*. to 19½*d*. is paid to the alnager for stamping, according to the piece.

There are four *frize fairs* in the year at Kilkenny, in April, June, August and September, and lately there was a fifth, that which was held at Enniscorthy having been transferred hither for a time. In the fair of August 1800, there were 40 cars from Carrick, with 15 pieces on each car: grey frize was 2*s*. 2*d*. per yard; and in pieces from 79 to 84 yards: blue frize 3*s*. 9½*d*. per yard, in pieces from 42 to 45 yards; white frize 15*d* to 20*d*.: about £.6000 worth of woollens used to be exhibited at each fair from

from Carrick: 8*d.* a piece is paid for stamping, and 16*d.* if the piece exceeds 90 yards, as a few do: the custom in the fair is 4*d.* for a property, that is for a car, or a single piece, if the seller has no more: from Carrick are brought ratteens or napped frizes, forest cloths, and broad cloths; some white frizes were brought from the Welsh mountains and the hills of Iverk, on about 20 cars, with 13 or 14 pieces each; nine or ten car loads from the county of Carlow, 15 or 16 pieces to the load: grey frizes at 2*s.* a yard, are brought from that county on horses backs, each horse carrying two pieces, which weigh about six stone each. At the fair were about 200 pieces of flannel, and but 37 sold, and those cheap: some narrow blankets also, from 16*d.* to 18*d.* a yard. There is not in general one piece of ratteen made in Ireland, for 50 that were made 20 years ago. The late Bishop of Ossory paid attention to the state of the flannel manufacture, and interested himself in its favour with government, by which means, some contracts were obtained. *Narrow serges* were made at Kilkenny a few years ago: three looms were employed by Mr. John Clohosy, but they are now laid aside. One loom was at work some time ago for the manufacture of *stuffs*, but is also stopped; ten loams and six coiners are employed for this purpose by Mr. Delany of Ballyragget. The stuffs used in the county are principally from Waterford, but are not brought to the frize fairs

There are three *beaver hat manufactures* in Kilkenny, which employ about fifteen journeymen, and

as

as many women and children: the principal of them, besides answering a home demand, sends off about £.2000 or £.3000 worth to neighbouring towns, which, as well as this, were formerly supplied from Dublin: the entire value of beaver hats manufactured is supposed £.5000 per annum. About 30 felt hatters are employed, and as many women and children: a felt hatter makes about five hats in a day, worth when finished, about 4*s.* a piece; the value of finished felt hats is about £.1800 per annum.

At the *Lintown factory* a charitable institution, established by Bishop Pococke, are made some fustians, corduroys, velveteens, and velverets, generally by 20 looms. It has been noticed before, page 529.

In Kilkenny are eight *tanneries*, their extent is

1.	20 vats,	28 handlers,	8 men.
2.	12 —	26 ——	5
3.	9 —	24 ——	4
4.	9 —	24 ——	3
5.	8 —	20 ——	4
6.	8 —	20 ——	4
7.	8 —	16 ——	3
8.	6 —	12 ——	4
Total,	80 vats,	170 handlers,	35 men.

Every vat contains from 30 to 40 hides, and every handler from 16 to 20; besides the hides, the tanners have from 40 to 100 dozen of calve-skins in the pits: a new tan-yard is about to be formed upon a larger scale than any of the present. In some of these tan-

yards,

yards, a kind of brown marle, which effervesces strongly, is used for staunching the pits: it must have bad effects in the process of tanning, as the calcareous earth will neutralize the gallic acid that comes into contact with it, and destroy the tanning principle.

At Rosbercon is a large tan-yard, and there are a few small ones in the county.

A *salt house* has just been erected at Kilkenny: it has one pan at work, and makes on an average from 4 to 5 cwt. per day, which sells at 8*s.* per cwt.; it burns five barrels of lime per day, and one of culm: another pan is about to be set up.

At Newbridge is a *salt house;* but one pan was at work, two were used formerly; they can make near half a ton a day, and burn six to eight barrels of lime, and about two of culm: salt was sold in 1800 for 10*s.* 10*d.* per cwt., and wholesale for 9*s.* 9*d.* The culm is brought to the salt house for 3*s.* 3*d.* a barrel of five bushels, being drawn near 14 miles from the colliery: three men are employed at £.13 per annum: a limestone quarry is close to the kiln; 2*s.* 8½*d.* a week is paid for raising the stone, and the same for drawing it to the kiln.

At Kilmurry, near Kilfane, is a *salt house* belonging to Mr. Davis; makes about 150 ton in a year; salt sold at 8*s.* 8*d.* per cwt.; price has doubled within a few years, principally from the duty laid on rock salt; and one-third less salt is used by the common people, since the price has been raised.

Near

Near Kilkenny is a *paper mill*, belonging to some of the Colles family: the produce does not much exceed the duty; it has but one vat, and a wheel of 16 feet diameter; rags are bought at 20*s*. a cwt.: the paper is bleached with oxygenated muriatic acid; which is not applied in steam, but cold, and to the rags when in a state of pulp: the liquor is previously condensed in water, with pearl-ash and lime.

The common farmers and cottiers, manufacture frizes and stockings for their own use, and also linseys and flannels; but except in Iverk, very little for sale: they spin the wool, which they purchase at the fairs, sometimes by the pound at 16*d*., sometimes as high as a guinea per stone: at the same time they buy copperas for *dyeing* black, when they wish to make grey frize; in which case, half the wool is dyed black; with copperas they use some astringent, as bark of oak, sallow, or docks; but alder bark is mostly used, as well as branches cut small, with a little oak bark and logwood: the bog alder, as it is called, which grows in marshy grounds, and on banks of streams, is preferred: alder and logwood alone, give a good black.

To dye yellow they use *resida luteola*, weld, which is common on banks of ditches, and in rubbish: they put ¼lb. of allum to a pound of wool, and as much of the plant as the pot can contain.

Walnut leaves and branches, with copperas, are used for a brown or olive colour, and for red, logwood and madder, which are bought: neither this plant, nor weld, nor woad, *isatis tinctoria*, have ever been

been cultivated, though they grow well in this country.

The favourite colour is blue, and the most general for coats and cloaks; most of their frizes are sent to Waterford, Ross, or Kilkenny, to be dyed of this colour, though it is dearer than any other; and they give a higher price for woollens on account of this dye. A blue colour may be obtained from elder berries, and from wortle berries, Ir. *fraochan*, with potash: blue, it is said, may be obtained from *polygonum aviculare*, a very common weed.

A few women at Callan make *lace*, and earn by it about 6*d.* a day. Lace is also made at Inistioge, where children are instructed in it at school: a woman by attending closely can earn 1*s.* 1*d.* per day; with other avocations, from 6*d.* to 10*d.*: a knot of thread, containing 12 skeins, which costs 1*s.* 1*d.* will produce about 5*s.* 5*d.*: a girl can be taught in about two years. It is disposed of partly in Ross, Waterford, and Kilkenny, partly to pedlars, who come to the town to purchase, with whom the women frequently barter for cotton, linen, or ribbons; there is generally a ready sale for the lace; but it is an unhealthy employment, requiring constant sitting and stooping. In a school there are twelve girls instructed to make it; the school-mistress being allowed 6 guineas per annum, with the benefit of the children's work: most of the young girls in the town are employed in the manufacture, and allow they can earn more money at it than by any other employment, such as quilting, sewing, &c. The thread is generally

generally purchased in Ross and Waterford, at different prices, from 4*d.* to 15*d.* and 16*d.*; there are also bobbins and pins required, with a coarse kind of thread called boss, for the edges of the lace, which costs from 8*d.* to 1*s.* per ounce; pins, 4*d.* per sheet, minikins for fine thread; lace pins, for strong coarse lace, 4½*d.* per sheet; bobbins, about 3*d.* per dozen, from three to six dozen used, according to the fineness or coarseness of the lace: a yard of linen required for a cushion, at about 14*d.*: the women make from a yard to a yard and a half, and two yards, in the week, according to the coarseness or fineness of the lace.

This county seems in general well adapted to manufactures, having the advantage of three navigable rivers, and two seaports opposite to its borders: labour is cheap, provisions plenty, and there are numerous streams adapted to any machinery: capital is only wanting. Sea coal is not dear on the banks of the rivers, at least as far as it is carried by the tide-water. Many situations on these rivers are well adapted to any trade, as Newbridge, Graigue, Inistioge; besides these, Castlecomer is well calculated for many manufactures:* it has plenty of water, labour low, and hands numerous: though scarcely potatoes enough are raised for consumption, yet provisions are cheap; in other parishes more potatoes are raised than can be consumed, as in Erke. Wool was formerly sent from Dublin to be spun at Castlecomer; but the price being raised, the people of Dublin preferred spinning for themselves; but spinning in this country

* See page 76.

country is so much cheaper than in England, that a great advantage might be derived to any manufacture: a ball may be spun here for 6*d.*, which would cost there 20*d.* or 22*d.* The land about Castlecomer is said to be very favourable to flax. Other towns, if they had the advantage of water carriage, are well circumstanced, as Freshford, which has plenty of water for any machinery. There are at present four woolcombers in this town, they work at 1*s.* per ball of worsted of 2 lb.: frize is wove here at 3*d.* a yard, and flannel at 2*d.*; linen from 4*d.* to 5*d.*; a few women spin wool at from 4*d.* to 6½*d.* per lb. and flax from 4*d.* to 5*d.* per lb. Callan and Urlingford have fuel cheap and good streams.

Sect. 11. *Mills.*

There are 22 *bolting mills* on the Nore, between Durrow and Inistioge: they grind each on an average, 4000 barrels per annum, but are capable of manufacturing twice that quantity. On the King's river, from Callan to the Nore, are ten mills: the average work of these is about the same; and the capital employed about £.1000 per mill, one with another. On the Barrow are three or four large mills within this county. In the barony of Iverk there are three on streams running to the Suir, two on the Lingan, one at Clonmore; there is one near Knocktopher, and in other parts of the county a few more

on

on small streams, in all about 42 bolting mills, besides small country mills. There are two mills on the stream which springs at Tubbrid, and runs through Freshford, and which though not considerable, have the advantage of water which never fails in the dryest weather; in the dry summer of 1800, corn was brought to these mills to be ground from Thurles, 14 miles distant; corn is bought up at these mills several shillings cheaper than at Kilkenny, and they are not sufficient for the grain of the neighbourhood: the situation seems adapted to a more extensive establishment; one of these mills grinds about 2000 barrels of wheat per annum, and has a small mill adjoining to grind barley, which it does to the amount of 300 barrels a year: starch is also made here from 5 to 800 barrels a year: the other mill, nearer Freshford, could grind about 2000 barrels, but does not do half that quantity. The other streams which fall into the Nore, are well adapted to mills, though not much used; there are two small ones on the Argula. The larger mills are necessarily accompanied by large stores.

There are two *rape mills* in the barony of Iverk, on the river Lingan, one connected with a bolting mill; they have not much employment; and the millers find it more profitable to buy up the seed for exportation than to make oil; the oil cake, when they work, is always bought up upon commission from Waterford, and exported to England.

SECT. 12. *Circulation of money and paper.*

BEFORE the present forced circulation of paper money, there were two banks, one at Waterford and one at Clonmell, whose notes had a free currency in this district, and were by the common people received on the same footing, if not preferred to those of Dublin; since that period, many banks have been formed; the want of a silver currency, necessitated small notes for silver, and all were equally well received: but the failure of three new banks, one at Waterford, one at Ross, and one at Enniscorthy, was productive of bad consequences. There are in this county at present two banks at Kilkenny, lately opened, and one that has been just set up at Callan: the great amount of paper currency, raises the price of all articles, and tends to keep them high.

Small farmers are fond of hoarding both gold and silver. It is not uncommon on the marriage of their daughters or sisters, to give a certain sum in a bag, which is again transferred to another in the same way, upon a similar occasion, and being scarce ever opened except in case of necessity, may continue thus withdrawn from circulation, a great length of time.

Sect. 13. *Roads and bridges.*

Roads are made of every kind of stone that occurs: the best are either of limestone, broken with a hammer, into what is called *powdered pavement*, or those made of rotten limestone in Iverk, which binds immediately: the worst are those of slaty argillite, which is soon turned into mud. Roads are often not formed sufficiently flat; limestone ones from their dryness might be made perfectly so: and, in dry soils particularly, the bank of the ditch should be towards the road. Old ditches which are often dangerous, may be filled with field stones, and will still serve as drains. A sufficient foundation of well broken stones, is not always given; and old pavements are often but slightly covered with gravel and slate, which soon wear away. The road should slope against the side of an hill, to prevent the water from above destroying it; and on all declivities, it should have paved courses crossing it diagonally, to turn the rain water into the ditch, which otherwise tears up the surface by accumulating. In wet ground Mr. Boyce constructed an excellent road with a foundation of furze faggots three feet deep well rammed down, over which was laid clay, and then stones and gravel.

The Cork road through Kilkenny and Callan, is a turnpike-road and not so well kept as might be expected

expected from the goodness of materials near it; those that go from Castlecomer are all turnpike-roads, to Kilkenny, to Athy, to Ballinakill, to Leiglin, and bad, like most colliery roads, being made of large stones: three of them are entirely in the hands of Lady Ormonde, who has employed an overseer to repair them, at £.200 a year; he takes up all the stones, and has them broken small.

The other roads are made by presentment: no better mode can easily be devised, than that of presenting roads by Grand Juries, which are formed of gentlemen from different parts of the county, each of whom is acquainted with, and can take care of those in his neighbourhood, and the more good roads there are in every part, the better for the farmer: but it happens sometimes, that the principal lines are neglected; that for instance from Kilkenny to Ross, is almost impassable, and part of that leading to Waterford very badly kept; while many cross roads are in excellent order. In taxing baronies too, if they are large, the burthen often falls unequally, as in the barony of Gowran, where the northern and southern parts are poor and hilly, and the centre, through which most of the roads are made, is flat and rich: so that the poorer part is taxed for the advantage of the wealthier; which would not be the case, if it were divided into three districts: the general tax in Gowran is about 8*d.* an acre; while the tax in the adjoining barony of Idagh, is about 3*d.* or 3½*d.* The tax should be levied by smaller districts, and Grand Juries should be required

quired to attend first to the great lines. Great complaints too, are made of the neglect of mountain roads, which are extremely necessary to the improvement of those lands, by the carriage of limestone and other manures. Proprietors of land too, as well as occupiers, are very unwilling to have roads turned, and rendered level, though for their evident advantage: a plan was laid out for a level road from Ross, along the Nore, towards Kilkenny, which in point of length, was but sixteen perches more, and nearly flat, instead of passing over steep and inconvenient hills, but the persons to whom some of the lands belonged, were so blind to their own interest, as to oppose it.

The money granted for roads at Lent assizes 1800 was,

	£.	s.	d.
Barony of Gowran,	1195	3	10
——— Iverk,	702	11	2
——— Kells,	505	15	6
——— Knocktopher,	252	9	0
——— Idagh,	588	5	9
——— Shillelogher,	171	4	0
——— Crannagh,	432	19	0½
——— Fassadinan,	616	13	4
——— Galmoy,	129	0	1
Liberties of Callan,	29	14	10
Total roads,	£.4623	16	6½

The other charges were,

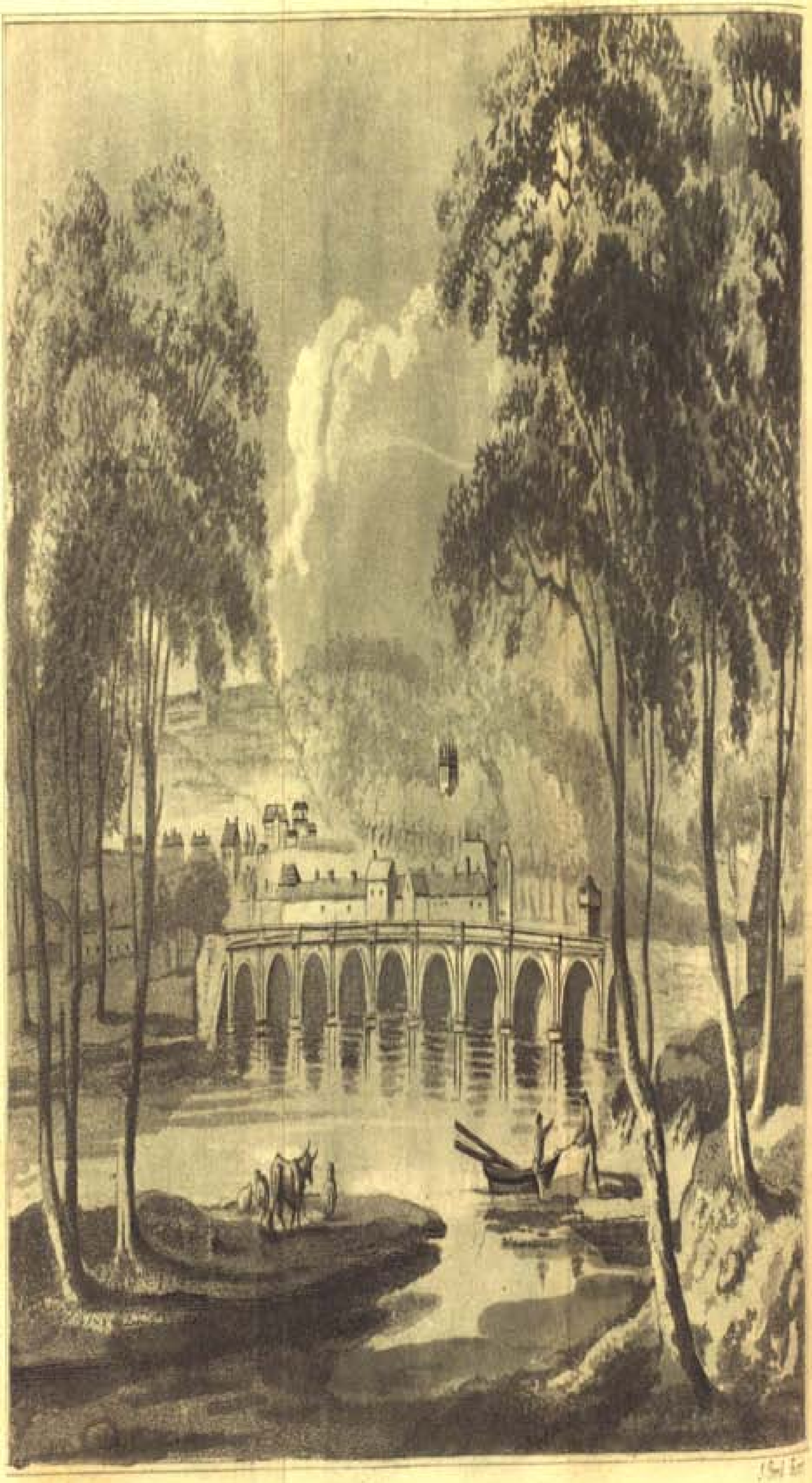
Police, ...	800 : 0 : 0
Militia substitutes, ...	455 : 0 : 0
Robbery presentments, ...	397 : 8 : 7
Bridges, ...	266 : 8 : 6
Salaries, rent, fees, ...	872 : 17 : 4½
Total,	£.7,415 : 11 : 0

The money granted at the Summer assizes 1800 was,

Salaries, fees, rent, &c. . . .	544 : 11 : 9
Infirmary, ...	100 : 0 : 0
Building and repairing bridges, .	1517 : 9 : 5
Police, ...	800 : 0 : 0
Walls, roads, poundage, robberies, burnings, &c.	1215 : 11 : 8
Total,	£.4,177 : 12 : 10
Total for one year, .	11,593 : 3 : 10

The number of chargeable acres in the county is 222,647, exclusive of the county of the city; and in each barony; Gowran 47,358, Iverk 18,257, Kells 19,839, Knocktopher 15,084, Idagh 24,133, Shillelogher 18,179, Crannagh 28,486, Fassadinan 24,616, Galmoy 21,117, Callan 5,578: in the qualification two or three acres of coarse ground, being valued as one of good. Roads are usually presented in spring, and bridges in summer.

The



BRIDGE of INISTIOGE.

The presentments in 1799 amounted to,

Spring, .	5483 :	0 :	1½
Summer,	3243 :	14 :	4¼
Total,	£.8726 :	14 :	5¾

In 1801,

Spring, .	9485 :	0 :	5	including £.931 : 14 : 9 towards the new goal.
Summer,	5231 :	6 :	4½	including £.1000 for the goal and £.400 towards Ballyteighlea bridge.
	14,716 :	6 :	9½	

Bridges.——The Nore is crossed by three stone bridges above Kilkenny, and by two handsome ones in that city, built after the designs of Mr. G. Smith; below Kilkenny there are three stone bridges, at Bennet's bridge, at Thomastown, and at Inistioge; the first and last were built by public money, under the direction of the Navigation Board. Inistioge bridge cost the public but £.900, and has ten arches, the southern side is ornamented by Ionic pilasters; the architect was G. Smith: the bridge is flat, and the arches are equal, which is one reason that it has withstood the greatest floods, for the pressure being equally divided, and the water having room to spread on one side, its force is diminished; whereas the bridge of Thomastown has been several times carried away,

or greatly damaged, because large buildings near each end confine the current. The last bridge on the Nore is a wooden one at Ross, built by the American, Emanuel Coxe; it is 508 feet long, besides a causeway leading to it from the Kilkenny side of about 50 yards; it is 40 feet broad: the greatest length of the timber in the piers is 49 feet. The purchase of the ferry, and the cost of the bridge was £.11,200; of which the bridge cost £.8000: the tolls are set for £.700 a year. The debentures stood the subscribers in £.106 per cent, and may now be purchased for £.70: one of the piers sunk considerably, and was raised, which cost about £.80. Some of the cut-waters, not being secured enough by stones and gravel according to the directions of the architect, were loosened when the pressure of ice on the surface, encreased the current below. Sinking the cut-waters properly is the nicest point in such bridges. There are twenty-three sets of piers, six in each; the toll for a chaise is 1*s.* 7½*d.*; for a car 6*d*½., 1*d.* for a dead pig, ½*d.* for a live one. There was in ancient times a wooden bridge at Ross, but when it was destroyed is not known; it did not exist in the time of Cromwell, as he passed his army over a temporary bridge supported by boats and hogsheads.

There is also said to have been a wooden bridge formerly at Waterford, built by the Danes: several pieces of framed timber were taken up many years ago, between the black slip, and the upper quay. The present bridge, the only one upon the Suir, which

BRIDGE of WATERFORD.

which passes into this county, was constructed by Coxe, previous to that of Ross, and like that is of American oak*: this bridge has suffered no damage since it was erected, and has produced twelve per cent to the subscribers. It is 832 feet long, forty-two broad, has forty sets of piers, each of seven pieces, besides cut-waters; the longest pile driven was seventy feet: the depth at low water, is thirty-seven feet, and seventeen feet the rise of the highest tides. The purchase of the Ferry and expence of the bridge, including a thousand guineas to the architect, was £30,000, which was subscribed in one day; of this the Ferry cost £.13,000: the tolls produced in 1800 above £.2800. The foot passage is nine feet wide, and railed. Each of these bridges has a draw bridge for the passage of vessels; the toll here for a chaise is 1*s.*, horse 1½*d.* and unladen 1*d.*, car 2½*d.*, cattle 3*s.* 4*d.* der score, or 2*d.* each; calves 1*d.* each, fowl 2*d.* per dozen, foot passengers ½*d.* dead pig 1*d.* live pig ½*d.* In 1770 an estimate was made by Thomas Covey, for building a stone bridge at Waterford, for £.36,745 : 18 : 6; though it is scarce to be supposed it could have been executed then for that sum: it was to have been erected at the upper end of the new quay, upon an artificial bank raised to within five feet of low water, and to have had nine arches and a length of 601 feet.

SECT.

* The building was begun the 20th April 1793, and the bridge was opened in May 1794.

Sect. 14. *Woods and Plantations.*

The most considerable woods in this county are those of Durrow, belonging to Lord Ashbrook; there were lately about 300 acres of old oak wood, and formerly more; most of it has been sold and part cut, some of which is not to be coppiced again; though it is not possible for the ground, which is a light soil, to pay better in any other way. Land on the hills which was formerly under wood, is now poor pasture and not worth 10*s.* an acre. In 1790 the wood of Cappanellan of 100 acres was sold for £.8000, when bark was bnt £.6 : 10*s.* per ton, but before it was all cut, bark rose to £.12 or £.14 : in 1801 it fell to £.11. for want of sale for the leather at Kilkenny: this wood consisted of gross timber, near a century old, but which is said to have been greatly injured by the great frost in 1739 : it is inclosed by a wall, and therefore coppiced, and a plantation has been made at the upper part, which grows well; by letting horses and cattle in, after the trees were felled, it has been much damaged : many of the large trees have not shot up again, particularly those sawed. Oak should be coppiced the moment it is cut, for the new buds of trees cut in May, appear immediately, and are several feet long before autumn; they never recover the injury of being

once

once broused. Nine years were allowed for cutting this wood, the parts cut each year were not separately coppiced, as they ought to have been, and the timber was left in the wood until sold. Forty acres of another wood were sold for £.6500, and eight years given to fell. The lowest price of oak timber was 2*s*. 6*d*. per foot; some fit for mill shafts, and squaring sixteen or eighteen inches, was sold for 5*s*. and a few large pieces, for particular uses, for 7*s*.: all that squares above seven or eight inches, is sold by the foot; and boat timber, if it squares six inches: some of it is sent to the Grand Canal: some birch bark was sent to Dublin, and sold, on account of an unusual demand, from £.9 : 10*s*. to £.10 : 5*s*. per ton. The straightest and cleanest timber is cut into spokes, which sell from two guineas to 50*s*. per hundred, and are sent to Dublin.

The workmen are paid 8*d*. to 10*d*.; women 5*d*. to 6*d*.; boys and girls 4*d*.; fellers 18*d*. to 2*s*. The bark while the tree is standing, is scraped with an iron in the form of a cresent, with a long handle, as far as a man can reach, and the rest when the tree is down; the but bark is cut round about a foot high, and torn off with the hand as low as it can be stripped, before the tree is felled; stripping the but-bark too low is a great injury, and prevents the new shoots. The bark is stripped with long iron strippers, and that of small branches, such as cannot be stripped easily, boxed off by rounded wooden boxers. The bark is immediately spread, then *reared*, the small bark in heaps, and the large endways: the heaps

heaps are again made larger, and when dry, the whole is carried in criels to the stack, which is about ten feet wide, and eleven high; it is *headed* with small bark, and roofed with large; and if it stands the winter, thatched. Stages of the stripped timber are used for drying the bark upon, if the weather is wet. The worst timber sells for firing at 4*s.* a car load: the brush and chips are given to the poor. The birch and hazel were lately thinned out of another wood; some made into hurdles of seven feet by four, sold for 2*s.* 8½*d.* each, and kish rods from 1*s.* 9½*d.* to 2*s.* per dozen. In these and other woods, hazel, birch, quicken and ash speedily sow themselves.

There are near 200 acres of wood, mostly natural and of oak, in the demesne of Desart, some of which is thinned every year; the smaller sticks sell for roofing at about 6*s.* 6*d.* a hundred. Some of the oak was lopped, which is a bad method, as this tree receives an injury by losing large branches which it never recovers. The alder is stripped before it is sold, and the bark thrown away. Lord Desart pays attention to the encrease of timber, by planting oaks; in planting, the young tree is secured by a sod, and a second sod reversed placed so as to surround the stem, which keeps it steady. The largest oak in the wood measured at 4 feet high 13 feet 10 inches, and at 5 feet 13 feet 3 inches; there are many large beech, ash, and other trees on the ground from 9 to 12 feet in girth.

Belonging

Belonging to Woodstock, there are about 300 acres of wood, but not much gross timber: much has been cut within a few years, leaving reserves, one to every square perch; chusing the four best in every four perch measured together: part of these standards became rampiked by exposure, but in sheltered places they succeeded well. It is essential in standards, to chuse those that have the best and closest heads. But the most advantageous mode of managing woods is neither by standards nor by cutting smooth, as is the usual practice, but by thinning away annually the worst trees, and those that impede the growth of others: a moderate oak-wood in the poorest land, would in this way, pay at least 20*s.* an acre annually. Grazing woods, is almost always injurious, and certainly never profitable, as underwood ought to produce more if well managed, than the coarse grass that grows among trees. The principal underwood in these last woods is holly, besides which grow *Salix caprea*, *fragilis*, *fusca*, *Rosa arvensis*, *Populus tremula*, *Vaccinium myrtillus*, *Viburnum opulus;* and among herbaceous plants, *Poa nemoralis*, *Agrostis nigra*, With.—*Bromus sylvaticus*, *Aira cæspitosa*, *Holcus mollis*, *Lysimachia nemorum*, *Sanicula Europæa*, *Angelica sylvestris*, *Scilla nutans*, *Geum urbanum*, *Anemone nemorosa*, *Melampyrum pratense*, *Hypericum androsæmum*, *pulchrum*, *quadrangulare*, *Solidago virgaurea*, *Oxalis acetosella*, *Equisetum sylvaticum*, *Blethnum spicant*, *Osmunda regalis*, *Polypodium vulgare*, *filix mas*, *filix femina* (with their varieties,)

ties,) *P. cristatum, aculeatum, Asplenium ceterach, trichomanes, ruta mur., Adiant nigrum* (and varieties,) *A. scolopendr., Hymenophyllum tunbrigense*, and many others.

The leaves of the oak are sometimes so destroyed in the beginning of summer by the larva of the *Phalæna viridana*, as to leave the trees quite bare, and oblige them to put out a second set of leaves after midsummer. Among other animals, these woods are frequented by the *Mustela martes*, yellow breasted, or pine martin, a different animal from the white breasted martin, *Mustela foina*, which is destructive to sheep: the former never quits the wood, but occupies the nests of scald-crows, killing their young.

There are in the county several small woods, of from 20 to 40 acres; the wood of Borliagh near Graigue, belonging to Lord Clifden, of about 30 years growth, and of 33 acres, about three of which was waste, sold in 1800 for £.1950. In stripping oak near Graigue, strippers of bone are often used, instead of iron. Lord Clifden has another small wood near the town of Graigue: and another wood of his, near Gowran, was grubbed up a few years ago. On or near the Nore are small woods at Kilfera, Dangan, Grennan, Brownsbarn, Ballinabarney and other places in the parish of Roer, Ballyneale, Brownstown; on the Barrow a few woods, the principal at Ballivara; by the names of places, the whole district between the rivers and beneath Brandon, appears to have been formerly covered by wood. In the north are woods at Uskerty, Upperoourt; and in the southern parts,

at

at Gortruss, near Bessborough, Castletown, Ballinabuola, and near the bottom of Tory-hill, at Coileah and at Clonassy; but the whole extent of natural and profitable wood in the county is not above 1800 acres. In the memory of very old persons, many parts were covered by woods, as the neighbourhood of Callan, and the banks of the Nore below Thomastown; shameful neglect in coppicing appears in some places, particularly in a wood not long since cut down at Barnyglissane, which although surrounded by a wall, is now left as a miserable pasture: the same neglect appears at Clone in Galmoy, and in a wood near Thomastown; though there is no mode in which these and other grounds could be so advantageously employed: the few woods that remain, are daily diminished.

Plantations.—Account of plantations for which premiums have been granted by the Dublin Society since 1786, *when security was given to preserve them.*

No. 1. *To G. P. Bushe, for enclosing plantations, &c.* 10 *A.* 1786. This forms part of 20 acres of plantation at Kilfane, well preserved and thriving, and has been filled up with great care by J. Power, Esq. the present proprietor.

No. 2. *To J. Davis, for fencing coppice wood, &c.* 27 *A.* 1789. This was enclosed and preserved for ten years, but the land is now grubbed up for tillage.

No. 3.

No. 3. *To John Keary, for enclosing Danish forts and* { 1 *rood planted* / 27 *perch enclosed.* } 1790

No. 4. *To R. Ball, do.* { 3 *roods planted* / 63 *perch enclosed.* } 1790

These forts or raths are at Three Castles, and the trees are preserved and thriving.

No. 5. *To Sir R. St. George, for enclosing plantations,* 14 *A.* 1791, at Kildrinagh; this is well fenced with a good dry wall of limestone about six feet high. The trees, particularly the larch, are growing well; and where any failed, they have been replaced: some were lately burnt by accident, but the plantation has been filled up again.

No. 6. *To Walter Kavanagh, for enclosing plantations,* 10 *A.* 1795, at Ullard; a beautiful plantation and well preserved on the Barrow; being sheltered, the trees have throve in a surprizing manner.

No. 7. *To R. St. George, for enclosing plantations,* 10 *A.* 1795, at Knocknamuck; this is extremely well fenced by a double bank planted with quicks and ash, with a deep and wide dyke between. The situation is high: the trees in general healthy: spruce fir appear all through them; they grow well on the declivity, but not on the summit.

Account

Account of number and sorts of trees registered with the Clerk of the Peace by persons having leasehold interests in the county of Kilkenny from 1767 *to* 1799, *conformable to Act of Parliament.*

Ash,	20,296
Apple,	1,076
Alder,	1,020
Apricot,	4
Mountain ash,	252
Beech,	11,143
Birch,	4,530
Balm of Gilead fir,	104
Chesnut,	1,069
Horse chesnut,	841
Cherry,	686
Elm,	15,199
Spruce Fir,	8,097
Scotch Fir,	14,779
Silver Fir,	12
Larch Fir,	8
Larch,	3,050
Hornbeam,	150
Liburnum,	10
Laurel,	154
Lime,	550
Oak,	29,134
Pine,	360
Weymouth Pine,	760
Carried forward,	113,284

Foxtail

Brought forward, . . .	113,284
Foxtail Pine, ...	24
Stone Pine, ...	37
Poplar, ...	2,174
Lombardian Poplar, ...	152
Plane, ...	20
Pear, ...	23
Peach, ...	12
Quicken, ...	946
Quickbeam, ...	67
Sycamore, ...	12,747
White arm Spruce, ...	136
Black arm Spruce, ...	2
Shrubs, ...	116
Whitethorn, ...	7,700
Wildings, ...	2,028
Walnut, ...	212
Yew, ...	51
Total, . . .	139,731

The names of trees are given as in the registry, some being entered under different appellations. It may be right to notice the principal planters who have been encouraged to improve by this judicious act. L. Brodrick at Ennisnag has registered 5000 ash, 1000 beech, 2000 elm, 22000 oak, 1000 poplar, 1000 sycamore. P. Hayden at Caherlisk, &c. 3528 ash, 320 chesnut, and 410 other trees. P. Walsh at Belline, &c. 5150 ash, 650 alder, 4400 beech, 900 birch, 250 chesnut, 795 horse chesnut, 6090 elm, 5200 spruce fir, 4530 Scotch fir, 1470 larch,

3050

3050 oak, 640 Weymouth pine, 855 quicken, 4200 sycamore, and 4320 other trees: and W. Butler of Bayswell, J. Baker at Raheenpish, J. Davis at Summerhill, E. Elmsmere and E. Elliot at Ballyneale, W. Fitzpatrick at Brownstown, G. Neville at Moonfin, J. B. O'Flaherty at Castlefield, G. Rothe at Doninee, P. Staunton at Kellymount, E. and W. Briscoe at Bleachville and Cloncunny, H. Hely at Crosspatrick, G. Shaw at Blackwell, and others, a variety of trees.

Planting is not undertaken extensively; few modern plantations exceeding ten or twelve acres. Many residences are adorned with old and fine trees, that have grown in the most vigorous manner: in the demesne of Castlecomer, are about 200 acres planted by the late Lord Wandesford, now producing large timber: an aspen, near the gate measured in circumference, at four feet high, 8 feet 11 inches: a sallow, 8 feet 7 inches. The largest tree probably in the county, is an ash near the front of the house of Durrow; near the ground, it measured in summer 1801, 19 feet 4 inches; at two feet, 16 feet 6 inches; and at four feet, 15 feet 1 inch: it has been lopped and injured, in consequence of an office erected close to it: many oaks in the park measured from 8 to 9 feet, breast high. At Bessborough an oak near the house measured 13 feet 6 inches at four feet; but in the demesne are some larger oaks, and several of equal size, as well as ash: some of the timber has been cut, but a certain number are planted every year to supply their place.

Jenkinstown

Jenkinstown the seat of Mr. Bryan is well covered with old trees. The park of Dunmore contained great timber, now mostly destroyed; but some young plantations have been made: the best timber has been cut at Garriricken, where most trees grew well, and among them the cork-tree. At Mr. Martins of Ballyhennebery in Iverk, is a cork-tree, growing vigorously and very healthy; near the ground it measured, in April 1801, 5 feet 10 inches in circumference; at one foot high, 6 feet 10 inches; here it spreads into five branches, one of which is three feet in circumference. Castletown has large timber, elm, ash, sycamore and oak; some from 9 to 10 feet in circumference. In the plantations of Ballaghtobin, a sycamore measured at one foot above the mound that surrounds it, 11 feet 10 inches; at four feet, 11 feet: the branches extend fifteen yards every way. In the church-yard at Owny is a yew 12 feet round, breast high. At Westcourt near Callan are good trees, an ash near the gate, at two feet, was 12 feet 7 inches in girth. Foulkscourt, Woodsgift, Uppercourt, Ballycondra, Lodge, Ballyragget, have fine trees, and some new plantations. Kilrush, the seat of the Rev. Dr. St. George, is well planted, and is ornamented by many large limes, horsechesnuts, and platanus; an avenue is composed mostly of the latter, which are from five to six feet in girth; one platanus was cut and makes handsome furniture: a walnut tree in the garden at one foot high, was 10 feet 7 inches, and at five feet, 9 feet 3 inches. Opposite the house of Barrowmount a walnut-tree measured

sured, at six inches above the bank that surrounds it, 13 feet 6 inches; its branches cover a diameter of 26 yards, it is healthy, and a great bearer: at the same place is much fine timber; one of the English elms measured breast high 10 feet 5 inches. At Kilfane are many beautiful and large trees; a Spanish chesnut in the garden measured at two feet, 11 feet 8 inches; at four feet, 10 feet 5 inches.

An oak near the Nore at Anaghs, measured 15 feet near the ground; 13 feet 3 inches at two feet, and covers with its branches a circuit of 35 yards. At Castlemorres is a large extent of old plantation, chiefly fir, valued from £.18,000 to £.20,000; and on the lands are many large oaks. Some oak on the road between this place and Kilmagany, are remarkable for being nearly evergreen. At Rosanarrow, the seat of Major Reade, is an avenue of fine elms, planted in commemoration of King William's entertainment here, with his whole army, on his way to Carrick, on the 20th. July 1690, by George Reade, Esq.: a pavilion was built on the spot where the King's tent stood, in form of the audience chamber, with two pair of folding doors, but it was ruined afterwards, and little of it now remains; the avenue leads from hence to the house.

Mr. Neville of Marymount, who has planted a great deal, and not in soil the most favourable to trees, states the following encrease by measurement.

In spring 1790 a beech 3 feet from the ground measured 23¾ inches, in spring 1800, 3 feet 1 inch, encrease 13¼ inches.—A larch near it, in 1790, 2 feet

4¼ inches, in 1800, 3 feet 8 inches, encrease 15¾ inches.—A larch in dug ground in 1790, 2 feet 9¼ inches, in 1800, 3 feet 8½ inches, encrease 10¾ inches; not a healthy tree.—An ash in 1790, 2 feet 10½ inches, in 1800, 3 feet 10 inches, encrease 11½ inches.—A Scotch fir in 1790, 23¾ inches, in 1800, 34 inches, encrease 10¼ inches.—An English elm in 1790, 19 inches, in 1800, 28½ inches, encrease 9½ inches.—A sycamore in 1790, 19 inches, in 1800, 25½ inches, encrease 6½ inches.—A Weymouth pine in 1790, 19 inches, in 1800, 31 inches, increase 12 inches. Soil dry, with a limestone gravel bottom. Scotch fir grows here into timber faster than any other tree, and sells better; larch next, and then beech. A dry limestone subsoil is the only circumstance unfavourable to trees in this county; a few instances may be seen, where on such a soil they become rampiked when tall; but these situations are rare; on the solid limestone basis or rock, as near Kilkenny and other places, they thrive remarkably well. A larch in a close plantation at Mr. Neville's encreased but four inches in girth in ten years, and a Scotch fir but eight inches. By repeated measurement I have found a larch, between twenty-five and thirty years old, in the nursery where it had been raised, but in very poor soil, encreased above two inches a year in circumference: and oaks of a large size, when in vigour, encreased always above an inch a year*. An oak at Mallardstown

* A cherry tree, in an garden at Woodstock, which grew from seed in 1740, measured in 1801, at two feet high, (the smallest part of its stem) 10 feet five inches in circumference.

town planted in the year 1700, measured in May 1800, at four feet high, ten feet, and at two feet 11 feet: it is closely surrounded by other trees and buildings.

The price of Irish deal, Scotch and spruce, cut in this county, was in 1800 about £.2 : 15*s.* per ton. Charring the outside of Irish deal, when cut for roofs, or other purposes, is an excellent mode of preserving it: it may be done by burning furze beneath it: preparing it with hot lime, or steeping it long in water, renders it durable, preventing the depredations of the worm.

Attempts to raise plantations from seed, have not in general succeeded in this country; seeds in this mild climate, are too apt to be destroyed by vermin, and particularly by mice.

The luxuriant growth of herbage in this country checks seedlings, and therefore transplanted trees, a little higher than the grass, are preferable. Potatoes are one of the best preparations for ground to be planted: close planting in exposed situations, and judicious thinning afterwards, are necessary: the latter is often neglected, to the great injury of plantations. Planting hedge rows in a proper manner, or the angles of fields, is so ornamental as well as advantageous to a country, not only from encreasing the timber, but the shelter, that they might be encouraged by premiums or by distributing a certain number of forest trees at a low price, whenever thorn quicks are purchased; from 2 to 300,000 thorn quicks are sold annually at Mr. Robertson's nursery

Kilkenny; the addition of ten or 20,000 forest trees, would cost little.

The species of elm that seems to suit this country best, and of which there are many old trees at Jenkinstown, Kilfane, Woodstock and other places, is that called the Hertfordshire elm, or smooth leaved Wych elm, the fourth species or *ulmus glabra* of Hunter's Evelyn; it is not liable to be blown down, like the English elm, nor to rot like the Dutch; its dark and smooth foliage and branching head, are ornamental: the small upright English elm is sometimes sold by nurserymen for the true one, and is an ill growing plant, good for nothing.

Nurseries.—There is none of any size in the county except Mr. Robertson's; it consists of about fourteen acres, rented at from four guineas to £.10. per acre: he disposes of many thousand transplanted trees, and some hundred thousand seedlings annually: the demand for the latter is encreasing. Scotch fir and beech are most in request, and lately larch. The quantity of clover seeds imported by him has encreased at least one third within the last twelve years, and generally falls short of the demand. The prices of some trees in 1800 were; four year old Scotch and spruce fir, two guineas per thousand, three year old ditto 30*s.* Beech three feet high 8*s.* 4*d.* per hundred, two feet 6*s.* 6*d.*, and one and two feet 5*s.* 5*d.* Seedling larch 11*s.* 4½*d.* per thousand. Seedling oak 8*s.* 1½*d.* per thousand. Oak four to six feet 12*s.* 6*d.* Ash three to four feet 8*s.* 4*d.*

per

per hundred, two feet 5*s*. 5*d*. Strong white thorns 5*s*. 5*d*. per thousand, small 3*s*. 9½*d*. Other trees in proportion. Mr. Robertson has a fine collection of shrubs, stove and green-house plants.

There was not long ago another nursery, on a small scale, near Kilkenny, and one for forest trees near Ballyragget, both now given up; there are two nurseries, of two acres each, in the parish of Roer, and there was a nursery some years ago near Rosbercon, now removed. The spirit of planting is not great, and far inferior to that of building.

The sooner the seeds of forest trees are sown, after they are ripe, the better: hard seeds are often impeded a year in their growth, by being kept till spring; and are more exposed to vermin and accidents. Acorns sown in autumn should have a covering of earth taken from the trench, and raised twelve or eighteen inches above the bed, which perfectly prevents their being attacked by mice: in spring this earth is removed, a mark having been left to shew the surface of the original bed; in this way, not one acorn of many thousands seemed to fail; while those not so covered, were destroyed: beech mast and chesnuts, should be treated in the same way.

Orchards, are in this county too much neglected: the old ones run fast to decay, and few new ones are planted. Mr. Robertson has practised the planting with success, and he communicated the following hints. "The situation which seems to suit orchards best, is on the banks of rivers and in vallies well sheltered

sheltered from the N. W. with a south eastern exposure: the most favourable soil, a strong loam, with a dry clayey bottom, though they will answer well on any, between the extremes of a thin gravel, or wet spewey bog, if it has sufficient depth, which should be about eighteen inches: or if the ground be gravelly, twelve may do, over a clayey bottom: the best preparation is manuring with potatoes, while a load or two of rich compost, of dung and earth, for each tree should be thrown together some months before, to plant them in: the under stratum of soil should never be dug into at making the holes, but a hillock rather raised round the root of the tree, which should be placed near the surface. From two to four years old, is the best age for their removal, and at three or four feet high, as they will otherwise be liable to be shaken by winds, loosened and stunted: the best order of planting them is in rows about twenty yards apart, and the trees in each, seven or eight, in a rich soil; in a poor one about fifteen row from row, and five or six in the row; by this method, the intervals may be cultivated to advantage between the rows, while their closeness in them affords them sufficient warmth and shelter, their branches having full liberty to spread at either side. The tillage between should be of the most ameliorating nature, which conduces much to the vigour of the tree and consequent ability of retaining its bloom in harsh weather, and bringing to perfection the fruit. The kinds most in esteem for cider here are the redstreak, moss apple, Burlington crab,

French

French pippin, and Gibbons russet; the two last of which being excellent bearers, and healthy trees on all soils, with the advantage of producing a choice cider, deserve to be principally cultivated here, as they are on the Black-water. Should the planter be induced to plant pears for perry, an attempt hitherto unknown here, though they are most certain bearers, and the produce more valuable than that of the apple tree, his soil should be strong and deep, and and the trees planted alternately with apples, as the roots of the pears will then occupy the lower strata, while those of the apples possess the surface, and without materially interfering with each other, each enjoy a greater range for nourishment than if kept asunder: the pears though slower in bearing, yet being of much longer duration and more vigorous growth than the apples, will in length of time overtop them, and fill the ground, if they are planted at the distance of ten or twelve yards from each other; while the apples, in the interim, produce fruit until the others come into bearing.

"The neighbourhood of Kilkenny has been long famous for the quality of the fruits, particularly pears and plumbs, of which in plentiful seasons, it sends quantities to the towns around, as Waterford, Wexford, &c.: among the rest the Bergamott pear, is much esteemed for the richness of its flavour; the soil where they are planted being peculiarly favourable, in consequence of its depth and richness; that by the river side behind back-lane, remarkably so, there being an orchard there belonging to Dr. Butler,

containing

containing about three quarters of an acre, which annually sets at from 30 to 40 guineas; one tree in which, a pear, has been frequently known to produce 20,000 fruit in a year; the value of which at a shilling per hundred, has amounted to £.10, it is a species of an indifferent quality called the sadler's tack; the tree is about twelve yards in diameter between the extremities of its branches, and upwards of 30 feet high."

The profits of orchards are at least annually ten or 12 guineas per acre, independent of the grass; the fruit of an orchard of three acres near Barrowmount, sold in 1800 for forty guineas: of 1½ acres near Callan, in 1801, for £.50; of an orchard at Kilfane of 8 acres, some of which is waste, from 80 to 100 guineas, for these two years: the rows are 45 feet asunder, and the trees 15 feet in the rows. Little attention is paid to pruning, or manuring in any of these orchards. The apples are all sold for eating apples, and most of them sent to Dublin.

In the barony of Iverk are some orchards, where cider is made, of an indifferent quality: the apples are pounded in a wooden trough, which is preferred to the method formerly used of pounding by a hand-mill; the cider is generally sour, no attention being paid to stop the fermentation by racking. They have great variety of apples, and use them indiscriminately; in good years cider sells from 30s. to two guineas a hogshead, but the produce is reckoned very uncertain, which is perhaps the reason that scarce any new orchards are planted. One

of

of the apples they seem to esteem, is a small pale one, called the Burlington, and another called the Abraham, red on one side, pale on the other. An orchard of two acres in Iverk, lets in a good year for £.60, and in a bad year for £.30: the ground of an old orchard stubbed up, let for 50*s.* per acre; and ground for a new one near it for £.3 : 10*s.*; the proprietor did not know the sorts; he got them from Waterford: in that county, orchards and cider making are better understood, and the apples esteemed are the Caccagee, French and Kerry pippin, Valentine.

The orchards received in 1801, some damage from the *Loxia curvirostra*, or cross-bill, a bird of passage that only visits this country occasionally; they were numerous in the south of Ireland, where they first appeared; but few came as far as Kilkenny, though some were taken alive in the neighbourhood.

Ozieries—There are a few on the banks of the Nore; and on the Suir, the principal one is an island of 25 acres, opposite Fiddown: oziers are cut every third year, the large ones for hoops, the smaller for kish rods; the *yearlings* or slender shoots, are left on each stump; hoops sell for a guinea a thousand: or are put on by coopers for a penny each: good kish rods 2*s.* a hundred: some of the smaller shoots are stuck down when the oziers are cut for *sets* to fill up vacancies. Land for oziery lets from £.4 to £.7 an acre.

SECT. 15. *Absentee and Resident Proprietors.*

THE principal absentee proprietor is the Earl of Bessborough, who possesses 17,000 acres in the county, about 2000 of which are let for ever. Bessborough, anciently Kildalton, has a fine demesne and handsome house of hewn limestone, with a front of 100 feet, which was built in the place of a large old mansion pulled down in 1744: in the hall are four Ionic columns of Kilkenny marble, each shaft an entire stone, ten feet six inches high: in the house is a valuable collection of pictures, which besides several excellent specimens of the Italian schools, and some of the Flemish, as of Snyders and Jordaens, has the celebrated night piece of Gerard Seghers. Though not inhabited for forty years, the house is kept in excellent order; it was built by David Bindon of Limerick, as were the houses of Castlemorres and Woodstock.

Castlemorres was also long the property of an absentee; the estate, which is divided, is partly so still; the whole consists of about 4000 or 5000 acres. Absentee landlords are often the best; and no man seems to have been more highly esteemed by his tenantry than the late Lord Mountmorres: he renewed his leases on much lower terms to the resident tenants, than he might have obtained from others, and made liberal allowance for all improvements.

The

The family of Lord Ashbrook have been long absentees: the Kilkenny part of the parish of Durrow, all belongs to him, including a fine demesne, and a large house, built by his ancestor Colonel Flower, in 1716: this house was built chiefly out of the ruins of the old castle, which stood nearer the town: it is roofed with shingles, which require but little repair, if they are painted when necessary. He has a good property in other parts of Galmoy.

Lord Clifden has a large house, including two ancient towers, at Gowran, accompanied by an extensive estate, on which stands the town of Graigue, and which including great part of Brandon, comprehends above 20,000 acres.

These are the principal absentees who have houses in the county: many others have dispersed estates, as Lord Courtown, the Marquis of Landsdown, and several commoners. Many of the nobility, as Lord Ormonde, Lord Desart, Lord Kilkenny, Lord Callan, are occasional absentees, and Lord Carrick, whose fine seat of Mount-Juliet, has been mentioned,* is the only constantly resident nobleman.

Some ruined residences present a melancholy aspect: Low-Grange, of the state of which between 50 and 60 years ago, when inhabited by Mr. Green, an interesting account is given in *A Tour in Ireland*, p. 216. (Lond. 1748), now forms a striking contrast to its former animation: its ruined walls are only occupied by weeds, among which waves the *hordeum murale*.

* Page 129.

murale. Some of the cut stone was removed from hence to ornament the terrace of Barrowmount, belonging now to Mrs. Gore, and which is itself, at this time, in a state almost as ruinous. Killaghy, once the seat of a branch of the family of Cuffe, shews only by naked walls and smooth green fields, not even a bush being left on the ground, that it was once a cultivated abode.

But these are much out-weighed by modern improvements in other places. At Castlecomer, Lady Ormonde has in a spirited manner completed and fixed her residence in a new and handsome mansion, on the site of that destroyed in the late rebellion: Johnson was the architect. Mr. Boyce has just finished at Bishopshall, a most excellent house and extensive gardens. Mr. Murphy, at Annise or Anaghs, near Rosbercon, has made a residence which ornaments the country, three sides of his house are faced with Portland stone; he has formed a new road leading to it, 42 feet wide, the ditches, whose banks are to the road, have offsets on which elms are planted, between them and the deep dikes. To Kilfane, Mr. Power has added a new front and other improvements, which render it not only an excellent house, but a good specimen of architecture. Sir Wm. Morres, has erected a new and handsome house at Upper-court, the portico of which consists of pillars, each a single block of fine limestone, raised on his demesne.

It is not the object of this work to describe the seats of proprietors, though many deserve notice.

tice. Few private houses can shew a more beautiful façade, than the southern front of Mr. Coxe's house at Castletown; the architect was Duchart, a Sardinian. Sir John Newport's taste has adorned his house at Newpark, among other things, with two paintings, which are among the best works of Carlo Dolce, and Salvator Rosa. The neighbourhood of Waterford is occupied by many other seats, as those of Mr. Newport, Mr. Shiel, and smaller villas: the vicinity of Kilkenny too, has many villas, and some larger residences, as Castle-Blunden, the seat of Sir John Blunden; Danesfort the residence of Mr. Wemyss; Lyrath of Sir W. D. Cuffe; Bonnetstown of Mr. Matthews; Archersgrove of Mr. Welsh; and several others. It would be tedious to enumerate all the houses of resident gentlemen, among which are Farmly and Floodhall, both adorned with well planted demesnes, the seats of Mr. Flood; Mount-Loftus of Sir Edward Loftus, commanding a most extensive prospect. On the Nore besides those mentioned, are Ballyragget Lodge, the seat of Mr. T. Kavanagh; Eland of Mrs. Mossom; Three Castles of Mr. Ball; Johnswell (now Norelands) of Mr. Bayley; Aghnamult of Mr. T. Neville, at the mouth of the King's river, where he has introduced modern improvements, new implements of tillage and good stock: Jerpoint the residence of Mr. Hunt; Brownsbarn of Mr. Nixon, Ballyduff of the Hon. P. Butler Cooper; Ballynabarney of Mr. Bolger; Ringwood of Lord Callan; Aylwardstown of Mr. Strange: Besides these, there are in other parts,

Knocktopher

Knocktopher the seat of Sir H. Langrishe, on the site of the old Abbey, part of which is preserved in the house; Ballaghtobin the seat of Mr. A. Baker; Farm of Mr. H. Baker; Chapelizod of Mr. L. Nixon; Kilree of Mr. Prim; Westcourt of the Rev. Dr. Stevenson; Kilmacoliver of Mr. Blunden; Mullinabroe of Mr. Jones; Greenville of Mr. Green; Summerhill of Mr. Davis; Blanchfieldstown of Mr. Kearney; Bettymount (now Salisburgh) of Mr. Rothe; Kilmurry of Major Alcock; Castlefield of Mr. J. B. O'Flagherty; Belview of Mr. Leving; Goresgrove of Mr. Mitchell; Marymount, a good house, and a place well planted, and entirely formed by the proprietor Mr. G. Neville; Rockfield belonging to Mr. Philips; Ballevan to Mr. Shearman; Derrynahinch to Mr. Strange; Lodge to Mr. Warren; Shipton to Mr. J. Waring; Springfield to Mr. S. Waring; Lowhill to Captain Warren; Shankill to Mr. Kearney; Foulkscourt to Mr. Hely, though now unfortunately neglected; Croan to Mr. Shirley; Bohilla (lately called Firgrove) to Mr. Robbins; Snugborough, lately occupied by the Rev. G. Shepherd, and Hillsborough, small places on the estate of Major Reade, now uninhabited, and several others.

tice. Few private houses can shew a more beautiful façade, than the southern front of Mr. Coxe's house at Castletown; the architect was Duchart, a Sardinian. Sir John Newport's taste has adorned his house at Newpark, among other things, with two paintings, which are among the best works of Carlo Dolce, and Salvator Rosa. The neighbourhood of Waterford is occupied by many other seats, as those of Mr. Newport, Mr. Shiel, and smaller villas: the vicinity of Kilkenny too, has many villas, and some larger residences, as Castle-Blunden, the seat of Sir John Blunden; Danesfort the residence of Mr. Wemyss; Lyrath of Sir W. D. Cuffe; Bonnetstown of Mr. Matthews; Archersgrove of Mr. Welsh; and several others. It would be tedious to enumerate all the houses of resident gentlemen, among which are Farmly and Floodhall, both adorned with well planted demesnes, the seats of Mr. Flood; Mount-Loftus of Sir Edward Loftus, commanding a most extensive prospect. On the Nore besides those mentioned, are Ballyragget Lodge, the seat of Mr. T. Kavanagh; Eland of Mrs. Mossom; Three Castles of Mr. Ball; Johnswell (now Norelands) of Mr. Bayley; Aghnamult of Mr. T. Neville, at the mouth of the King's river, where he has introduced modern improvements, new implements of tillage and good stock: Jerpoint the residence of Mr. Hunt; Brownsbarn of Mr. Nixon, Ballyduff of the Hon. P. Butler Cooper; Ballynabarney of Mr. Bolger; Ringwood of Lord Callan; Aylwardstown of Mr. Strange: Besides these, there are in other parts,

Knocktopher

10. To the person who, holding not more than 100 acres, shall produce the best pig, two years old, (Henry Dyer) £.1 : 2*s* : 9*d*.

11. To the person who, in the year 1801 shall raise, under his own care and inspection, the greatest number of stocks of bees, (Catharine Hughes) £.2 : 5*s* : 6*d*.

Second Class.

12. To the person or artist, who shall make the best plough on the most approved principle, (Mich. Brennan of Johnstown) £.2 : 5*s* : 6*d*.

14. To the owner of the plough that performs best with a pair of horses with reins, without a driver, (Robert St. George, Esq.) a gold medal.

15. To the ploughman who ploughs best with a pair of horses with reins, without a driver, (Mr. Robert St. George's ploughman) £.2 : 5*s* : 6*d*.

16. To the ploughman who ploughs second best in like manner, (Hon. John Vesey's ploughman) £.1 : 2*s* : 9*d*.

17. To the ploughman who shall plough with a pair of oxen, without a driver, (Wm. Maher, Esqr's. ploughman) £.2 : 5*s* : 6*d*.

19. To the owner of the plough that has gained the first prize with oxen without a driver, (William Maher, Esq.) a gold medal.

20. To the owner of the plough of any sort, or drawn in any manner, that shall perform best and cheapest, (Robert St. George, Esq.) a gold medal.

21. To

Sect. 16. *Farming Societies.*

The First Midland Farming Society, formed to connect the gentlemen of this county, with those of Tipperary and the Queen's county in the same pursuits, held its first meeting at Durrow in March 1801, and adjudged its first premiums the July following, which were thus published,

"At the annual shew, held on the 16th and 17th of July, the Hon. James Butler, President, premiums were adjudged to the following gentlemen and farmers,

First Class.

1. To the person holding more than 100 acres, who shall produce the best cow or heifer, in milk, bred by himself, (Patrick Dooley of Rockfield) £.5 : 13*s* : 9*d*.

2. To the person producing the best cow or heifer, in milk, bred in Ireland, six months in his possession, (Robert Stubber, Esq.) a gold medal.

3. To the person who shall produce the best bull, two years old and upwards, bred by himself, (Robert Stubber, Esq.) a gold medal.

7. To the breeder of the two best hoggit rams, (William Maher, Esq.) a gold medal.

8. To the breeder of the two best rams of any age, (William Maher, Esq.) a gold medal.

10. To

1. To the person producing the best two year old bull, bred by himself, a gold medal.

2. To the person producing the best three year old cow, giving milk, a gold medal.

3. To the person producing the best two year old heifer, do.

4. To the person, not occupying more than 100 acres of ground, producing the best three year old cow, giving milk, four guineas.

5. To the person ditto, producing the second best, two guineas.

6. To the person ditto, producing the best two year old heifer, four guineas.

7. To the person producing the second best, two guineas.

8. To the person producing the best two one year old rams, a gold medal.

9. To the person not occupying more than 100 acres, producing the best penn, consisting of three one year old ewes, four guineas.

10. To the person producing the second best, two guineas.

11. To the person producing the best one year old boar pig, a gold medal.

12. To the person not occupying more than 100 acres, producing the best one year old sow, two guineas.

13. To the person ditto, producing the second best, one guinea.

14. To the person producing the best stallion, a gold medal.

15. To

21. To the person who produces the best harrow for fallow ground, (Hon. John Vesey) a gold medal.

22. To the person producing the best for harrowing in seed, (Robert St. George, Esq.) a gold medal."

For 1802 they published the following advertisement.

"FIRST MIDLAND FARMING SOCIETY.

President, EARL OF ORMONDE.

COMMITTEE.

C. B. Ponsonby, Esq.	Rev. Thomas Drought,
C. P. Doyne, Esq.	Wm. Pigot, Esq.
Sir Wm. Barker, Bart.	John Fitzpatrick, Esq.
Roger Scully, Esq.	Robert Stubber, Esq.
Garret Neville, Esq.	Richard Lloyd, Esq.
Sir R. St. George, Bart.	William Maher, Esq.
Hon. John Vesey,	William Pilkington, Esq.
Hon. James Butler,	Edward Flood, Esq.
Rich. W. Vicars, Esq.	Robert St. George, Esq.
George Rothe, Esq.	Rev. Thomas Grady.
Sir Henry Parnel, Bart.	

C. P. Doyne, Esq. Treasurer.

The object of this Society is to improve the agriculture and live stock of this district, comprehending the counties of Tipperary, Kilkenny, and Queen's county.

Resolved, That the Shews be holden at Durrow, and the following premiums given on the 28th and 29th of May, and 13th and 14th of December 1802.

That no person shall act as judge, who shall be interested in the decision.

That the cattle, sheep and pigs, according to the opinion of the judges, that shall have the greatest propensity to fatten at the earliest age, will be preferred.

That the stallion, according to the opinion of the judges, which shall be most likely to get the best light-troop or carriage horses, as they are the most saleable, and most approved of for doing the farming work, will be preferred.

That the owners of implements of agriculture, or persons appearing for them, must produce to the secretary, a certificate, before ten o'clock on the shew day, containing the owner and maker's name, place of abode, and name of the implement, which must be produced at the place of shew, the shew day.

18. To the person, occupying not more than 100 acres, who shall raise under his own inspection the greatest number of stocks of bees, two guineas.

19. Second greatest, one guinea."

The spirit of improvement has been excited by this society: small farmers contended for the premiums last summer for cows and pigs: and one exhibited his common plough driven by himself without leader, or reins, the horses obeying his voice only.

The society have resolved to apply for subscriptions to the absentee proprietors of the three counties, whose estates receive all the benefit of the institution, while they, drawing clear incomes from the

15. To the person or persons producing the best and most useful plough, harrow, scuffler, scutch rake, and seed sowing machine: for each a gold medal.

16. To the person or artist who shall make the best plough on the most approved principle, two guineas.

17. To the person who shall make the second best, one guinea.

The intention of these premiums, is to encourage and introduce to general notice, such improved implements of agriculture as appear of real utility.

Conditions.

That the owner of stock, or person appearing for him, shall produce to the Secretary, before ten o'clock the shew day, a certificate, containing an account of the age, pedigree, and manner of feeding each beast:—

Also the owner's name, place of abode, and premium they claim.

That no beast will be permitted to be shewn, but such as shall be produced at the place of shew before twelve o'clock on the shew day, be sufficiently secured with a collar, so as to prevent accidents, and be bred within the district.

That those persons not occupying more than 100 acres, to whom premiums are adjudged, must satisfy the committee that such premiums will be laid out in a further improvement of their stock.

bere 10*s.* per acre, *barley* 8*s.* to 9*s.*, *oats* 5*s.* to 8*s.*; other corn in proportion; *potatoes* 10*s.*, *meadowing* 4*s.* to 8*s.*, *rape* 12*s.* to 14*s.*; *sheep* (for wool) 3*d.* per head, including lambs, *lambs* 6*d.* a piece; *oziers*, for twenty-five acres in Fiddown, five guineas, the only instance of their being tithed; the tithe now is valued higher. Tithe is sometimes demanded by proctors for *orchards*, *bees*, *turneps*, but not paid.

The demands for tithe vary, at the will of the proctor or incumbent: in the parish of Callan 8*s.* is paid for wheat; in Dungarvan 15*s.* or three crowns was demanded in 1801: wheat and potatoes have in general risen since 1797 in the barony of Gowran, from 8*s.* to 10*s.*; barley from 6*s.* to 8*s.*; meadow from 5*s.* to 6*s.*; the poorest oats in Idagh were charged 3*s.* Potatoes are sometimes not charged to rich farmers in Gowran, who have much corn; but the tithe of potatoes falls chiefly on the poor cottiers, who pay by the perch, sometimes the full value. In the district of Freshford, some cottiers said they permitted their tithe to be drawn rather than pay the demand, which was above the value. Tithes are not very often taken in kind; but the proctors sometimes delay their valuation, which obliges farmers to keep their corn on the ground to its great injury; this has been complained of, particularly in the union of Kilmacahill, where repeated notices have been given to the proctor in vain.

Though the clergy in general are reasonable in their demands; yet when tithes are left to proctors, or let, or are (which is the greatest abuse) in lay hands;

the country, are not obliged to support the poor, either directly by poor laws, or indirectly by encouraging labour; and who therefore owe something to national industry.

The best mode in which a Society could promote agriculture, would be by a joint-stock farm; here experiments could be tried and registered, and the system must be bad, if the farm did not do more than pay its expences: here the best implements of husbandry should be exhibited, and the best only: here all the plants useful to the farmer, should be shewn in their proper state of cultivation: here seeds expensive or difficult to be procured, should be sold at reduced prices. In offering premiums, it might be better to give one large sum at each meeting, for one distinct object, as the importation of a peculiar breed, or the adoption of a particular mode of tillage, than to split the whole into little premiums; for many candidates will be found to contend for one large premium, few for small ones; and if one great step is taken in improvement at each meeting, it is as much as can be expected. In giving premiums too, it might be better to give only part in money, and part in good implements of agriculture which common farmers find it difficult to procure.

Sect. 17. *Tithes,*

Are usually paid by composition: the articles paid for, and their usual rates at present are; *wheat* and

bere

the incumbent often takes notes; and is sometimes not entirely paid for two years.

All reasonable clergymen, seeing these disadvantages, wish for another mode of payment: and if the tithes were sold, at a moderate valuation, to those interested in them, a fund might be established, not only sufficient to pay the clergy more than their present incomes, but to purchase glebes; and such a scheme appears no less easy than desirable.

Every incumbent should be provided with glebe sufficient to supply his house, and with a glebe house fit for a gentleman to reside in: then the miserable excuses and shifts made to avoid residence, would be done away; and the pastor would be an ensample to his flock, not only in morality, but in agriculture. In England commutations for tithe have been suggested by some of the heads of the church, as the Bishop of Lincoln; the payment varying according to the price of corn. (See Bedford Survey p. 59.)

All the evils produced by the present mode of paying the clergy, are too numerous to enlarge upon: the man who does his duty worst, will enforce his tithes the more, and be the best paid: the flocks are alienated; the establishment decreases. But in an agricultural view, tithe is a premium against tillage; a deduction of ten per cent out of the *profit*; such a deduction, as if made upon the profits of any other manufacture, would entirely ruin it. It operates exactly in the contrary way to rent: rent is a stimulus to improvement, because the

sum

hands, many local complaints must arise, too numerous to repeat or detail: the poor man will pay the proctor his demand, rather than be cited to the Bishop's court, or than keep his corn on the ground when the grazing of his stubbles are necessary to him: many such local instances might be stated; but being partial are better omitted. In this county tithes are a greater cause of complaint than in others, as it is almost the only part of Leinster in which tithe is demanded for potatoes, which seems unreasonable, as few counties have more corn. Hence tithes, whether they are a real grievance or not, have always been the pretence for disturbance; hence the prevalence of *white boys* some years ago; hence the farmers seem to consider themselves scarce affected by any other grievance: it is the first object in their minds; and more so here than in many other places, as the inhabitants and rich farmers are almost all Roman Catholics, who think it hard to support two establishments, and pay for a worship, from which they receive no benefit. When the subject therefore was agitated in parliament, this county was the first to petition against tithes in 1787.

The tithes are usually valued by the proctor after harvest; sometimes he meets the farmers at public houses, another source of evil, to settle with them: sometimes the incumbent agrees himself; the farmer then quits his work to go to him repeatedly, and by various stories tries to circumvent the clergyman; whose time is taken up in making bargains. The tithes are paid half yearly, in November and May; the

SECT. 18. *Clergy.*

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
Union. Patr. Dean and chapter of St. Canice, and appr of the rectories	1. *Rathcool*, Vic. 2. *Kilkyran*, Vic.	None. No pr. sch. m.	Vicar not resident in this county.	. . . . None.	4 3
Union. Patr. Bp. of Ossory.	1. *Methell*, Rect. and Vic. rated in K. B. £.6.	A ruin,		Old survey. 13 A. 3 R. 6 P.	9
	2. *Kilmoddimoge*, or *Kilneddymock*, Rect and Vic. K.B. £.1.	A modern church for this union, built on the lands of Coolcullen, in the par. of Macullee, in order, but not quite finished.	At Leighlinbridge, co. of Carlow.	(Now about 15 acres in the union.) No G. House.	2
In 1798, 1 mar. 7 bapt. comm. 31 to 57.	3. *Kilderry*, Rect. and Vic. K.B. £.7.		A prot. sch. m. who resides in the par. of Dysert	o. s. 7 A. 1 R. 20 P.	3
Tascoffin * Preb. K. B. £.4. Patr. B. of Ossory. In 1799, 2 mar. 1 bapt. 9 to 16 communicants.		A new church built under the direction of Bp. O'Beirne: as was the church of Odogh. No pr. sch. m	Not in this county. Curate at Kilkenny.	A small one claimed, not ascertained. No G. H.	5
Blackrath. Preb. Patr. B. of Oss. K. B. £.7. Pays £.1 : 19 : 6 *d.* quit rent §		A ruin. No pr. sch. m.	At Thomastown, where he is curate.	About 10 A. No G. H.	4
Union. Entirely appropriate in Vic. Choral of St. Canice.	1. *St. Martin's*, K B. £.10. 2. *Ballybur.*	A ruin at Templemartin. A small par. in Shillelogher.	No person appointed to the duty. No pr. sch. m.	. . . . None.	3 1

* James, the second Earl of Ormonde, defeated and slew 600 of the Mac Murroghs, or Mac Moynes, here, in 1362.

§ Vic. of Burnchurch also pays for a rect. called Blackrath.

sum being fixed, and being only, as it were, for the raw material, to be worked upon, incites the farmer to make as much profit as he can; because this profit will remain to him clear, and be entirely his own; but then comes the tithe, which deducts actually one tenth from this profit; and is so far an actual bar to improvement, encreasing along with it in arithmetical progression. In cases therefore, where much money is to be laid out in improving ground, and where the improvement will not, as it must often happen, pay more than *ten per cent profit*, such improvements will not be undertaken by prudent men. Consequently tithe really stops improvement at a certain point; consequently it diminishes productive labour; consequently it encreases the price of corn, while it reduces the price of labour.

Some lands anciently monastic, are tithe free; such are, Aghnamult, Sheestown, Kilree, Kilfera, in all about 4000 acres in the union of Burnchurch. Such are some lands in the parish of Graigue and others: the value of these lands is high, and they are generally well improved.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
Union.	1. *Burnchurch*, Vic. K. B. £.10. Rect. appr. in Vic. Ch. St Patrick's, Dublin.	Lately ruinous; now a ruin: serv. in a private room. A pr. sch. m. R. C. chapel.	Inc. and curate both reside in Kilkenny. 7 to 10 comm.	12 A. 2 R. 28 P. with church-yard. No G. H.	7
Patr. B. of Ossory.	2. *Dunfert*, Vic. K. B. £.10. Rect. impr. in Corp. of Kilkenny.	A ruin. Rect. tithes let for £.15 a year. R. C. chapel at Ballydugh.	. . . .	. . .	5
Q. R. £.35.	3. *Kilfera*, Vic.—Rect. impr. in fam. of Tynte, as are also the tithes of Sheestown.	A monastery: no remains	. . . .	. . . .	6
These 18 par. united by act of council: together with the lands of *Lismateige*, in the par. of Kilkeasy, *Borrisbmore*, in the par. of Urlingford, *Garanamanagh* in Union of Cloghmanta, and part	4. *A. Jerpoint*, Rect.	A ruin.* Pays no prox.	but pays tithe.	. . . .	6
	5. *E. Jerpoint*, Rect.	A ruin at Mullinakill.	Pays no proxy,	But pays tithe, except the lands of Pleberstown.	—
	6. *W. Jerpoint*, Rect.	. . . .	. . . .		—
	7. *Ballylinch*, Rect.	. . . .	. . . .	. . . .	—
	8. *Dunbell*, Rect.	. . . .	. . . .	. . . .	—
	9. *Grange of Kilree*, Rect.	. . . .	. . . .	. . . .	—

* In the ruins of the church are several tombs, particularly one of Robert Walsh; "Near this tomb are the effigies of two monks extended on the earth, and some slabs, with figures in bas relief, and effaced inscriptions, all of the meanest sculpture. In an adjoining vault, are the images of a monk and nun lying together, whose history is perhaps a parallel to that of Theodore and Constantia. An ill-cut head projects from the west angle of the bellfry, which is said to have been placed there in commemoration of a servant of the abbey, who found in the earth a quantity of gold, and applied it to continue the building, which had been impeded for want of money. At a small distance from the abbey, at the west side, are the imperfect remains of a place of worship, which belonged to a town immediately adjoining it. This town is at present levelled with the earth, but its foundations are yet to be seen, and some years back were visible the ruins of its bridge over the Nore." I am indebted to Mr. James Greaves, of Thomastown, for this interesting account, and am sorry the limits of this work prevent me from inserting now the whole of his obliging communication.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Union. Patr. B. of Ossory.	1. *Blanchfieldstown*, Vic.—Rect. appropr. in Vic. Choral of St. Patrick's Dublin.	A ruin.	Archdeacon in Kilkenny. Curate at Jerpoint.	None.	2
	2. *Smithstown*, Vic.	A small parish sunk in the former, pays no proxy.	. . . .	. . . .	1
Corps of the archdeaconry. K.B. £26:13:4	3. *Tullaberin*, Vic. Rect. is the corps of chantorship. K. B. £.10.	A ruin. R. C. chapel.	. . . . Pr. sch. m. at 40*s.* a year.	5 acres.	8
	4. *Kilfane*, Rect and Vic.	Ch. in good rep. In 1798, 1 bapt. 5 to 8 comm.	. . . .	12 acres. No G. H.	8
Dungarvan, Vic. Patr. the Crown. Rect. impropr. K. B. £.6.		A ruin. No pr. sch. m. R. C. chapel.	In Fiddown, where he is curate.	About 15 acres By O. S. 15 A. 20 P. No G. H.	5
Union. Patr. B. of Cissory. In 1798, 2 marr. 5 bapt. 2 bur.	1. *Thomastown*, Rect.† and Vic.	In order.* R. C. chapel.	Rector and curate both reside.	O. S. 8 A. 2 R. 20 P.	6
	2. *Columkill*, Rect.† and Vic.	A ruin.	. . . .	O. S. 7 A. 5 R.	7
	3. *Tamaghcherch*, Rect.† and Vic.	Supposed the ruin on the lands of Kilcullen. —— Pays prox.	Pr. sch. m. at 40*s.* a year.	Now about 13 acres in all. No G. H.	—
	4. *Brownsbarn*, totally impr. in E. of Ormonde.	A ruin. Rect. of Thomastown is paid 40*s.* for the duty.	. . . .	. . . .	3

* In the church is a tomb, said to belong to an Irish king, and another to a giant. Part of the old church fell down in 1797: and a very handsome and large black marble base of a cross, with armorial bearings and an inscription, was shamefully destroyed in 1800.

† These three rectories granted by James I. to the first Lord Cavan. 1 Peer. 349.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Union.	1. *Inistioge*, Vic. Rect. impt. in family of Sutton.	In good repair.* R. C. chapel.	In Inistioge: curate is R. of Listerlin, and does the duty.	None. Pr. sch. m. but not licensed.	16
Patr. B. of Ossory. Episcopally united.	2. *Clonamery*, Preb.	A ruin. R. C. chapel at Clodagh, which serves for par. of Roer.	. . . .	None.	5
Rectories appr. in Vicars Choral of St. Canice.	3. *Kilbeacon*, Vic.	A ruin. R. C. chapel. No pr. sch. m.	. . . .	Vicarial glebe, 16A. 2R. 12P. Rect. glebe equal. impr. G. H. in very bad condition. £.100 given by First Fruits.	15
	4. *Rosnan*, Vic.	. . . .	. . . .		4
	5. *Killaby*, Vic.	A ruin.	. . . .		8
Union.	1. *Graigue.*	A ruin; † a large sum given by the First Fruits: and thrown away. R. C. chapel.	Not in this county: curate resides at Graigue.	None.	11
Patr. B. of Leighlin.	2. *Ullard.*	A ruin; doorcase with semicircular Saxon arches and fret work.	. . . .	None.	10
Powerstown, Rect. and Vic. Patr. B. of Leighlin. Vic. K. B. £.2: 13: 4d.		In good order. R. C. chapel.	At Fethard, Co. Wexford: curate in par. of Gowran.	About 11 A.	21

* Church in the old abbey, which has several monuments, besides one in the town to David Fitzgerald, Baron of Brownsford, who died 1621.—Adjoining the abbey is a tower, which is below square and above octagon.

† Of the abbey there are fine remains. An octagon tower belonging to it, fell down in 1744.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
of *Ardera* in par. of Alish: all of which, except the first par. formed parcel of the Abbey of Jerpoint.	10. *Woollengrange*, Rect.	. . . .	. . . .	. . . .	—
	11. *Aghnamult*, Vic. tithe free: pays no prox.: Rect. un. to Kells.	. . . .	. . . .	. . . .	—
	12. *Garran*, Rect.	. . . .	Pays no tithe, but pays prox.	. . . .	1
	13. *Grange Legan*, Rect.	. . . .	Pays no tithe, nor prox.	. . . .	1
	14. *Grange Maccomb*, Rect.	Perhaps these are one and the same parish.	. . . .	. . . .	1
	15. *Conaby*, pays no prox.		. . . .	. . . .	2
	16. *Blackrath*, Rect.—perhaps the same as the Preb.	The site of these parishes is unknown. They pay no tithe, but pay proxies.	. . . .	. . . .	—
	17. *Bawn*, or *Blacknow*, Rect.		. . . .	. . . .	—
	18. *Monkstown*, or *Rathbin*, Rect.		. . . .	. . . .	—
K. B. £.8.	19. *Moyne*, Preb. held with the above union.	Ch. a ruin;—another ruined church in the par. at Ardeloe.	. . . .	At Inchykile, 106A. 86A. by O. S. No G. H. No pr. sch. m.	2
Ballyreddin, or *Treadingstown*, totally appropr. in D. and Ch. of St. Canice.		None. (A small parish near Bennetsbridge.)	No person appointed to the duty.	None.	1

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Kilmocar, Vic. Rect. E. of Ormonde. K. B. £.3.		None.	In Kilkenny.	None.	7
Union. United by act of council. Patr. the Crown and B. of Ossory alternately.	1. *Odagh*, Vic. Rect. impr. K. B. £.10.	A new church. In 1798, 2 mar. 25 to 30 comm. Pr. sch. m. at 40*s.* and one acre of ground.	Resides.	o. s. 2 A. 25 P. G. H. in good repair.	10
	2. *Coolcrabeen*, Rect. K. B. £.9.	. . . .	. . . .	. . . .	7
	3. *Donoghmore*, Rect.	R.C. chapel at Ballyragget.	. . . .	o. s. 3 A. 3 R. 20 P. In the Union 20 acres.	9
	4. *Kilcormick*, Vic.	A ruin.	. . . .		—
Jenkinstown, totally impropr. in the City of Kilkenny. Tithes set for £.10 a year.		A ruin.	No person appointed to the duty.	Impropr.	1
Dysert, Rect. impropr. in fam. of Tynte. Vic. appropr. in Vic. Choral of St. Canice. K. B. £.4.		A ruin. In 1798, 6 bapt. 1 bur.	Rect. of Mothell appointed curate.	About 70A. in two parts, impropr. in the fam. of Tynte. Chief rent, £ 21 : 0 : 3*d.* to E. of Ormonde.	7
Union. United by act of council.	1. *Maculler*, Vic. City of Kilkenny patr. K.B. £ 6	A ruin. R. C. chapel. Rectories impropr. in C. of Kilkenny.	Resides in Kilkenny.	3A. Vic. glebe Rect. glebe impropr. in city of Kilkenny, letfor £.12 : 7 : 4*d.*	5
	2. *Kilmsdum*, Vic. City of Kilkenny patron.	. . . . The tithes of these 2 par. let for £.54 a year.	. . . .	3 A. 2 R. 32 P. No G. H. in the Union.	6
	3. *Dunmore*, Vic. E. of Ormonde, patr. K. B. £.7.	In repair. Rect. E. of Ormonde.	. . . .	15 acres. o. s. 17 A. 1 R. also 14 A. 2R. 15P	2

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
Union. Patr. B. of Leighlin.	1. *Kilmacabill*, Vic.—Rect. tithes appr. to Shee's hospital, Kilkenny, and to an alms house in Waterford.	A ruin.	. . . .	. . . .	7
	2. *Grange Sylvia.*	. . . .	Not in this co. no curate.	None.	—
Mayhill, Patr. B. of Leighlin.		R.C. chapel at Paulstown.	Not in this co. no curate.	. . . .	6
Union. Rect. K. B. £.26. Vic. K. B. £.13:6:8d.	1. *Gowran*, Rect. and Vic. Patr Crown and Ld. Clifden alternately.	In repair.* Comm. 14 to 16. — In 1798, 2 bur. 1 bapt. R. C. chapel.	Resides in Durrow, curate in par. of Kilfane. Pr. sch. m. at 40*l.*	10 acres. No G. H.	6
K. B. £.8.	2. *Erke*, Rect. and Vic. Patr. the Crown. £.11 Q. Rent.	In repair. Comm. 10. 1798, 1 mar. R. C. chapel in the par.	Sometimes in the Glebe house. No pr. sch. m.	15 A. 19 R. G. H. in good repair.	23
Comer, Rect. and Vic. Patr. the Crown. Vic. K. B. £.10. In 1798, 23 bapt. 9 bur. 5 mar.		In good repair. Comm. 60 to 107. R. C. chapel, and another at Clough.	In county of Donegal. Curate in Castlecomer.	12 acres. o. s. 7 A. 3 R. 29 P. No G. H.	29
Union. Episcopally united.	1. *Attonna*, Rect. Crown patr. Vic. B. of Oss. patr.	In Queen's co. sch. m. at £.3 a year.	Resides.	In Queen's co 45A. 1 R. 20 P. C. rent, £.6 G. H. in Queen's co.	3 in Kilkenny.
	2. *Achanney*, Rect. Crown patr. Vic. B. of Oss. patr.	R.C. chapel at Lisdowny.	. . . .	. . . .	3 in Kilkenny.
	3. *Kilmenan*, Rect. and Vic. B. of Oss. patr.	A ruin.	. . . .	. . . .	3

* With some monuments of the Butler family, and a handsome one of the late Lord Clifden. Edm. le Botiller, E. of Carrick, who died 1321, and James, the first E. of Ormonde, were buried here.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
	9. *Clashicrot*, Rect. K. B. £.4.	. . . .	. . . .	G. H.	2
	10. *Rathkeath*, or *Bannagh*, Rect. K. B. £.10.	A ruin; with some old monuments and inscriptions not easily decyphered.	. . . .	. . . .	4
Rectories impropr. in C. of Kilkenny.	11. *Tubbrid Brittain*, Vic. K. B. £.2.	A ruin.	Rectorial tithes of these parishes let for £.14 5*s.* a year.	. . . .	4
	12. *Killaghy*, Vic. K. B. £2:13:4*d*.	A monastery no remains, once united to Tullaroan; pays no proxy.		. . . .	2
	13. *Kildrinagh* Vic. Pays no proxy.	A ruin.		. . . .	1
Durrow, Vic. Patr. B. of Ossory. In 1798, 4 mar. 7 bur. 15 bapt. about 80 comm.		† New, unfinished, but in good order; cost but £.970. Pr. sch. m. at 40*s.* R. C. chapel.	Resides. Rect. impropr. in Dean and chapter of St. Canice.	19A. and 2R. 18 P. in the town, on which the G. H. is built. £.100 given by First Fruits.	9

† In digging the foundation was found a skeleton, with a large black ring, like ebony, on the breast.—St. Fintan was worshipped here. Colgan.—Styled anciently *Dermagh in Idagh*.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
Glashare, Rect. and Vic. United to Rathdowny in Queen's county.		None. Patr. Bp. of Ossory.	Not in this co.	None.	4
Fartagh, Rect. and Vic. Patr. B. of Ossory.		In repair.* Site changed by act of council. 13 to 20 comm.	At Johnstown, in the par.	None.	6
Union. Rect. and Vic. approp. in Dean and Ch. of St. Canice.	1. *Ratblegan.*	A ruin.	Rect. of Fartagh appd. curate.	None.	2
	2. *Urlingford.*	A ruin. R. C. chapel.		. . . .	1
Union. Episcopally united, and called from its great income the Golden prebend. Patr. B. of Oss. Comm. 60 to 80.	1. *Agbour*, Preb. K. B. £.8.	In good repair.‖ R.C. chapel in Freshford. Pr. sch. m. salary about £.5.	G. H. at Clashicroe, where the inc. resides, in tolerable repair. A curate resides in Sheffin.	59 acres in the Union.	5
These 7 rect. approp. in Dean & ch. of St. Canice.	2. *Sheffin*, or *Balleen*, Vic.	. . . .	. . . .	. . . .	10
	3. *Coolcashin*, Vic.	. . . .	. . . .	. . . .	2
	4. *Clogbmanta*, Vic. in K. B. £.10. with	A ruin.	. . . .	. . . .	2
	5. *Kilrush*, Vic.	. . . .	. . . .	. . . .	1
	6. *Clontubbrid*, Vic.	. . . .	. . . .	. . . .	2
	7. *Ballinamara*, Vic.	A ruin.	. . . .	. . . .	7
	8. *Ballylarkin*, Vic.	. . . .	. . . .	. . . .	1

* In the old church a monument of one of the Fitzpatrick's, (*Mac Giolla Phadruic*) who is represented in a coat of mail, inscript. given in I. Anthologia, 353.

‖ Door case double, of semicircular Saxon arches, with mouldings: an inscript. over it in Irish characters, copied and translated in I. Anthologia, 351; it recites a gift of glebe.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
K. B. £.6.	3. *Tullobanbregue*,* Vic. sometimes called *Grove*.	. . . .	. . . . for the purchase of glebe: and £.100 towards the G. H.	. . . .	—
	4. *Grange*, Rect. and Vic. impr. in fam. of Flood, but incumb. of *Inchib.* paid for the duty.	. . . .		. . . .	—
Enniscag, Corps of the Treasurership. Patr. B. of Ossory. K. B. £.11.		A ruin. The land of the par. belongs to the see of Oss.	Curate of Thomastown paid for occas. duties £.10.	None.	1
Union. Patrons, E. of Ormonde, and B. of Ossory alternately. £. 27 Crown rent.	1. *Kells*, Vic.	In repair.	In the Queen's county.	20 A. near the church, and 3 A. in another place.	9
	2. *Earlstown*, Rect. and Vic.	1798, 6 bapt. 1 bur. 30 to 40 comm.			3
	3 *Ballaghtobin*, Rect. and Vic.	. . . .	. . . .	. . . . G. H. in tolerable repair:	5
	4. *Kilree*,† Rect. and Vic.	A ruin.	A curate in the par. of Ballaghtobin.	part not built on the glebe: £.100 given by First Fruits.	6
	5. *Mallardstown*, Rect. and Vic.	A ruin.			2
	6. *Stencarty*, Vic.	. . . .	The land belongs to the S. of Ossory.	. . . .	2
	7. *Aglonamult*, Rect.	Vic. united to Burnchurch.		. . . .	11

* In old county books styled Union of Tullahan, Lislone, and Dereen; Dereen is now united to Tullomain in the union of Callan.

† In the church two large monuments: one to Richard Comerford, of Danganmore, and Joan St. Leger, his wife, who is styled "*Pia hospitalis et admodum in omnes misericors matrona.*" She died 14th. Oct. 1622.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Union.	1. *Callan*, Rect. and Vic. K. B Rect. £.40 Vic. £.13:6:8d.	In good order, some old monuments R. C. chapel.	Rector and curate at Callan.	33A. dispersed. o. s. 33A. 2R. 16P. No G. H.	—
E. of Ormonde, Patron.	2. *Tullaroan*, Rect. and Vic.	A ruin.	. . . .	. . . .	20*
In 1798, 2 mar. 6 bapt. 4 bur. 28 to 50 comm.	3. *Tullomaine*, Rect. and Vic.	. . . .	. . . .	. . . .	3
	4. *Conlogbmore* Rect. and Vic.	A ruin.	. . . .	. . . .	7
	5. *Killaloe*, Rect. and Vic.	R. C. chapel.	. . . .	. . . .	6
	6. *Ballycallan*, Rect. and Vic.	In good repair.	. . . .	. . . .	10
Kilmanagh, Preb. Patr. B. of Ossory. K. B. Rect. £.6:13:4d. Vic. £.5.		In good order. 1798, 2 bapt. 10 to 12 commu.	Resides. G. H. lately condemned as uninhabitable. £.100 was given by First Fruits.	200 A. and 4 A. 3 R. detached. o. s. 201A.3R.33P. and 4A. 3R. near the ch.	9
Union. Patr. B. of Ossory.	1. *Outrath*, Preb. Corps of Chancellorship.	K. B. £.11.	Resides, G. H. at Castleinch, sometimes called Bamford, in good repair.	In separate places, 28 A. 2 R. 9 P. 0 : 2 : 30 P. 2 : 2 : 0 P. 0 : 0 : 36 P. 0 : 2 : 12 P.	5
	2. *Inchibologan*,§ Rect. K. B. £.13:6:8d.	In good order.	£. 160 was given by the First Fruits.	0 : 1 : 36 P. 33A.0R. 3 P.	4

* 27 townlands named formerly: the parish is, in old county books, divided into two; one of these was anciently called Grace's parish, from having been the property of that family, who forfeited 28 townlands in this barony, which were granted to the Sword-blade company. At Tullaroan are the remains of an old cross, erected by the Graces.—This family is said to have descended from Raymond le Gros. See Peer. II. p. 184.

§ In old records, divided into the parishes of *Inchnagh* and *Logh*, from whence the present name is formed. In old county books called Union of Castleinch and Brownstown.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
	11. *Bewley*, or *Owny*, Rect. and Vic. K. B. £.4	A ruin.* R. C. chapel.	. . . .	. . . .	5
	12. *Tubbrid*, Rect. and Vic.	. . . .	. . . .	. . . .	3
	13. *Tipperaghny*, Rect. and Vic.	A ruin.	. . . .	. . . .	2
Union.	1. *Kilamery*, Preb.	A ruin. K.B.£.8 : 3 : 4	Not in this co. Curate of Callan does occas. duties.	None.	10
	2. *Rosanary*, pays no prox.	A ruin.			
Church Jerpoint, Vic. Rect. impropr. in City of Kilkenny. —— Rectorial tithes let for £.90 a year.		None. K. B. £.6.	Curate of Thomastown paid for occas. duties.	o. s. 5 A. 3 R. 15 P.	10
Kilkeasy,§ Rect. and Vic. appropr. in Vic. Choral of St. Canice.		A ruin.	No person appointed to the duty.	None.	7
Templegal, or *Whitechurch*, Rect. B. of Oss. Patr. Vic. Crown Patr. K. B. £.6. Sometimes called Castlelane, and par. of Castletown.		In good repair. 30 to 32 comm. From 1792 to 1798, 2 mar. 3 bap. 1 bur.	Not resident in the parish. No pr. sch. m.	£.6 a year, paid by Lord Bessborough for the glebe. No G. H.	3
Union. Episcopally united. City of Waterford patrons.	1. *Mancully*, Vic.—Rect. impropr. in City of Waterford.	None.	Curate for occas. duties, salary £.10. resides in Fiddown.	. . . .	3
	2. *Kilcullybeen*, Vic.—Rect impropr. in City of Waterford.	In repair. In 1798, 2 bur. 5 to 17 comm.	Vic. resides in Waterford. No pr. sch. m.	. . . .	9

* The centre of the window tops pointed, the sides rounded: a gradation from Saxon to Norman architecture

§ Lismateigue, in this parish, has been sometimes considered as a distinct parish. 581 acres of the parish belongs to the see of Ossory.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Town-lands.
Union,	1. *Knocktopher*, Rect. and Vic.	In good repair. Vic. in K. B. £.8.	Inc. resides, & also a curate in the par. of Knocktopher.	Glebe H. in good repair.	12
	2. *Kilkerrill*, Rect. and Vic.	. . . . .		. . .	
	3. *Kilneddy*, Rect. and Vic. K. B. £.6 : 13 : 4*d*.	R. C. chapel at Lukeswell.	. . . .	. . . . .	7
Episcopally united.	4. *Agbaviller*, Rect. and Vic.	A ruin.	. . . .	. . . .	14
	5. *Kiltorcan*, Rect. and Vic.	. . . .	. . . .	. . . .	5
	6. *Derrynabinch*, Rect. and Vic.	A ruin. R. C. chapel at Ballyhale.	. . . .	. . . .	
	7. *Kilmagany*, Rect. and Vic.	In repair, built by G. Reade, Esq. and £.200 left to endow a clerk: the interest is not paid.	A curate resides at Kilmagany and rents the glebe.	. . . .	8
Patr. B. of Ossory.	8. *Dunamagin*, Rect. and Vic.	. . . .	. . . .	. . . .	5
	9. *Tullobeglt*, Vic.—Rect. impropr. in E. of Ormonde.	R. C. chapel at Windgap.	. . . .	. . . .	6
	10. *Fiddown*, Rect. and Vic. Vic. in K. B. £.6 : 6 : 8*d*.	In good repair,* 40 to 60 comm. 1798, 15 bapt. 8 bur. R. C. chapel and at Templeorum.	A curate resides in the par.	Dispersed. A. 12 in one place 18 in another, 2 1 — 33 acres.	25

* Contains monuments of the Ponsonby family.—St. Maidoc was worshipped here. Colgan.

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Union.	1. *Dunkit*, formerly *Dunkill*, Vic.	A new one at Gaulskill, built in the time of Bp. Beresford, but never rendered fit for service by the negligence of the agent.	Vic. not resident in this county. Curate resides in Waterford.	1 A. with the church-yard.	15
United by act of council.	2 *Gaulskill*, Vic.	. . . . No G. H.	. . . .	1 A. 1 R. 15 P. with church-yard.	3
	3. *Kilcallin*, Vic.	1798, 4 bapt. 1 mar. 3 bur. no comm. R.C. chapel at Glanmore.	. . . .	21 A. 3 R. 30 P. with ch. yard.	—
Union.	1. *Rosbercon*, Vic. K. B. with Shrub. £.3 : 6 : 8d.	In repair. R. C. chapel, new.	Rector resides in Waterford.	3 A.—more in Down Sur.	7
City of Waterford patrons	2. *Desertmoan*, Vic.	A ruin at Ballyneale.* R C. chapel at Tullagher. No G. H.	Cur. Vic. of Kilbride, resides in Ross.	1 A. 1 R.	13
	3. *Shanbogh*, Vic.	A ruin.	. . . .	3 A. o. s.	3
Episcopally united.	4. *Ballygurrin*, Vic.	A ruin.	. . . .	4 A, 0 R. 20 P. 4 A. o. s.	3
	5. *Kilmacaweget*, Vic. K. B. £.1 : 6 : 8d.	A ruin.	. . . . Sch. m. at 40s.	3 A. 2 R. 21 P. 12 A. o. s. 11 A. 1 R. 38 P.	8
Rectories impropriate in City of Waterford.	6. *Rathpatrick*, Vic.	In repair. 1798, 5 bur. comm. 21 to 28. R.C. chapel at Sliegh-rue.	. . . .	None.	7

* In the church is a handsome monument of black marble, erected by Eleanor Fitzgerald, daughter of a baron of Brownsford, to her husband Robert Frayne, with armorial bearings, and styled "Amoris mortisque monumentum."

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Clonmore, Rect. and Vic. Patr. B. of Ossory.		None. In 1798, 1 bapt. 4 bur.	Rect. resides in co. of Down. Curate at £.40 resides in par. of Tullohoght.	In two different places, about 10 A. in all. No G. H. No pr. sch m.	7
Union. Episcopally united. City of Waterford patrons.	1. *Portnascully*, Vic. K. B. £.2.	No church in the Union.	Vic. resides in Waterford.	None.	8
	2. *Polerstan*, Vic. K. B. £.6.	. . . . No. pr. sch. m.	. . . .	1 R. and G. H. in very bad repair.	6
	3. *Illud*, Vic K. B. £.2. Rects. im propr. in City of Waterford.	. . . .	. . . .	2 A. 2 R.	5
Ballitarsney, Rect. and Vic. Patr. B. of Ossory. K. B. £.3.		None. No sch. m.	A curate lately, at £.25, not resident.	About 1 acre. o. s. 1 A. 19 R. & 3 R. 30 P. seperate.	3
Union. Rectories approp. in D and Ch. of St. Canice: Vicarages in Vic. Ch. of St. Canice.	1. *Aliah*, pays no prox. 2. *Rathkyran*. K B. £.2 : 5 : 6	Ch. in indifferent order. 17 comm.	Curate of Clonmore appointed to the duty.	. . . . .	10
Aglismartin, Rect. and Vic. Crown Patr.		None. No sch. m.	Rector resides in co. Wicklow.	About 2 acres. G. H a small thatched cabin.	8
Kilmacow,* Rect. and Vic. Patr. B. of Ossory.		In repair. 3 to 14 comm. In K. B. Rect. £.6. Vic. £.4.	Rector resides in G. H. which is in repair.	12 A. 1 R. 38 P.	10

* Anciently called *Kill-magh-bui*, or *church of the yellow field*; probably from the yellow sand found here.

It appears that the 147 parishes (see page 6.) are distributed at present into 55 benefices; some of which consist of parishes dispersed in various parts: that thirteen incumbents reside within their parishes in this county, nine of them in glebe houses, and ten curates; and that 28 churches are fit for service besides the cathedral. Some clergymen reside near, though not in their parishes; some attend their parishes on Sundays from Kilkenny and other places; and it is not uncommon for incumbents in one parish to be curates in another.

A *Society* has been formed at Kilkenny, by some of the younger clergy, under the patronage of the Bishop, "*For the purpose of communicating information respecting the best means for promoting practical Christianity.*" They are to correspond with members of the established church in other parts of the kingdom. The Rev. Hans Hamilton, Rector of Knocktopher and Fiddown, is Treasurer, they have a Secretary and Clerk: the acting Committee are,

The Rev. Robert Shaw, Curate of Fiddown.
The Rev. James Adams Ker, Rector of Listerlin.
The Rev. Hans Hamilton, and
The Rev. Peter Roe, Curate of St. Mary's.

Among the members, in this county, are the Rev. Charles Caulfield, Preb. of Kilmanagh, and the Rev. Henry Irvine, Curate of Comer: each member is to pay an annual subscription; they resolve, "That the correspondence be confined entirely to practical subjects, viz. means that have been tried and

Distribution and State of Parishes.

Parishes.		Churches.	Residence of Incumbents.	Glebes.	Townlands.
Rorr, Rect. and Vic. B. of Ossory, patr. K. B. £.3 : 6 : 8*d.*		In repair. R. C. chapel in ruin, and par. *annexed* to Inistioge.	Rector not in this county. Cur. in Ross. Pr. sch. m.	None.	26
Listerlin, Rect. and Vic. K. B. £.5.		A ruin. £.500 granted for a new one, by First Fruits; not applied. R. C. par. *annexed* to Desertmoan.	Rector resides. G.H. in repair. £.100 given by First Fruits	10 A. 2 R. In Down survey, 52 A.	5
Union. Rectories impropr. Patr. B. of Ossory.	1. *Kilbride*, Vic. K. B £.1 : 6 : 8*d.*	A ruin. No sch. m.	Vicar resides in Ross.	None.	2
	2. *Kilcoan*, Vic. both pay prox.		. . . .		5
Union. Patr, B, of Ossory.	1. *St. Mary's*, Rect. and Vic.	In good repair. 1798, 42 mar. bapt. 46, bur. 30. comm. 280 to 250.	Vic. resides in par. of St Patrick's. Cur. in St. Mary's.	None. Sch. m. at £.30 a year.	—
	2. *St. Johns*, Vic.—Rect. impropr. in C. of Kilkenny. Rect. tithes let for £.171 a year.	A ruin. A monastery. R. C. chapel.	. . . .	. . . .	20
Episcopally united.	3. *Clara*, or *Church-Clare*, Vic.—Rect. impropr. in C. of Kilkenny. Rect. tithes let for £.113 : 15*s.* a year.	A ruin. R. C. chapel at Rathgarvan.	. . . .	. . . . 16 A. o. s. 22A. 1 R. 6 P.	7

St. Canice. Rect. impropr. in Vicars Choral.—Ch. cathedral; R. C. chapel.

St. Patrick's. Corps of the Deanery.—No Ch. no Gl.—K. B, £.26 : 13 : 4*d.* Dean resides in the Deanery-house, parish of St. Canice.—R. C. chapel.

St. Maul's. Totally appropr. in the Bishop of Ossory.—Ch. a ruin: no person appointed to the duty.—Par. contains 600 acres.

Rosconnel. Ch. in ruins; stands in this county, with 5 acres of glebe: inscription over the door in the south side, mentions that the church was *rebuilt* by the rector in 1646: it appears not accurately copied in Anthologia.

Kilcooley. About 600 A. of this par. are in the county, called Newtown Kilcooley.

county belonging to Ossory, and two to Leighlin: non-cures, and non-residence, are of course not permitted. From their attention and constant residence, the clergy generally command the respect of their flocks, which are of course rather encreasing. The clergy are appointed by the Bishop, who constantly resides in Kilkenny or Ballyragget. The Bishop is elected by the Chapter; if the election is unanimous, it is confirmed by the Pope; if not, the Bishops of the province recommend: the Metropolitan has jurisdiction in appeals only, not in visitations.

The incomes of the clergy are uncertain, depending upon the liberality of their flocks, and the money they receive for confessions, burials, and all the sacraments: which leaves them in the power of the lower orders, whom they are afraid of offending. The names of ancient monastic institutions are preserved by a few friars, who do not wear the habit; in Kilkenny is a convent of Recollects, one of Capuchins, and one of Dominicans; at Thomastown one of Carmelites; at Callan one of Regular Canons of St. Augustin; at Knocktopher one of Carmelites; near Waterford, one of Franciscans: some of them have one, some two friars, in a poor habitation; they contain in all nine friars.

There is no Presbyterian congregation in this district: the Quakers were offended many years ago, by some insult they received in Kilkenny, and not one resides in the county. There are two or three Methodist

and found successful in promoting certain desirable ends, for which see the annexed list of subjects, on which the Society are desirous of obtaining information.

" That the correspondence be carried on in the following manner: when any member writes to another, he is at the same time to write a copy of his letter to the Secretary, who is to furnish each of the other members with a copy.

" Subjects on which the Society are desirous of communicating and obtaining information:—

" Means which have been found to answer in bringing ignorant persons of all ranks to a knowledge of religion:—

" Methods which have been tried and found useful in conveying religious instructions to persons of a different persuasion from our own:

" The best methods of instructing persons in the knowledge of the scriptures:—

" The best means for guarding our flocks from the attacks of infidelity:—

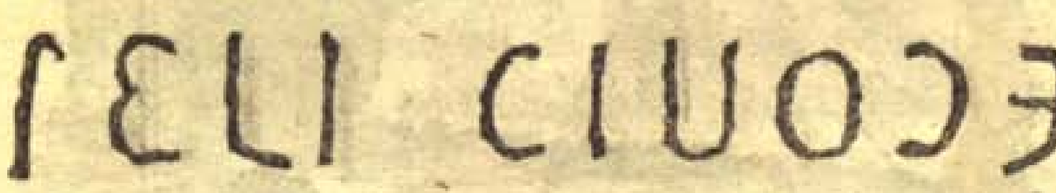
" The best methods of arguing with and reclaiming infidels, with any other matters of practical utility, which any member may think worth communicating.

" Corresponding members are requested to direct the copy of their letters to the Secretary under cover to the Bishop of Ossory."

Roman Catholic Establishment.—The clergy having numerous flocks, are always resident: their unions or *annexes*, as they are called, are formed of contiguous parishes; of these there are 25 in the county

make this work much too long: all that can be done is to enumerate some of the remains that were observed during this survey. Any person desirous of writing a history of this county, may find some materials for it, among the papers of the see of Ossory, and particularly in the large collection in the Evidence Chamber at the Castle of Kilkenny.

On the summit of Tory hill, called in Irish *Sleigh Grian* or *the hill of the Sun*, is a circular space covered with stones; the larger ones have been taken out and rolled down the hill for the use of the country people; there is still one large one near the centre; and there is an appearance of smaller ones, having stood in a circle, at a little distance from the heap, which is above sixty five yards in circumference: within which, on the east side, is a stone raised on two or three unequal ones, with this inscription, facing the west and the centre of the heap;



The letters are deeply and well cut, on a hard block of siliceous breccia; they are two inches high, between each is a space of about one inch, and a distance between the words of three inches: in Roman letters, they would be,

BELI DIUOSE.

The

NELI CIUOJ3

The first letter is one of the most simple forms of the Pelasgic B, which * was also written , and in in cutting upon a hard stone, the fine strokes may have been omitted: the others are well known. That the Divinity was worshipped in this country under the name of BEL, needs no proof; that the Divinity was worshipped in the British isles under the name of DIONUSOS, is also recorded: that worship is beautifully described by Dionysius, the Geographer, V. 570, who says, that in the western islands, the wives of the illustrious Ammonians (or Amnitæ, ἀγλαοὶ Ἀμμίδων) from the opposite coast, celebrated the worship of DIONUSOS with as great fervor as the Thracians.

The stone on which this inscription is cut, is 5 feet 1 inch long, in front; at the back 6 feet 5 inches; it is 5 feet broad, and 1 foot 4 inches thick. In front appears to have been a sunk place, flagged, the sides diverging; but it is imperfect. The common people pay some respect to this relic.

On the top of the hill of Cloghmanta, commanding an extensive and magnificent view, is another ancient *Pyratheia*, a circular heap of stones 87 paces round: it is placed within a circular fence of stones, which encloses two or three acres, and is distant from the heap, in the nearest part, about 95 yards; the heap is nearest to the eastern side: part of the circle has been lately destroyed to make a wall: in Irish this is called, like other heaps, *See Fin* or *Sith Fin*. (See III. Collect. 490.)

The

* See the alphabets in "Remains of Japhet."

The name of *Clogh-man-ta*, *the stone of God*, or *of the great God*, (of similar origin with that of *Sliegh-na-man*, the *mountain of God*, on which was an ancient altar of the Sun) is sufficient indication of the use of this enclosure. The name of *Man*, one of the most ancient appellations of the Divinity, and always connected with that primitive idolatry, which was spread to the east and west by the Cuthite or Scythic branch of the Noachidæ, is too interesting to be overlooked; but to illustrate their history properly, demands the abilities and knowledge of a Vallancey or a Bryant. (See III. Collect. 51. and 632. and IV. 166.—and also I. Bryant, p. 402. II. 8. 198. 307. 471. & passim—also Rowland's Mona. p. 49.)

Cromlechs.—The most remarkable is at Kilmogue in the barony of Knocktopher: the upper stone is 45 feet in circumference, and is supported before, upon three upright ones, two of which are twelve feet high, and one nine, being farther in; the other end rests on an horizontal stone, propt by others; forming with side stones, in all nine, a small inclosure under the lower part of the great stone, which is six feet from the ground at the lower end, and 15 feet at the upper; it slopes to the S. S. W. The stones are all siliceous breccia. By the country people it is called, *Lachan Scahl, (The great altar stone.)*

In the western part of the barony of Iverk, are several Cromlechs, but they have all been partially prostrated:

prostrated: the upper stone of one at Ballyheniberry is 16 feet 4 inches long, and 10 feet 4 inches broad, and three feet thick; it was raised upon four supporters. On the side of the hill of Owny, is an entire one, low, and filled up by loose stones: at the bottom of the hill is another, the upper stone of which measures 9 feet by 7½ feet, and 2 feet thick; it rested on three in front, and two behind; sloped to the S. S. W.: it had two side stones, making a cell, like that at Kilmogue. Other Cromlechs, partly fallen, exist, at Kilnerry near Castletown, at Tubbrid in Iverk, at Raheen above Bessborough, at Bollyglass, parish of Aghaviller, and another between Castlemorres and Kilmacoliver. There is a Cromlech in the demesne of Mr. Neville at Marymount; it is one of the smallest; the upper stone measures 27 feet by 21 feet in circumference; it was supported on three others; the two front ones eight feet high, on which it still rests; the hinder one has slipped away and has been broken; they are all limestone: beneath was a flat stone broken up by the country people to look for money, and under which, bones were said to have been found.

On the lands of Ballyspellin, not very far from the spa, is a very large stone, which was formerly supported on smaller ones; it is called by the country people *Clogh-bannagh, stone of blessing:* not far from it, is a conical stone, lying on its side.

At Ballynasliegh near Durrow, was a great stone, probably an altar, and called in Irish *Cloghancarneen;* it was about 15 feet by near 8 feet broad,

and 20 inches thick; it was supported on six or eight large stones, which stood in the side of a cavity, and raised it three feet above the ground; beneath was a place hollowed out and floored with stones: this altar was entirely destroyed, the hollow only now remaining, by a neighbouring clergyman, who, it is said, dreamt there was money underneath; he expended two or three days with much labour and whiskey in the exploit · in one angle of the hollow, when the stone was broken, was found a heap of bones, with teeth, like those of pigs. On the hill, 100 yards above, appears a cavity, from whence the great stone might have been raised, and slipped down upon the supporters. Not far from this, is a square enclosure with four large upright stones, and two others forming a roof; three or four side stones have been taken away, to make gate posts. On digging within, human bones are said to have been found; the earth round it, is raised; the entrance at an angle: in Irish it is called *mainsair asal*, or *the asses manger*, either a modern, or a corrupted name.

On the hill above, is an elliptical enclosure, 40 yards by 34, surrounded by a bank of small stones; a pit and a heap have been made in it: to the north and east of this, on the side of the hill, are marks of small enclosures, and foundation walls, shewing the site of an inconsiderable town; a small oblong building is said to have been a chapel: among these enclosures, are seven or eight circular pits, mostly filled up, about twelve feet wide at top, narrower below,

below, the sides of stones; they may have been storehouses for grain. Between this hill and the river, a great many human bones have been found, and among others, a skeleton enclosed between flags, accompanied by a horn.

On the upper part of the hill of Garriduff, parish of Fiddown, is a place called *Leibe-na-cuhn* or *the dog's grave*, as it is now interpreted, which originally seems to have signified the *priest's grave*: the place is somewhat hollow in the centre; there were sixteen stones, placed in four rows, but two or three have been taken away, having been undermined; the largest are about six feet high: the two centre rows, were four feet distant, and had five stones each, close to each other: the outer rows were closer to the others, and have three stones each: there might have been more stones; a large one lies against the ditch near it; and there were formerly said to have been stones covering these, and forming cells: some burnt bones were said to have been found near the surface. Lower down, on the lands of Garryduff, are the remains of enclosures, or stones disposed by art, though time and derangement have rendered their disposition obscure: about 500 yards lower down, stands a single tapering stone 10 feet 8 inches high, and more, if the soil was level; at the base six feet round; in thickness it varies from one side to the other, from 2 feet to 10 inches. In other places, upright stones, placed perhaps as *stones of memorial*, as well as some ancient heaps, are seen. In front of a great stone at Ballynony, parish of Kilbeacon,

were taken up six or seven small urns, containing ashes, disposed in cells formed of flags, and covered by a heap of stones; such urns have been found at Belline by Mr. Walsh, and at other places: they seem formed of clay baked in the sun, with an ornamental design rudely traced.

Raths, the ancient habitations of the Irish, are very numerous in some districts, particularly in Galmoy, and near the Nore, where the forests probably did not extend so much, on account of the calcareous soil: in the small parish of Cloghmanta are twenty, all circular, and of various sizes. The largest are near the Nore; between Kilkenny and Ballylinch bridge, twelve or fourteen may be seen, at no great distance from the river; some very large, with high banks. Most have one fence, some two, some three concentric enclosures: a very large one of the latter sort is not far from the cave of Dunmore. They are not all circular; one near Ballyragget is elliptical, adjoining a circular one; one near Ballyconway, one near Marymount, and others, square, and a few angular. Some raths, particularly in Galmoy, have flagged chambers beneath; in some, two chambers. Chambers under ground, roofed with flags, are found, not accompanied by raths; as at Rathard, near Tory-hill; at Kilmanaheen, near Bessborough; and at Graigue, near Castletown, one with three chambers connected by steps. As the wicker houses made by the Irish within the raths, probably rendered them afraid of fire, so ashes are seldom found within them, but heaps of burnt stones,

in

in which, as is noticed by Keating, (p. 270) they cooked their victuals, are not uncommon; some still standing, near the edges of bogs, formerly woods, which afforded fuel; by the common people these heaps are called *feile-fiadh, the feast of meat*, or *venison*. (See Coll. III. p. 82.) At Earlsrath, near Kilbeacon, is a very large fort, oblong, and surrounded by a deep fosse, formerly filled with water, with a bank about 20 feet high, formerly fenced with squared stones, which have been taken away to build a house; in the area, which is about 70 yards by 55, were buildings: remains of a smaller fort, somewhat similar, are seen at Ballytarsney. Some large *moats* are dispersed through the county: one of the largest is at Callan, its perpendicular height is above 40 feet, its flat summit is 46 yards by 24: at the western side a small moat was separated from it by a deep fosse: near Kilkenny is a large moat, and another at Castlecomer, whose top is about 60 yards diameter by 30; and others, at Dungarvan, Knocktopher, Tybrachny, Inistioge, Powerstown: in a valley near Graigue and other places are smaller moats or barrows. At Rathbeath on the banks of the Nore, is a moat, in itself not remarkable, but mentioned as the place where *Heremon* erected a palace, and where afterwards he was buried: it has a double ditch, and its top is 40 yards by 25.

Here Heremon, or the Herimonii* are said to have erected a town; no remains of which appear at Rathbeath;

* See IV. Collect. 332, and III. p. 263. They were perhaps a branch of the northern Hermiones mentioned by Tacitus and Pliny,

beah; still less is there any appearance or tradition of the *silver mines* said to have been worked here: the soil is chiefly the sediment of the river, over limestone and limestone gravel, and in a plain distant from the hills. But Heremon, say the Irish historians, fixed his residence at Argetros, and changed the old name to *Rath-Beathach* or *Rath-beath;* and as the modern Irish afforded no etymology for the old Scythic name of Argetros, but *Argioth* silver, a *silver* mine was placed here, and then a silver mint by some historians.* The name of *Arget-ros*, appears connected with primitive or Cuthite idolatry; as do many in this county; nor has the word *ros*,† which is found in the names of many places, been yet satisfactorily explained.

On the lands of Ardeloe, at the junction of the Nore and Dinan, is some appearance of ancient foundations, though of small extent; it was a site likely to have been chosen; and might have been the original position of Argetros. There is also here a small ruined castle, of more modern date, which is said to have had communication with the river by a subterranean passage.

Some

* See Keating Trans. 113. III. Collect. 281. II. Ware 204. Ogyg. 112.

† We have in this county, and in one district, Rosanany, Rosanarrow, Rossoon, Rosmore, Rosdamna, and others; not all places that are, *ar virque*, by the water, nor *pleasant places*, as *ros* is said to mean. It is to be observed that these names are chiefly confined to one district, as the *cromlechs* are to another. There is some reason to suppose *ros* may have signified *a consecrated place*.

Some of these high moats, particularly those that have any appearance of a fence round the summit, may be properly attributed to the Danes, and one of these seems to derive its name from them, that of *Lis-terlin, fort of the Easterlins* or Danes: its top measures fifteen yards by eighteen, and has marks of a small bank raised round it; its perpendicular height is about forty feet: the moat is about 114 yards in circumference at the base, and has a ditch about thirty feet wide in most places, which is discontinued on the eastern side.

Round Towers.—This county has five; one at *St. Canice*, distant a few feet from the south side of the Cathedral, its entrance about twelve feet from the ground on the south east side. Another at *Tulloherin*, distant eight feet from the N. W. angle of the church; its circumference at three feet from the foundation is fifty feet six inches; entrance, about twelve feet from the ground: in the top seem to have been eight windows, four remaining in one side which is perfect: the tower is built of siliceous breccia, but the church of limestone. Another is at *Kilree*, nine yards from the N. W. angle of the church; at four feet high it is fifty feet six inches in circumference, door five feet six inches from the ground; at top, four windows. Another at *Fartagh* commonly called *Fartagh na geiragh*, a corruption probably of *Farta na Ancoiragh*, the burial place of the Anchorites, or Culdee Monks. This tower is opposite to the western door of the church, and is ninety-six

feet

feet high; it was accurately measured by the Rev. Mr. Welbourne the late Rector: the wall is cracked; it had eight stories and seven floors; the door opening on the first is twelve feet from the ground, and looks towards the church; the wall at the door is three feet two inches thick; the upper story has four windows, whose tops are angular, formed by two stones. A fifth tower stood at *Aghaviller*, (probably *Agha-oillir, field of the pilgrim*) the lower part only remains; above the foundation it measured fifty feet round; beneath this, it has a circular base, projecting six inches, and fourteen inches high, resting on a square foundation; that at Kilree is built in the same way, as the others probably are: this tower is peculiar by having a door-way even with the ground, and apparently co-eval with the building; this door way is five feet one inch high, two feet nine inches wide at top, and from two to three feet wide at bottom: internal diameter of the building, eight feet ten inches, wall four feet thick, two courses remain for floors, and part of a third story with a small window: on the first, an old floor is remembered to have stood about forty years ago. The first story within, is twelve feet high; without, it is thirteen feet to the old door way, which this had, like the others, opening to the first floor, but which has been modernly walled up. The tower stands twenty feet to the S. of the foundation of the old church and at the S. W. angle; it is built of siliceous breccia. Whatever these towers may have been, they seem well adapted for bellfries, when the churches were

of

of wood: they may have been used as places of confinement or penance: a pilgrimage is called *Turrish* in Irish, and prayers said by pilgrims at *stations* are called *Turrish* prayers; a term peculiar to this country, and perhaps allusive to these towers.

In the parish of Macullee south east of Purcell's-hill, is a place called in Irish *Reighlig na lugh duigh* or *the burying place of the black lough*; here there were about twenty small upright stones, placed like grave stones, at the head and feet of bodies; by digging between them Mr. Ellis found some decayed bones, near the surface: there is a faint tradition in the country that a battle was fought here, and by the situation, which is, as Keating describes, west of Leighlin, it seems to have been the scene of the famous battle of Magh-ailbee, in which Cormac King of Munster, the King of Ossory, and a great number of chieftains fell in the year 913. Some authors have placed this battle in Idrone; but no place answers so well to Keating's account as this: the name of *Mac-ullee* or *Magh-ullee*, may have been a corruption of *Magh-ailbee*, which signifies the *fields or plains of the hills*, and well describes these dry, open and heathy hills. On the summit of a hill called Knock-major from a modern proprietor Major Purcell, and above the place of burial, is a small circular enclosure; most of the monumental stones have lately been taken away, to build the walls of a cabin. In the valley beneath these hills, towards Wildfield, were found many old spear heads. Several small heads of spears or javelins have been dug up in other

places

places; one found at Belline by Mr. Walsh measures in length 4 inches $\frac{5}{8}$ and has two ears to pass thongs through, for fastening it to a light handle; the metal is very hard, and appears to be a sort of bronze, containing a good proportion of tin. This instrument has been deposited with the Dublin Society, together with a kind of bronze gouge; and an oval stone sharpened towards either end, with a small triangular one hollowed at each side, all found on the same land: also an old broach of brass, with an ingeniously twisted spring, found near Gowran: a pin (probably for the hair) with a small ring neatly ornamented, found near Kilfera; both given by Mr. W. Barton of Mount-Rothe.

Monasteries.—Some of those that belonged to the *Culdees* seem to have been, at Durrow, (anciently *Dermagh, the field of oaks*) Fartagh, Fiddown, Killaghy, Kilamery, Kilfane, Kilmanagh, Callan, Kells, Inistioge; the three last were succeeded by Augustinians, who have left considerable ruins. Kells has the remains of nine towers and walls that enclose two large squares; not far from the abbey is a moat, which forms the seventh side of a small heptagon enclosure, with high walls, said to have belonged to a college. Two of the most celebrated abbeys in this county belonged to Cistertians, at Jerpoint, and at Graigue; their ruins give an idea of their extent and grandeur. The three ruined abbeys at Kilkenny, exhibit beautiful specimens of gothic architecture, particularly that of St. John's; next the Dominican, or black abbey, and then the Franciscan,

ciscan. The Dominicans (if they were so) at Rosbercon, and at Thomastown, the Carmelites at Knocktopher, and the Nuns at Kilculliheen, have not left much remains. There is said to have been an old abbey at Barrowmount, and another near Kellymount, and a second monastery at Thomastown, not noticed in the Monasticon.

At Clontubbrid is a singular cell, built over a spring; it is called in Irish *Tubbrid na droaith*, the Druids well; the cell is seven feet, by two feet six inches, and two feet six inches raised from the ground; the door-case, with a sharp arch, four feet six inches high: it may have been the habitation of a Monkish Eremite.

Castles.—These were in general built by the first English settlers, and though several have been destroyed, and some included in modern houses, yet their number is still very great; but most consist of a single tower, which formed the place of strength or keep, and to which were formerly attached the smaller buildings. *Granny* or *Grandison* Castle in Iverk, is one of the most considerable; it has three round towers on the Suir, and two courts: a large square tower, connected to a great hall, and another round tower, form the other side: in the inside of the arch of a window in the hall, is a grotesque angel holding a shield with the arms of Butler, and opposite, a figure of justice. Here, tradition says, was held a court, under the direction of Margaret, the

great

great Countess of Ormonde,* for the trial of rebels; and the window is shown, whence they were supposed to have been hung. The respect or fear inspired by this great woman, remains still among the common people, by whom she is called *Maughrced ny ghirord* or Margaret Fitzgerald: and they frighten children by her name. The castle of *Balleen* was built partly by her; it is the next considerable castle to that of Granny; it has large square windows, with stone frames and divisions, and, apparently, no arches over them: on one part is a date 1455; on another is shewn a seat, said to have been that of Margaret Fitzgerald. On the top of Ballyragget castle is also shewn a seat called hers: over a chimney piece is this date, 1591, and the letters *I. M.* The castle of *Coolkill* in the parish of Roer, and others, are said to have belonged to her. Besides these, the castles of *Knocktopher*, *Gowran*, *Dunfert*, *Poolstown*, *Nehom*, *Callan*, *Ballycallan*, *Damnagh*, *Kilmanagh*, *Urlingford*, and several others, besides Kilkenny, have belonged to the Butlers.

The

* Mentioned by Carte, as "a person of great wisdom, and courage uncommon in her sex." By Stanihurst, called "*Fœmina spectatissima, rerum etiam prudentiâ supra muliebrem captum prædita.*" And also, "a lady of such parts that all the estates of the kingdom crouched unto her; so politic, that nothing was thought substantially debated without her advice. She was manlike and tall of stature: a secure friend; a bitter enemy; hardly disliking, where she fancied; not easily fancying, where she disliked.". She died 1539. She rebuilt the Castle of Gowran.

The Castles of *Drumroe*, at Mount Loftus, of *Gowran*, of *Barrowmount*, and of *Low Grange*, which was included in the house, together with an ancient chapel, are said to have belonged to Lord Galmoy. King John built a castle at *Tybrachny:* the present one, in style of architecture, resembles Ballyragget. At Tybrachny are foundations of a small Danish town, and a tombstone with Danish sculptures. The castles of, *Stroan*, *Kilfane*, *Clofouke*, *Conahy*, *Ballyfoyle*, (in Kilmodum) and *Cloranke*, are said to have belonged to the family of Purcell, *Cowen* to that of Brennan, *Cantwell's Castle* at Sandford's Court to that of Cantwell: those of *Castlemorres*, *Frenystown*, *Foulksrath*, *Foulkscourt*, probably to the families whose names they bear, those of *Bishopslogh* and *Kilbline* to that of Curry. Those of *Cloghmanta*, *Kilrush*, *Tubbrid*, *Killeshuran*, *Balief*, to the Shortalls; the two last, as well as those of *Seskin* near Durrow, are circular. Fitzgerald, the possessor of *Burnchurch*, was a baron of the county Palatine, as was Fitzgerald, proprietor of the castles of *Brownsford* and *Clonamery*.

Gaulstown in the parish of Gaulskill seems once to have belonged to a branch of the De Burgos, from a monument in the church of Gaulskill*. The castle

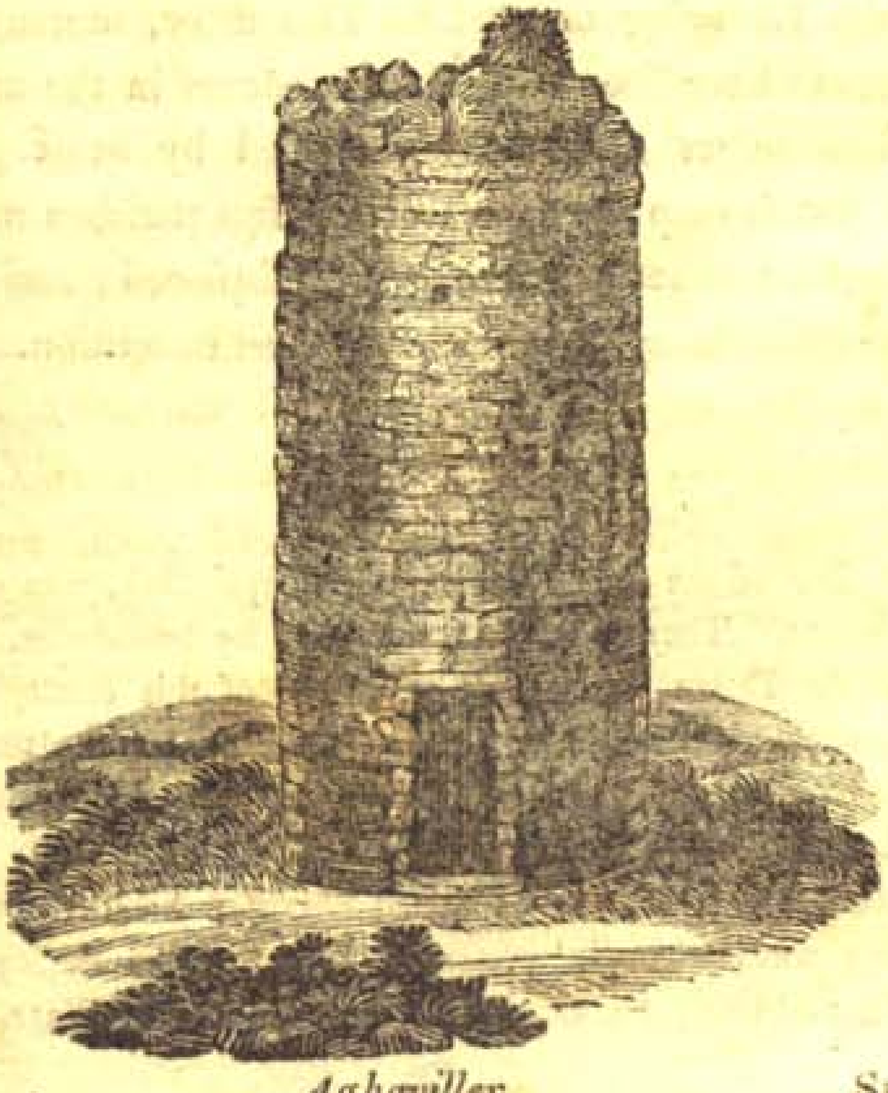
* The inscription concludes thus "Hic tumulantur corpora Walteri de Burgo Armigeri de Gawlstowne ætatis suæ .... uxorisque ejus Alfsee Den". The monument recites his descent from Sir William de Burgo, Vice Chamberlain to K. Edw. III. whose estates are mentioned, and his relationship to the Red Earl, but it is mutilated.

tle of *Grennan* near Thomastown, said to have been built in the time of King John, belonged once to the family of Den: it was garrisoned and commanded by Robert Burrell in 1649, who capitulated to Cromwell: the castle of *Dysett*, lower on the river, is remarkable for having been the birth place of Bishop Berkeley. To the Walshes belonged probably, the castles of, *Inchicarin*, (See p. 383.) *Castlehoyle*, *Earlsrath*, *Munshalls court*, *Ballynony*, *Ballinlea*, *Ballybokan*, *Corbally*, *Castlegannin*, *Newcastle*, *Ballybrushin*, *Knockmeilan*, *Lismateige*, *Ballybregan*, *Ballycoolycy*, and some others. *Clone* near Castlemorres belonged modernly, to a branch of the Caulfields. *Courtstown*, *Ballylinch* and others to the Graces.

There were many more castles, whose remains exist, or whose site is known; every proprietor had one at least: the number of proprietors at a certain period, might be nearly reckoned by the *Castles;* as the number of inhabitants, at a period prior to the erection of convents, might be, in some degree, computed from the *Raths.* Most of the castles are marked in Sir William Petty's map. Their usual characteristics are, double walls with passages, wide chimnies, stone gutters, projecting defences, generally one arched floor, and sometimes two.

The castle of Dunfert (corrupted into Danesfort) was built by William, Earl Mareshall, as was that of *Kilkenny;* for an account of the latter, see Ledwich. This author has overlooked some inscriptions, and

and lesser antiquities; and among them, a chamber in which it is said some of the parliaments assembled at Kilkenny, anciently sat. This forms part of a house in the coal market, now inhabited by Mr. Tresham, an apothecary; it consisted of one large hall forty-nine feet by forty-seven, with a dungeon underneath twenty feet square, with which the hall communicated by a trap door, and stone stairs. Part of the benches with high backs, and the carved oak frame of a table, remain: an iron door formerly led out of the dungeon into the yard; the windows have iron bars and are small, high and arched. This hall is now subdivided into a kitchen, shop, and three or four rooms: the upper floor is low, with large beams; and above is a modern building.



Aghaviller.

Sect. 20. *Maps or Surveys.*

The map of this county by Sir William Petty, is the best that exists, though inaccurate in some circumstances, and particularly in the course of streams. A survey was lately made, for the Grand Jury, at a great expence, by Mr. Neville Bath, who has drawn maps of other counties: he only pretends to delineate the roads and the boundaries of baronies; but even those are imperfectly represented; a part of the county, including Newbridge, (see p. 1.) being omitted.* This error, moreover, seems to have been copied, as it occurs in the small and incorrect Irish Atlas published by Scalé. In Mr. Bath's map the names of the few parishes mentioned are sometimes wrong and misplaced; and the whole has the appearance of careless execution.

Sect.

* Part of the boundary near the Royal Oak, was once in dispute. There is no good authority for boundaries, except the Down Survey. The extent of this county was very anciently determined, having been one of the twelve constituted by King John. Previous to this, Henry II is said to have divided, this part of the kingdom at least, into counties, and to have appointed Sheriffs; his division or survey was originally preserved here, in the Abbey of Duiske or Graigue; and it existed in the time of Ware.

SECT. 21. *Weights and Measures.*

ALL corn is sold by weight: selling by measure, which is, in fact, giving a premium upon bad grain, is a practise not known.

The *stone* for corn, has 14lb. avoirdupois.

The barrel of *wheat* has 20 stone.*

——— *Barley and Bere*, 16 stone.

——— *Oats*, 14 stone.

——— *Potatoes*, 21 stone.—20 is the proper weight, but 1 stone is allowed for dirt, &c.

——— *Malt*, 12 stone.

——— *Bran*, 8 stone.

Wool and tallow are sold by the *stone* of 16 lb.

Hides and butter by the cwt. of 112lb.

All *liquids* by wine measure.—The legal Irish gallon has 217.6 cubic inches.—(The English wine gallon has 231, and English beer gallon, 281 cubic inches.)

The barrel of *beer and ale* has 42 gallons.

The barrel of *lime*, has usually but 31½ gallons, though it is contrary to law.

Bandle linen is sold in Kilkenny, by the *slat* of 2½ yards: in some of the country parts, by the *bandle*

* And is to the English quarter as 70 to 129: the English quarter of wheat being 516lb. The English quarter of barley has 420lb.—and of oats 308lb.

of 24 inches: other linen and woollen goods by the yard.

The Irish *acre* is to the English, as 196 to 121; the perch being, as 7 to $5\frac{1}{2}$.

Coals are purchased at Waterford and Ross by the large barrel, and retailed by the small. Variation of weights and measures, serves no purpose, but that of fraud. The conformity of them, through the British empire, and with those of foreign countries; and their division, as well as that of money, by decimals, would be benefits to trade, greater than any regulation yet devised.

CONCLUSION.

CONCLUSION.

THESE observations, applying to so many different subjects, made by a person not sufficiently versed in them all, perhaps, not master, as he ought to be, of any, must be necessarily incorrect; still more will they be found defective, as the writer was pressed by time and impeded by a state of health, which rendered him incapable of proper exertion.

As far, however, as information could be obtained, each object of the proposed enquiry has been treated: the defects in practise have been noticed; some remedies suggested; some obstacles to improvement occasionally mentioned, with the means of removing them:—these subjects might here have been reinforced and extended, if this work was not already, perhaps, too long.

This Survey therefore goes to the public, under the sanction of the Dublin Society, to be filled up, corrected, improved, generally and locally, by persons better informed.

NOTE.

NOTE.—In the *tables of tillage* (p. 256.) the blanks, are not always to be understood as implying a total negation of the article in the column, but, that the quantity did not appear of importance enough to be returned, by the persons who were so good as to make the communication.—The *tables of present population*, as well as those of the *state of parishes*, are only to be considered as imperfect sketches, which those who have power and opportunity, may easily complete.

The Colliery Account (p. 46.) was copied accurately from a return, made by Lady Ormonde's Agent, and compared with the original: but why the *value* does not agree exactly with the *quantity* was not explained.

49,557½ } Barrels at 6*s* : 3*d*. would produce { £ 15,486 : 14 : 4½
49,063½ } { £ 15,332 : 6 : 10½
47,861½ } { £ 14,956 : 14 : 4½

the great difference in the last year, is caused by the price having been raised to 8*s* : 8*d*. in November 1799, and which is not taken into account.

Expence of the Colliery from 5th January 1799 to 28th December 1799, was £.14,563 : 4 : 9*d* : the clear profit, £.3,371 : 6 : 6*d*.—Coals landed, 58,740 barrels:—sold, 47,794½.—Expence from 28th December 1799 to 27th December 1800, was £.17,599 : 16 : 9½*d* : clear profit, £.5,884 : 4 : 6½*d*.—Coals landed 56,100 barrels:—sold 50,540½.

APPENDIX.

NO. I.

THE

REPORT

OF

WILLIAM CHAPMAN, ENGINEER,

ON

THE PRACTICABILITY AND EXPENSE

OF MAKING

A NAVIGABLE CANAL,

FROM

THOMASTOWN TO KILKENNY.

ADDRESSED TO

THE RIGHT HON. THE EARL OF ORMONDE.

THE

REPORT

OF

WILLIAM CHAPMAN, ENGINEER,

ON THE MEANS OF MAKING

A NAVIGABLE CANAL,

FROM THOMASTOWN TO KILKENNY.

To the Right Honorable the Earl of Ormonde.

MY LORD,

YOUR having requeſted me to write not only on the means of carrying this canal into execution, but alſo on the probability of profit to the ſubſcribers, has been the cauſe of delaying this report, in expectation of receiving the moſt authentic intelligence, that could be obtained, of the probable amount of the articles, that would be conveyed up or down the line. After thus accounting for its detention, I will now, my Lord, proceed to the profeſſional part of it, and give you my ſentiments on the moſt effectual and advantageous mode of making a navigation from *Thomaſtown* to *Kilkenny*.

From the high ground every where bounding the vale of the *Nore*, and frequently verging on the banks of the river, there is no poſſibility of leaving it ſo as to ſhorten the diſtance, and be every where out of the influence of its floods; yet, by means that are no way coſtly, and to which I ſhall ſhortly advert, a navigation more free from inconveniencies, and replete

with advantages, than the generality are, may eaſily be effected.

The continuing in the beds of rivers, even when running through flat countries little ſubject to floods, is found with very few exceptions inferior to parallel cuts; but in thoſe liable to a ſudden riſe of water, the idea of making them navigable is totally reprobated, as alſo is the entering into them at all, if poſſible to be avoided without greater inconveniencies.

As, on examining the plan accompanying this report, you will ſee that I have not availed myſelf of a conſiderable portion of the old navigation on the eaſt ſhore, or of the deep reach of the river below *Sheeſtown Mill*, and have preferred cutting through the high point below the third lock, to the entering into the river to paſs round it, it will be neceſſary to give you my reaſons, and I cannot do it more forcibly than by pointing out the ills attending an adoption of the old line.—The firſt that I ſhall notice is, that wherever a river is entered, unleſs in holding ſoils, a very great expence is incurred in keeping out water, while ſinking and laying the foundation, and building the lower part of the lock. A like difficulty occurs, when any repairs are wanted. And likewiſe, on leaving the river, there is a neceſſity of a flood lock, with two pair of gates, equal to the riſe of the river in floods; or otherwiſe, that the firſt lock below it, ſhall have its walls and gates raiſed, ſo much the higher than its intended fall, as that riſe ſhall be; to theſe muſt be added, the expence of maintaining the weirs, to keep up the head of water, and alſo occaſionally drudging away the ſand and gravel, that the river may have depoſited.

Theſe circumſtances operate equally, whether you enter or leave the river, on the ſame ſide, or croſs it.

The latter caſe, however, involves more difficulties; as, from the boats quitting the ſhore, they are, in floods, more liable to be carried down with the current, and deſtroyed.

The deep reach of the river, below *Sheeſtown*, is exceedingly navigable, and a towing path might eaſily be raiſed on its weſt ſhore; but conſiderable danger would ariſe, in turning round the flat land above the *Iſland*; and the boats, in floods, might be carried over the weir—beſides, it would be difficult and expenſive to deſcend upon it, from the old navigation, on account of the ſhoals that lie between the old fifth lock, and the head of this deep water.

I will now in a few words contraſt the advantages and diſadvantages of purſuing the old navigation as far as it went, or of totally following the line I have the honour of propoſing. In the former, from the frequency of croſſing the river; viz.—1ſt. Above Mr. Prim's, common to both lines—2d. Below *Sheeſtown Mill*, and a 3d. time above Mr. Ryan's, the power of tracking by horſes, which is a great ſaving in inland navigations, would be totally precluded, becauſe of the frequent change from ſide to ſide, and the long diſtance to go about; which can only be avoided by the eſtabliſhment of ferries, ſo many of which would be too expenſive. The inconvenience of once croſſing cannot be avoided, without aqueducts, over the *King's River*, and that of *Jerpoint*, a great circuity of courſe, for the purpoſe of getting height for theſe aqueducts, and a vaſt expence, in paſſing under the high grounds above and below *Mount Juliet*, and on the approach to *Thomaſtown*: therefore, as a leſs evil of the two, muſt be ſubmitted to, the other line, in an economical ſenſe, being impracticable.

In the old line, beſides the croſſing three times, there is, as already mentioned, a long continuance

below

below *Sheeſtown Mill*, and an entrance into it, to paſs round the high point.

Theſe circumſtances, when the river is at a mean height, are of no great detriment; but on every flood, be it more or leſs, muſt always be attended with danger, and, at leaſt, with ſuch a degree of it, as to diminiſh the value of any market or paſſage boats; which, in the now propoſed line, I look on as a productive article of revenue.

In the ſection, accompanying the plan, will be ſeen the ſtate of the levels, of the old navigation, where adopted; and alſo that I have, as far as circumſtances would admit, ſuited the falls of the locks to the old levels; which, by attending to the eſtimates of theſe parts, will be found to be productive of conſiderable ſaving. Had it been poſſible to have ſaid ſo much in favour of the locks, the expence would have been greatly reduced; but they, had they even eſcaped the depredations that have been made on them, would have been no further uſeful, than the value of the cut ſtone in their piers; their conſtruction, excluſive of their great width, (upwards of twenty feet) being after the model of thoſe, in the very infancy of aſcending canals, conſiſting of upper and lower gates, ſix to twelve perches aſunder; the interval, between the piers of the gates, being formed with ſloped earthen banks, as in the reſt of the canal, and capable of containing a number of boats; ſo that the water conſumed, and the delay in paſſing any individual boat through a lock, would be enormous indeed.

The new locks I would propoſe to be eleven feet wide in the chamber, and ſixty* feet long in the clear; and to have four feet three inches over the ſills of the gates. Theſe two laſt dimenſions are ſimilar to thoſe

* Thoſe of the Grand Canal are, from ſixty feet ſix inches, to ſixty-three feet.

of

of the locks of the *Grand Canal*, with which you may have ſome, though not much communication; as the paſſage from *Waterford* to *Dublin* will reduce what would go the other way. I am led to recommend a reduction of three feet in the width of the lock, from thoſe of the *Grand Canal*, from various cauſes, viz.—The reduction in the width of bottom, conſequently in the charge of excavation and of land.—The want of neceſſary width between the hills, and the river, in various parts of the line. And the propriety of paying attention to the relative proportions of width, length, and depth of water for boats, that have to navigate a tide-way, which, though they admit of great latitude, may yet be too far extended—for which reaſon, I have rejected the proportions of the *Staffordſhire Navigation*, as their boats, under this circumſtance, are much too narrow for their length and depth;—the chamber of their locks being only ſeven feet wide, and ſeventy feet long. I meaſured one of the largeſt of the Thomastown boats, and found her extreme width to be ten feet nine inches, and length fifty-two feet over all, excluſive of the rudder; thus the ſize of the lock is ſuited to the boats now navigating, and were it calculated for leſs, the ſaving would be inadequate to the loſs of tonnage and increaſe of freight.

Were not theſe reaſons ſufficient to render it unneceſſary to encroach further on your time, I ſhould give ſeveral others, in favour of the dimenſions I have propoſed.

As the eſtimate is full and particular, in the modes of execution of each part of the line, I ſhall only ſay, that the inconvenience of the narrowneſs of ground, under *Sheeſtown*, admits of being remedied, by uniting to the ſhore ſome of the ſmall iſlands that are near it.

The

The fall of the river, from *Kilkenny* to *Thomaſtown*, is ninety-three feet; but, including the riſe of floods, on the firſt and tenth locks, may be accounted 105 feet, as each of theſe locks muſt guard againſt ſix feet riſe at leaſt, from the loweſt water of the river. This fall might have been effected with fewer locks than fourteen, the number I have propoſed, but then the expence of the whole would have been greater;—and, as to the variety of their falls, I have been determined in them, by the convenience of ſuiting the old levels of the canal, and of paſſing under the land arches of *Bennet's* and *Bally-lynch Bridges*; and alſo the peculiar circumſtances of ſuch ground, as I found moſt eligible to paſs through.—Yet, after all, ſhould the work ever be carried into execution, it is probable, that circumſtances out of my power to know, ſuch as the ſolid ſtrata approaching nearer to the ſurface than expected, may occaſion a diverſity both in their fall and poſition; and alſo in their price.

In the eſtimate, which I have made to amount to 19,700*l.* excluſive of land, I have taken care to attend ſo far to all ſuch circumſtances, as might probably occur, as to leave the chance of the expenditure falling ſhort of the eſtimate as great, as of its exceeding; being ſolicitous to avoid the cenſure too juſtly thrown on eſtimates of extenſive works.—I have allowed the locks, and every part of the line, to be ſubſtantially executed; as too great a parſimony in the beginning is attended with a conſtant expence in repairs and alterations.

The width of the bottom of the levels I have, in ſhallow ſinking, eſtimated to be fifteen feet; which will admit two boats to paſs, and allow them to be drawn with more eaſe, and leſs waſte of the banks, from the water paſſing by them. In deeper ſinking, where

where width adds to the expence, or where breadth of ground is wanting, I ſuppoſe the bottom to be only twelve feet; and in the latter caſe I have, according to circumſtances, calculated on a wall being built, on one or both ſides, to contract the width of the ſurface.

Some years ſince, the canal would have been much eaſier to be executed, than at preſent; and the longer it ſhall be delayed, it will be the more impracticable, unleſs the evils, I am about to complain of, be remedied or removed.

I have already obſerved, that the high ground approaches ſo near the river's edge, as not to leave ſufficient room for the canal. Now the flat ſhore, on which, alone, the canal can be carried, has been [in parts that are now deficient] much more extenſive than it is, and it owes its diminution to the mill and fiſhing weirs (but more generally to the latter); for, wherever the force of the current, in floods, is directed to the flat ſhore, which is compoſed of nothing but former depoſits of the river, or what has fallen from the higher grounds, it is, from its looſe texture, gradually undermined, and ſwept away—and as the water, falling over the weirs, is directed againſt the ſhore, immediately below their up-ſtream ends, it follows, that thoſe parts muſt ſuffer rapidly in the beginning, and though leſs ſo, as the ſhore recedes from the ſtream, yet ſtill the decreaſe of it will be progreſſive. To impreſs you more forcibly with this ſubject, I will juſt enumerate the damages, that have already been done.

The firſt is, from the weir of Mr. Colles's Marble Mill, which has occaſioned breaches in the old canal, that will be very expenſive to repair.

The ſecond is, from the weir of Sheeſtown Mill, which has ſwept away ſo much of the low ground, as

to

to occaſion very extenſive breaches in the old canal, on the eaſt ſhore. This, however, will be of no conſequence, if the plan, I have propoſed, be followed; as that ſhore would then be relinquiſhed. Below theſe, there is nothing that affects the propoſed line of canal, until we come below Lord Carrick's demeſne; and from thence, the fiſhing weirs, until oppoſite Mr. Hunt's, (two of them particularly) have done very material damage, and, if ſuffered to continue as they are, muſt, in time, leave no flat ſhore to carry the canal upon.

I muſt not omit noting, that in paſſing through Lord Carrick's demeſne, I have availed myſelf, ſo far as it ſuited, of the canal already made, preſuming that it would not be diſagreeable to his Lordſhip; as it will be equally beautiful in the one caſe as the other, and would prevent a waſte of ground, and ſave ſome expence.

The length of the old canal, ſo far as adopted, incluſive of about ſixty-ſix perches, from *John's-Bridge* to its entrance, is three miles and a few perches; and the remaining, or new part,* rather exceeds ſeven miles. The ground required for which, as obſerved in the eſtimate, will be fifty-ſix acres, and a conſiderable part of it of ſmall value.† I have affixed no price to it, both as being incompetent to the taſk, and preſuming, that the gentlemen, through whoſe grounds it is to paſs, will, not only from public ſpirit, but a conſideration to their own intereſt, ſo far encourage the undertaking, as, in general, to make a preſent of the ground.

* This includes the few perches within the river, as ground will there be wanted for towing paths.

† Part of the ground, beyond the extent of the old canal, is reported to have been already purchaſed.

I now

I now come to the part, that has detained me ſo long, the neceſſary data for which I have been expecting from the cuſtom-houſes of Waterford and Roſs; as Mr. Buſhe was ſo obliging as to ſay he would procure them for me. Although I have no doubt of obtaining them, I am unwilling to defer longer, and, therefore, will proceed to the beſt eſtimate, that my enquiries have enabled me to make, of the profits, that may be derived from the tolls of boats paſſing on the canal.

ESTIMATE

OF THE ANNUAL AMOUNT OF THE TOLLS

OF BOATS PASSING ON THE CANAL,

DOWNWARDS.

		Stone.	*Tons.*
30,000	Barrels of Wheat, at 20		3,750
30,000	Bags of Flour, at 16		3,000
25,000	Barrels of Barley, at 16		2,500
15,000	Ditto of Malt, at 12		1,125
25,000	Ditto of Oats, at 14		2,187
20,000	Cwts. of Oatmeal,		1,000
8,000	Tubs of Butter, at 12		600
6,000	Barrels of Pork, at 2½cwt.		1,000
2,000	Ditto of Beef,		
	Tallow, Hides, &c.		200
	Marble, about		1,000
	Tons,		16,362

	L.	*s.*	*d.*
Eſtimating theſe to paſs, on an average, but eight miles on the canal, and rating the tonnage only at 1½*d.* per mile, the toll would be 1*s* per ton, or	818	2	0
Kilkenny Coals, ſuppoſe 3,000 Tons, at 1*d.* per ton, for an average of 8 miles,	100	0	0

UPWARDS.

3,000	Tons of Timber, Deals, and Iron,			
1,000	Tons of Oil, Spirits, Wine, Salt, Barilla, Dye-woods, Tar, Groceries, &c. &c.			
2,000	Tons of Sea Coal.			
6,000	Tons, at an average of 8 miles, at 1½*d.* per ton per mile,	300	0	0
	Market and Paſſage-boats, at 10*l.* per week,	520	0	0
	Stones, Bricks, Manure, Country Timber, &c. &c. paſſing ſhort diſtances on the Line, may amount to	100	0	0
	Total,*	1,838	2	0

According

* I am confident that the tonnage on the line might be rated one-third higher than it is, (and then it would be below the

According to theſe eſtimates, the annual amount of the tolls, at their loweſt rates per ton, may be about 1,800*l.* and yet I have put down the quantity of each article, in general, leſs than I was told would be its probable amount; ſo that I doubt not, but in the courſe of two or three years, after the navigation ſhould be completed, the amount of the carriage would exceed what I have ſuppoſed, particularly, if it be continued from *Inniſtioge*.

The articles of beef* and pork* from *Kilkenny*, it may be ſaid, are merely ſuppoſitions; but, can there be a doubt, that, if there were an open navigation to *Waterford*, it would be much more advantageous to the country people, to ſlaughter their cattle and hogs at *Kilkenny*, than be at the expence of driving the one, and carrying the other on cars, to *Waterford*; by which, excluſive of the cattle being over-heated, and rendered leſs fit to cure, they ſuffer, conſiderably, in reduction of their weight.—The article of marble,* I have ſuppoſed to be 1000 tons, and, with the cheapneſs derived from water carriage, it is probable, that demands for a greater quantity would ariſe, as its ſales would be extended, not only in this kingdom, but in England.—I have rated the paſſage and *market* boats at 10*l.* per week,† which I think no unlikely produce,

the uſual rates in England).—In this caſe, (leaving the paſſage boats as before,) there would be an advance of 439*l.* making the whole tolls 2,277*l.*

* In the courſe of a very few years, the quantity, and, conſequently, the tolls on the two firſt articles, and on tallow and hides, may reaſonably be expected to increaſe many fold; and the export of marble be more than doubled. Alſo, as the town of Kilkenny would increaſe from its exports, its demand for goods, up the canal, would bear ſome degree of proportion.

† On the Grand Canal, the paſſage boats, alone, yield a profit, clear of all expences, of 700*l.* a month.

as for thoſe near the line of the canal, it would be the cheapeſt conveyance for themſelves, and their articles, to the markets of *Kilkenny* and *Thomaſtown.**

In fine, admitting that the tolls, in place of being very productive, were the reverſe, which is very improbable, it would be highly the intereſt of the proprietors of the land, through and near which the canal will paſs, to carry the plan into execution, as affording opportunities of carrying away the products of their eſtates at an eaſier rate—it increaſes their demand, and enhances their value, as experience univerſally proves:—lands, through which canals are carried, having riſen 50 to 100 per cent., and much more. That the town of *Kilkenny* is deeply intereſted in the event, is a poſition ſo obvious and incontrovertible, that the traders and manufacturers of the place muſt find themſelves concerned to promote it; as its conſequence would be, a great increaſe of the town, from its becoming, like *Waterford*, an emporium for timber, iron, ſugar, and all foreign products neceſſary for the conſumption of the neighbouring country; and, alſo, for the export of all their produce, whether in manufactures, grain, or cattle.

After what has been already advanced, I need not impreſs you with the neceſſity of ſpeedily carrying the plan into execution; and, alſo, of the promoters putting in their claims for the ſhare of parliamentary bounty, that the undertaking woud be deſervedly entitled to.

* The paſſage from Thomaſtown to Kilkenny might, incluſive of paſſing the thirteen locks, (each of which may be gone through in three minutes, in the manner I would propoſe them to be conſtructed) be made in three hours and a quarter, or leſs. The boats need only ply on the market days of theſe places.

Experience

Experience goes in aid of common reaſon to prove, that, when the work is begun with, the commencement muſt be at *Thomaſtown*; as, then, advantages will gradually follow its progreſs.

In the preſent ſtate of the navigation from *Inniſtioge*, the boats will not be able to come up, or go down, fully laden; but the command of water to ſupply your locks will enable you to put up with that inconvenience, as, in ſome inſtances, it would be attended with a greater, to have the boats deſcending to ſtop at *Thomaſtown*, to put out part of their cargoes into others; or in going upwards, from that place, to wait for the taking in the loadings of other boats.

Though the navigation from *Thomaſtown* to *Kilkenny* will, in all probability, pay itſelf well, yet, I am decidedly of opinion, that it would pay much better, were it, at the ſame time, complete from *Inniſtioge* to *Thomaſtown*; and, alſo, that the tolls of that part of the navigation would pay much more than thoſe of any other part of equal diſtance; for, it is evident, that almoſt the whole of what paſſes along the upper navigation would paſs through the lower, *which, at the ſame time, would excluſively enjoy* the trade from *Waterford* and *Roſs*, to and from *Thomaſtown*, and the adjacent country. For theſe reaſons I would ſtrongly recommend, that, whenever parliament ſhall be applied to, for incorporating a company, for carrying on a navigation to *Kilkenny*, the ſpace from *Inniſtioge* to *Thomaſtown* be included.

An eſtimate of the expence of it is out of my power to give, not having ſurveyed it; but, from what I ſaw, in riding along the banks of the river, I ſuppoſe it will coſt much in the ſame proportion, as from *Thomaſtown* to the commencement of the old canal.

Your

Your patriotic endeavours, to promote what will ſo eſſentially redound to the proſperity of the county of Kilkenny, and to the intereſt of the kingdom at large, I hope, will be crowned with their merited ſucceſs:— And I have the honour to be,

MOST RESPECTFULLY,

MY LORD,

YOUR OBEDIENT HUMBLE SERVANT,

OLD-TOWN, NAAS,
JUNE 22, 1787. WILLIAM CHAPMAN.

The Right Hon. the Earl of Ormonde,
CASTLE—KILKENNY.

ESTIMATE

OF THE EXPENSE OF MAKING A

NAVIGABLE CANAL,

FROM KILKENNY TO THOMASTOWN.

First, Second, and Third Levels, 490 *Perches, viz.* — 420 *Old Canal.* 70 *New.*

	£.	s.	d.
1. To cleaning out 80 perches of the first, second, and third levels, on an average of 5 feet sinking, 16 feet breadth of bottom, and slopes 3 to 2.—91 C. yards, at 3½*d.* equal to 1*l.* 6*s.* 6*d.* per perch,	106	0	0
2. To clearing out 330 perches of the same levels, on an average of 2 feet 6 inches—40 C. yards at 3½*d.* equal to 11*s.* 8*d.* per perch,	192	10	0
3. To the first 30 and last 10 perches of the new cut, at the end of the third level, to avoid entering the river; average sinking 4 feet 6 inches—83 C. yards, at 3½*d.* 1*l.* 4*s.* per perch,	48	0	0
Sodding, side lining, and puddling, at 1*l.* 5*s.* per perch,	50	0	0
4. To 30 perches of the new cut, in passing the face of the hill, two thirds of which will average 18 feet cutting, on the side next the hill. The whole, including the walls, I estimate at,	330	0	0

Fourth Level—248 *Perches, viz.* — 220 *Old Canal.* 28 *New.*

5. To cleaning out the first 110 perches of the fourth level—rather uncertain, but from what I can judge, from where I founded the stream that ran through this part, may average about 8*s.* per perch,	44	0	0
	770	10	0

	£.	s.	d.
Brought over - - - - - - - -	770	10	0
6. The remaining part of this level, from the dam to the old fourth lock, is 110 perches, 80 of which are nearly perfect. The cleaning out of the whole, inclusive of securing the opening in the bank, may amount to	15	0	0
7. To closing the breaches, and securing the part of the canal bank, that is wasted, by the direction of the current over the weir of the marble mill—uncertain, without a minute investigation, but may cost about,	200	0	0
8. To 28 perches of new cut, to the end of the fourth level, inclusive of sodding, backing, and puddling, at 2*l.* 10*s.* - - - - - - - - - - - - - - - - -	70	0	0
Fifth Level—370 Perches—New Canal.			
9. To 75 perches, commencement of the fifth level, average sinking 6½ feet, breadth of bottom 15 feet, and slopes 3 to 2—124 C. yards at 3½*d.* —36*s.* per perch, - - - - - - - - - -	135	0	0
10. To 155 perches of the fifth level, under the steep ground above and below Mr. Butler's, of Sheestown, will, inclusive of walling, where requisite, and of excavation, puddling and sodding, cost, in different places, 3 to 7*l.* per perch, and may average	775	0	0
11. To 30 perches of the fifth level, to the short rock of Sheestown mill—sinking 4 feet, and breadth of bottom 15 feet—65 C. yards. Side lining and sodding at 35*s.* - - - - - -	42	10	0
12. To cutting away the rock, to pass behind Sheestown mill, for a length of about 15 perches, the stone of which will answer for the rubble work of the fifth lock, and, therefore, shall only estimate those 15 perches at 3*l.* per perch, - - - - - - -	45	0	0
	2053	0	0

	£.	s.	d.
Brought over - - - - - - - - -	2053	0	0
13. To cutting and embanking the remainder of the fifth level, 95 perches, at an average of 2*l.* 5*s.* - - - - - - -	213	15	0
Sixth Level—265 *Perches*, *viz.* - - - - - - - - - - { 155 *New.* 110 *Old Canal.*			
14. To cutting and embanking the fixth level to the mill, at the entrance of the old canal, 155 perches, at an average of 2*l.* 10*s.* - - - - - - - - - -	387	10	0
15. Extra cutting, in the face of the hill, above the mill, and ſecuring the outer bank of the canal, - - - - - - -	30	0	0
16. Clearing out the canal, to Bennet's-bridge, 110 perches, about 30 of which are complete, and the remaining 80 may average 24*s.* - - - - - - -	96	0	0
Seventh Level—262 *Perches*, *viz.* - - - - - - - - - - - - - { *Old* 150. *New* 102.			
17. To clearing out the canal, 110 perches, at an average of 17*s.* 6*d.*	83	15	0
18. To the end of the old canal is 40 perches more, which is nearly, if not quite, complete.			
19. To cutting, embanking, and completing the remainder of the ſeventh level, about 102 perches, at an average of 2*l.* - - - - - - - - - - - - - - -	204	0	0
Eighth Level—230 *Perches.*			
20. To 70 perches of deeper cutting and embanking, at the extremities of the level, at an average of 3*l.* - - - - - -	210	0	0
21. To 160 perches of level cutting, viz. 5 feet, and where the excavation will form the banks, including ſodding, at 40*s.* - - - - - - - - - - - -	320	0	0
Ninth Level—195 *Perches.*			
22. This level, as the embankment, where the bottom of the canal approaches near the ſurface, is partly formed by the riſing ground on each ſide, may average about 45*s.* - - - - - - - - - -	238	15	0
	3836	15	0

	L.	s.	d.
Brought over -------	3836	15	0

Tenth Level, (inclusive of the River,) 190 *Perches.*

23. To cutting 8 perches, on the entrance of the river, below the ninth lock—average depth, 10 feet 6 inches, width of bottom, 12 feet, and slopes 5 to 3, equal to 241 cube yards per perch, at 5*d.* to 5*l.* ----------	40	0	0
24. Keeping out the water, in the lower part of the sinking, and taking away the dam, uncertain, suppose -----	10	0	0
25. To sinking 142 perches, from the entrance on the east side of the river, to the lock at Bally-lynch-bridge, average depth, 8 feet, width of bottom, 12 feet, 150 C. yards, at 4*d.* to 2*l.* 5*s.* ----------	319	10	0
26. To extra expence, in walling, to contract the canal, to pass between William Brenough's mill and dwelling house, ----------	20	0	0
27. To 60 perches of embanked towing path, viz. 40 on the east side, and 20 on the west side, of the river, at the passing place.—Height of embankment, 4 feet; width at top, 10 feet; outside slope, 3 base to 2 in height; quantity, 48 cube yards per perch, at 6*d.* per yard, is 24*s.*	72	0	0

Eleventh Level—240 *Perches.*

28. To sinking and embanking, against floods, the first 25 perches at 3*l.*	75	0	0
29. To deepening 75 perches of the canal, in Lord Carrick's demesne, about 14*s.* per perch, -------	56	5	0
30. To forming the remaining 140 perches of the eleventh level, at 45*s.*	315	0	0

Twelfth Level—280 *Perches.*

31. To cutting the 110 perches, at an average of 45*s.* ----------	247	10	0
	4992	0	0

	£.	s.	d.
Brought over - - - - - - -	4992	0	0
32. Sixty perches of the remaining 170 at three different places, at No. 41, No. 41, ad. and between No. 42, ad. and No. 43, will require cutting off the hill ſide into the rock, and walling without, and, as the ſtone will moſtly come into uſe in the adjoining locks and wall, may eſtimate this at only 5*l.* per perch,	300	0	0
33. As about one-third of the reſidue of the 170 perches will require walling, the average will, incluſive of puddling, be about 3*l.* - - - - - -	330	0	0
Thirteenth Level—260 *Perches.*			
34. To cutting, embanking, &c. of 260 perches, at an average of 45*s.*	585	0	0
Laſt, or Fourteenth Level—103 *Perches.*			
35. To cutting 103 perches, at an average of 6½ feet depth and ſodding, at 50*s.* - - - - - - - - - - - - - - - - - -	257	10	0
36. Back drains and fences behind 2275 perches of the new cut and lock ſeats at 3*s.* 6*d.* - - - - - - - - -	398	2	6
Forming and gravelling the roads, at an average of 28*s.* per perch,	303	1	4

ESTIMATE OF STONE WORK.

	£.	£.	s.	d.
Fourteen locks of 11 feet width and 63 feet length in the chamber, at an average of above 7⅓ feet fall, incluſive of the extra riſe of the firſt and tenth locks, to guard againſt floods, at 600*l.* - - - - - - - -	8400			
Keeping dry the foundations of the two locks deſcending on the river, viz. the ninth and fourteenth—very uncertain, as they muſt be 6 to 7 feet below the ordinary ſurface of the river, and the quality of the ground untried—but ſuppoſe 50*l.* each, - - - - - -	100			
		8500	0	0
		15665	13	10

		£.	s.	d.
Brought over - - - - - - - -		15665	13	10
Fourteen lock-houſes at 40*l.* - - -	560			
Securing the foundation of the piers of the greater land arch at Thomaſtown, and clearing the tail of the fourteenth lock, alſo uncertain, but ſay,	100			
Bridge in Lord Carrick's demeſne,	120			
Land communication bridges, about ten, at 40*l.* - - - - - -	400			
Four large tunnels, at 40*l.* - - - -	160			
Six ſmall ones, to paſs the water from the hills, at 25*l.* - - - -	150			
		1490	0	0
Incidents, temporary damages to land, and ſuperviſal, 15 per cent.		2573	7	0
		£.19729	0	10

Purchaſe of lands on ſeven miles, at an average width of four perches, will be 56 acres; near one-half of this is on ſwampy grounds, (on the inner ſide of the flat lands, at the foot of the hills) which do not appear capable of producing to the proprietors 5*s.* per acre rent—the reſt is chiefly on river meadow.

N. B. The uſual mode, when the land is not given, is to value it at eighteen years purchaſe.

OLD TOWN, NAAS,
JUNE 22, 1787.

WILLIAM CHAPMAN.

APPENDIX.

NO. II.

REPORT

ON

LINES OF NAVIGATION

FROM

KILKENNY.

REPORT

ON

LINES OF NAVIGATION

FROM

KILKENNY.

GENTLEMEN,

YOUR intended bill for the Kilkenny Navigation having been withdrawn this ſeſſion, on account of want of compliance with the parliamentary reſolutions of 1788, (of which I ſent you a copy) you have of courſe more time to reflect on what is neceſſary to be done: and, if you adopted any particular plan, without full inveſtigation of its comparative merits, I ſhould feel myſelf to blame; *if it aroſe from my not informing you of ſuch general outlines as I am poſſeſſed of.*— The only line, in reaſonable competition with the River Navigation, is from Kilkenny, by a little *ſouth of Gowran*, to a little *north of Gore's-bridge:* and to aſſiſt you in your deciſion, I ſhall firſt ſtate the comparative falls and diſtances on each line; accompanied with ſuch remarks as occur to me, in favour of each.

RIVER

RIVER NAVIGATION.

FROM KILKENNY TO	Distance.	Total distance.	Distance chargeable with tolls	Distance of free navigation.	Rise or fall.	Total of rise and fall.
	Miles	*M.*	*M.*	*M.*	*Feet.*	*Feet.*
Thomaſtown, - - - - - - -	9¾				93	
End of Inniſtioge Canal,	5¼	15			ab. 20	113 above the tide
Parting Water, - - - - - -	ab. 5	20	15	5		
Scars of St. Mullins, - - -	ab. 5	25				
Gore's-bridge, - - - - - - -	10½	35½	25½	10	ab. 75	188

ADVANTAGES.

1. In going from Kilkenny to Waterford, *Parting Water* is a point *common to both navigations;* and by the above table it appears the paſſage by the river is *near five miles ſhorter*, and will be chargeable with about *four miles and a half leſs toll.*

2. By the river navigation, *the city will have a more general and eaſy acceſs* to the navigation-boats: becauſe, by the other line it would be expenſive and improper to deſcend into the town; and, therefore, the *level of the loweſt paſs between Gore's-bridge and Kilkenny* ſhould not be departed from, but continued to ſome ſuitable baſon, on the eaſt ſide of the town; which, however, would not be very inconvenient, as I *conceive the line will paſs below the turnpike gate on the Dublin road.*

3. The country, in the vale of the Nore below Kilkenny, will receive the advantages of navigation, in a greater degree than it does now, or will do by the other line.

NAVIGATION BY GOWRAN.

FROM KILKENNY TO	Diſtance.	Total diſtance.	Diſtance chargeable with tolls.	Diſtance of free navigation.	Riſe and fall.	Total of riſe and fall.
	Miles.	*M.*	*M.*	*M.*	*Feet.*	
Gore's-bridge, - - -	ab. 9		9		125	Suppoſed fall from the ſummit between Kilkenny and Gowran.
Scars of St. Mullins,	10½	19½			75	200 Suppoſed height above the tide
Parting Water, - - -	5	24½	19½	5		

ADVANTAGES.

1. In going to Dublin, the Gowran line appears to be *upwards of twenty-ſix miles ſhorter*, and chargeable with *ſixteen miles leſs toll.*

2. By the river, the navigation would be precluded from extending further into the country, *on account of the neceſſity of a great aſcent;* but by this line, the canal, being about eighty feet above the level of the river, may probably be extended *without a lock*, to Freſhford, or to Ballyragget, and with a riſe of *only three or four locks* to Caſtle Durrow.

The charge of the line, by Gowran to Gore's-bridge, will probably be leſs expenſive than the line by the river to *Thomaſtown only.*

The ſum requiſite to complete the navigation from Thomaſtown to Inniſtioge, may be ſpared; or if ſubſcriptions to that amount can be had, the line to Freſhford, or to Ballyragget, may probably be executed for the ſame amount; *incluſive of the expenſe of an aqueduct* over the Nore, or over the Dinan, according as the banks of theſe rivers may point out.

3. The country *above* Kilkenny will be rendered navigable; and *the produce of the country to the eaſtward of Thurles be drawn off by this channel.*

I have

I have now diſpaſſionately ſtated the advantages of either line, and ſhall only add a few general remarks.

If the Gowran line take place, the commerce from Kilkenny to Dublin will probably be two-fold what it would be by the circuit of going down the Nore, and up the Barrow: *therefore*, the Barrow Navigation Company *will be ſo much benefited*, that I conceive they will find it their intereſt to *concede to you ſuch a reduction of toll in your trade to Waterford*, as will put you nearly on the ſame footing as if you went the direct rout.—What I would preſume to recommend to you, is, that as your commerce to Waterford is the moſt conſiderable by far, as to tonnage, the Barrow Company ſhould, *as an inducement to your adoption of the Gowran line*, be requeſted to enter into an agreement with you, that veſſels navigating that canal ſouthwards ſhould be charged with *no more tonnage, than on the difference of the length between the Gowran canal, and the navigation by the Vale of the Nore, to Inniſtioge:* viz. according to the diſtances I have given you, *on ſix miles only, in place of ten and a half*, by which means the Waterford commerce would ſuffer only the charge of a few hours additional boatage.

Several of the heights and diſtances, I have given you, are *only approximate;* but if you propoſe to carry any works into effect, the whole ought ſpeedily to *be aſcertained;* to give you time to take the neceſſary ſteps, previous to the next ſeſſion of parliament, which in all probability may commence more early than uſual.

I AM, VERY SINCERELY,

GENTLEMEN,

YOUR OBEDIENT HUMBLE SERVANT,

DUBLIN,
JULY 2, 1793.

WILLIAM CHAPMAN.

Gentlemen of the Committee of the Kilkenny Navigation.

The annexed eſtimate of the probable expenſe of the navigation from Thomaſtown to Inniſtioge is founded on the plan and obſervations made by Mr. Lanigan; and will depend on their accuracy, which I have no particular reaſon to doubt.

ESTIMATE

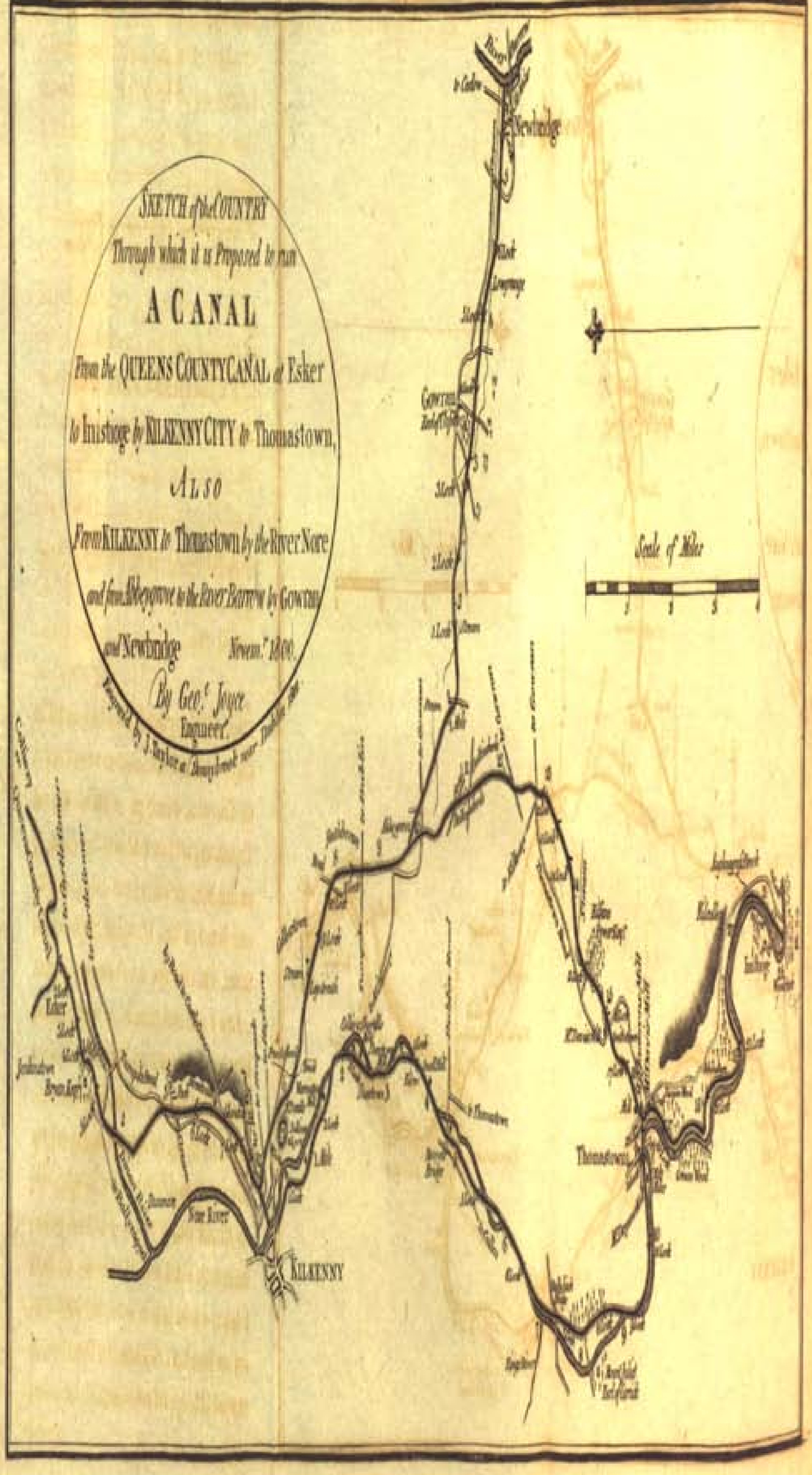
ESTIMATE

OF A

NAVIGATION FROM THOMASTOWN TO INNISTIOGE.

	£.	s.	d.	£.	s.	d.
530 Perches of canal, average 9 feet depth, at 6*l.* 15*s.* 0*d.*	3577	10	0			
345 Do. of do. 7 feet, at 3*l.* 10*s.* 0*d.*	1207	10	0			
380 Do. of do. 5 feet, at 2*l.* 0*s.* 0*d.*	760	0	0			
320 Do. of towing path, on the banks of the river, at 15*s.*	240	0	0			
				5785	0	0
Six locks, at 600*l.*	3600	0	0			
Weirs to raiſe the water into the canals, about	350	0	0			
Towing path bridges over rivulets,	150	0	0			
				4100	0	0
Repairs of Inniſtioge lock and canal, &c.				400	0	0
				10285	0	0
Temporary damage to land, incidents on river navigations, ſuperintendence, &c. 20 per cent.				2057	0	0
Land on an average width of 4½ perches, on the whole diſtance of 1575 perches, will be 44*a.* 1*r.* 7½*p.* ſay 44¼ acres, which at 50*s.* per acre, and eighteen years purchaſe, amounts to 45*l.* per acre,				2002	10	0
				14344	10	0

APRIL, 1793. W. CHAPMAN.


SKETCH of the COUNTRY
Through which it is Proposed to run
A CANAL
From the QUEENS COUNTY CANAL at Esker
to Inistioge by KILKENNY CITY & Thomastown,
ALSO
From KILKENNY to Thomastown by the River Nore
and from Bleyonre to the River Barrow by Gowran
and Newbridge Novem.r 1800.
By Geo.r Joyce
Engineer.
Scale of Miles
Newbridge
Gowran
KILKENNY
Thomastown

APPENDIX.

NO. III.

REPORT

OF

THE PROPOSED CANAL

FROM THE

COLLIERY CANAL

TO THE TIDE WATER AT INNISTIOGE,

BY KILKENNY CITY AND THOMASTOWN,

FROM

KILKENNY TO THOMASTOWN,

BY THE RIVER NORE,

AND

A BRANCH FROM THE GENERAL LINE AT

ABBEY GROVE TO THE RIVER BARROW,

BY GOWRAN, NEWBRIDGE, *&c.*

BY GEORGE JOYCE, ENGINEER.

REPORT

OF

THE PROPOSED CANAL,

FROM THE

COLLIERY CANAL, &c.

To the Right Honorable the Earl of Ormond and Oſſory.

MY LORD,

AGREEABLE to your inſtructions I proceeded to the Colliery Canal, near Eſker; took levels from thence to the Tide water, at Inniſtioge, by Kilkenny City and Thomaſtown; and from Kilkenny to Thomaſtown, by the river Nore, alſo a branch from Abbeygrove to the river Barrow; a map, ſection, and eſtimate, ſuitable thereto, I have the honor to lay before your Lordſhip.

From a cloſe examination of the country between Eſker and the Dynan river, I took up the levels at a point where I found the level marks left by Mr. Sparks. I proceeded through the lands of Guagerah and Jenkin's-town, leaving O'Brien's houſe to the right, croſſed the turnpike road, at the end of O'Brien's avenue; thence to the Dynan, weſt of Old Bridge; this length I find to deſcend ſo as to require four double locks, and one ſingle lock; then croſſed the Dynan river, by an aqueduct bridge, and embankment, one hundred and

ſixty-four perches in length; thence through the lands of Dunmore, near M'Evoy's farm houſe; thence to the deer-park, leaving Mr. Lawler's houſe to the left, I croſſed the deer-park, eaſt ſide of the turnpike road; thence through Bonnettſrath, croſſed Caſtlecomber road, Glandine, through Brenan's meadows, leaving Great Pond, or Bog, to the left, to the eaſt ſide of Hoſpital; this length is favourable; good cutting requires one double and two ſingle locks, and an embankment on the low lands, north-eaſt of Roch Pond, two hundred and thirty-eight perches in length.

From thence I croſſed the road to Newpark and Heyburn, to the free-ſchool of Brook, leaving Mr. Brownrig's houſe to the left, and Mr. Purcel's to the right; this valley will require an embankment, one hundred and eighty-two perches in length; thence to Legitrath and Cellerſtown, by farm houſes, Ryan and Mooney, to Temple Martin, and Rathboran;—at this place I find it neceſſary to aſcend the ſummit level, by two ſingle and one double lock, to avoid the great expence of cutting, that would be in caſe the long ſummit was continued, which is ſhewn on the ſection; by aſcending as before ſtated, we ſave that enormous expence, and have a ſummit level of near four miles and a half in length, and can be ſufficiently ſupplied with water in every part;—a reſervoir for taking in all the ſtreams and rivulets at Templemartin, and Rathboran, &c. is intended there for that purpoſe.

From thence I continued through the lands of Ballinabook, leaving Cliſden houſe to the left, Abbeygrove, Blansfill's town, the houſe at Abbeygrove to the left; thence through Ballynabola, leaving the caſtle to the right, through Cloghala, leaving Mr. Cramer's to the right, croſſed the road to Gowran, and Thomastown;

town; from thence through the lands of Dungarvan, and of the ſummit level; thence to the roads Kilkenny, Thomaſtown, and Gowran, which I propoſe one bridge to anſwer the three; thence, through the lands of Stroan, to Kilſaine, through the demeſne of Kilſaine, leaving Mr. Power's houſe to the left; from thence to Thomaſtown, at Cody's-bridge, by Davis's mill and ſalt-houſe; to deſcend this will require three ſingle and four double locks, as ſhewn in the ſection; to complete the above, according to the plan, ſection, and eſtimate annexed, will coſt the ſum of 85,396*l.*

From thence I continued by the river Nore, to Dangan; though keeping as cloſe in land as poſſible, there will a lock and weir be required to pond the river; thence by Dangan wood, Brown's barn, Kilcullen, and Inniſtioge; keeping ſtill inland, as much as poſſible, I paſſed by the Great Rock, north of Bridge, by the eaſt land-arch of the bridge; thence, keeping cloſe to the hill ſide, until I meet twelve feet neap tides, and fifteen feet ſpring tides, near Mr. Tighe's improvement.—Immediately at the Prieſt's place, this length from Cody's bridge will require ſix ſingle locks, with neceſſary weirs, and the one next the tide to be made ſuitable thereto;—the eſtimate will be equal to 14,352*l.* making in the whole amount of eſtimates from the Colliery canal to Inniſtioge, the ſum of 99,748*l.* This may be, at the firſt view, conſidered very great, but viewing the improvement, which ſo great a depth of water as the harbour at Inniſtioge preſents to the public, I truſt it will be ſufficient to compenſate amply for the preſent expenſe, great as it may appear; and that, in a very ſhort time, if properly attended to.

Hence, it is evident, having ſo great a communication opened to the county of Kilkenny, gentlemen may carry

on a trade on the canal, independent of any other canal in Ireland, having a ſufficient harbour here to receive ſhipping from any part of Europe, drawing fifteen feet water; alſo, on the lands of Brown's barn, there appear to be ſome ſlate quarries, which may very much add to the trade on this canal, and alſo pay part of the preſent expenſe; theſe advantages are ſeldom found together.

The end next the ſea, which ſeldom fails having a good trade, I would recommend to be the firſt place opened, that the proprietors may be receiving ſome help towards defraying the expenſe of theſe works; in every ſituation of this line of canal, I truſt there will be found the beſt of limeſtone quarries, ſand, &c. ſo that there may be ſufficient materials, timber excepted, found in the excavation, or very convenient thereto; this, in ſome ſituations, may help to moderate the expenſe, if not, it will certainly prevent it from increaſing; in ſhort, viewing the ſituation of the country with every other advantage and property, that appears in favour of this canal, I need not heſitate at ſaying that, in my opinion, it will pay the proprietors as well as any other canal in Ireland.

Before I proceed farther, it may be neceſſary to ſtate why I ſhould propoſe this canal to be thirty-three feet water ſurface, and four feet ſix inches deep, on the cill; this needs very little demonſtration, more than to ſay, that the Grand Trunk canal in England, whoſe width is much leſs, has been found inadequate to the trade of the country; it was one of the firſt executed in England, and few have followed the plan ſince. I have viewed moſt of the canals in England, and the countries they have run through, and comparing the trade that is likely to be carried on in this

kingdom,

kingdom, this country in particular, both from agriculture and manufacture, I think it will be found neceſſary, that this canal ſhould be of the dimenſions I propoſe, and the locks and bridges the ſame as thoſe on the Grand Canal; the Grand Canal Company found it neceſſary to alter their locks, widen and deepen their canal, becauſe their trade required it: few counties in England or Ireland are better ſituated, or more capable of availing themſelves of an extenſive inland navigation, than the county of Kilkenny.

The utility of inland navigation in general, and the benefits, that reſult therefrom to any county, through which they run, are ſo univerſally known and acknowledged, that it is unneceſſary for me to ſay any thing on that ſubject, while the particular advantages, that may be derived to the country from the canal now propoſed, muſt neceſſarily be much better known to the gentlemen reſiding in the country, and who are conſequently better acquainted with the local circumſtances than I poſſibly can, render it unneceſſary for me to ſay any more on that ſubject.

As to the conducting this buſineſs, when the money eſtimated is expended, either by miſmanagement or otherwiſe, in this caſe the engineers are often blamed. This ſhould not be the caſe, as I am confident, the ſum now eſtimated is equal to complete the works in two years, or thereabout, if proper attention is paid, which, I hope, the directors for the management will ſee done, and proper engineers appointed, who have conducted the like works before.

I beg leave to add, that in laying out this canal for execution, ſeveral improvements may be made, and deviations from the preſent lines of the canal; that, which I have taken, may with care and knowledge be

adopted,

adopted, it being impoſſible for any engineer to make the beſt line of canal in firſt taking the levels.

Before I cloſe this report, my Lord, I have alſo taken levels from Kilkenny to Thomaſtown, by the river Nore, and make no doubt of the practicability of making it a navigable canal, keeping inland as much as poſſible, (which may be ſeen by the plan and ſection) for which I have prepared an additional plan of the locks and weirs, with draw cloughs, &c. according to the eſtimate annexed thereto; though ſtill liable to damage and accidents from the floods, the eſtimate for which is 28,993*l.* with the eſtimate from Thomaſtown to Inniſtioge, 14,352*l.* together will amount to 43,346*l.* From Kilkenny to Inniſtioge, this line may be continued to the Dynan river, by the old Dunmore houſe; valuing the purchaſe of land from Kilkenny to Inniſtioge, which I have not taken in the above eſtimates, there would not appear any conſiderable difference between this and the land canal, not by any means equal to the repairs of damage, which may from time to time be found neceſſary, by the river.

I have alſo taken the levels from Abbeygrove to the river Barrow, by Gowran and Newbridge, &c.—The plan and ſection will, I truſt, explain the impracticability of this branch, with the enormous expence of carrying it into execution, and the river Barrow being by no means navigable in that part, the eſtimate for this ſhort diſtance is 24,622*l.* a ſum too great for any trade, that could be carried on between itſelf and that part of the Barrow: if a branch was to take place from the general line to the Barrow, it will be found moſt practicable to run it to Leighlin-bridge, where it will meet the Barrow higheſt, and better finiſhed.

Your

Your patriotic endeavours to promote a buſineſs, that will ſo eſſentially add to the proſperity of the county Kilkenny, and the intereſt of the kingdom at large, I hope, will be crowned with their merited ſucceſs.

I HAVE THE HONOR TO BE,

MOST RESPECTFULLY,

MY LORD,

YOUR OBEDIENT HUMBLE SERVANT,

DUBLIN,
JANUARY 8, 1801. GEORGE JOYCE.

The Right Hon. the Earl of Ormonde and Oſſory,
CASTLE—KILKENNY.

Eſtimate

Estimate from Kilkenny to Thomastown, by the river Nore.

From first and second lock, by Scott's and Sullivan's mills	268	6	0	Limestone, gravel, clay, &c. Old Canal	2	10	670	0
3 Warrington land old canal	256	4	0	Clay and limestone, gravel	1	10	384	0
4 Kilfara, by Collis', and Shortill's, and Sheestown mills	500	5	6	Do. securing banks	2	0	1000	0
5 Kilrea, Old Canal, to Bennett's bridge	478	3	0	Clay and gravel, joining quarries	1	5	597	10
6 By Maiden Hall, Crossed River, Wollingrange	360	8	0	Do. do. mooreland, some stone	3	0	1080	0
7 Wollingrange, to Ballylinch bridge and canal	394	5	0	Do.	2	0	788	0
8 Earl of Carrick's demesne	202	3	0	Stong clay	1	5	252	10
9 Thence through West Jerpoint	244	5	0	Clay and limestone, gravel	2	0	488	0
10 West Jerpoint	156	6	0	Do. good quarries near	2	10	390	0
11 Do. by Mr. Duggan's mill to Thomastown bridge	192	15	0	Do.	9	0	1728	0
				Total of earth-work			£.7378	0

Eſtimate from Kilkenny to Thomaſtown, by the river Nore, continued.

MASONRY.

12	Single locks, with gates, machinery, &c. complete, backing, puddling, &c. - - -	1100	13200	— —
2	Weirs to head or pond the river, with draws, ſloughs, and complete framing ſet in weirs	526	1052	— —
	Walls to ſtrengthen and ſecure the lock ends, againſt floods and banks in different ſituations	—	600	— —
1	Bridge in the Earl of Carrick's demeſne - - - - - - - -	—	160	— —
10	Occupation and private road bridges - - - - - - - - -	80	800	— —
4	Large tunnels - - - - - - - - - - - -	50	200	— —
6	Small do. for paſſing water from the hills and trackways, &c. - - - - -	30	180	— —
	Raiſing Land Arch, Bennett's bridge, Ballilynch bridge, and ſecuring the abutments of Thomaſtown bridge - - - - - - - - - - -	—	400	— —
	Making and forming 2526 perches of trackways or towing paths - - - -	3s. 6d.	442	1 —
12	Lock houſes - - - - - - - - - - - -	£.50	600	— —
	Harbour walls, banking, &c. at Thomaſtown - - - - - - -	—	200	— —
			25212	1 —
	Contingencies unforeſeen and extra expence on ſaid eſtimate, at 15 per cent. - -	—	3781	16 —
	Total - - - - - - - - - - -	—	28993	17 —
	Eſtimate from Thomaſtown to Inniſtioge, by the river Nore -	—	14352	10 —
	Total amount of eſtimates from Kilkenny to Inniſtioge - -	—	43346	7 —

N. B. Purchaſe of Land is not included, as I ſuppoſe it is before paid.

Eſtimates continued, from Abbeygrove to the river Barrow, by Gowran and Newbridge.

EARTH WORK.	Level.	Length in Perches.	Average ſinking, &c.	QUALITY OF SOIL.	Rate per Perch.	£.	s.	d.
		Canal to be 33 feet water ſurface, and 4 *f.* 6 *in.* deep on the cills.						
From Abbeygrove, Blansfilſtown, and Claſſwilliam, &c.	1	532	8 o	Strong clay and gravel	2 12	1383	4	—
Claſſwilliam common, moorland	2	140	9 o	Ditto mooreland, clay and gravel	3 0	420	0	—
Do. towards Gowran by Millrace, do.	3	144	8 o	Ditto do. do. and ſtone	2 12	374	8	—
Croſſed road to Gowran by Flower mill, Clifden demeſne, &c.	4	250	6 o	Yellow clay, limeſtone, gravel and quarry	1 10	375	0	—
Low range	5	112	8 o	Ditto and gravel	2 12	291	4	—
Ditto by Gowran road	6	168	9 o	Ditto	3 0	504	0	—
Ditto by ruins of old building	7	240	6 o	Ditto and part rock	1 10	360	0	—
Thence to the Barrow by Newbridge	8	104		Clay and gravel, quarry, &c.	2 10	260	0	—
Excavating and embanking reſervoir near Claſſwilliam						200	0	—
				Total of earth work		4167	16	0

Eſtimate

Eſtimate from Abbeygrove to the river Barrow, by Gowran and Newbridge, continued.

MASONRY.

	£.	£.	s.	d.
2 Double locks, with gates, machinery, &c. complete, backing, puddling, &c. - -	2100	4200	—	—
1 Do. do. do. do. with bridge, do. - - -		2300	—	—
5 Single locks, do. do. do. - - -	1100	5500	—	—
5 Supply tunnels, &c. - - - - - - - - - - -	50	250	—	—
4 Public road bridges - - - - - - - - - - -	250	1000	—	—
5 Private road bridges - - - - - - - - - - -	150	750	—	—
8 Occupation do. - - - - - - - - - - - -	50	400	—	—
8 Lock houſes - - - - - - - - - - - -	50	400	—	—
Harbours or quay walls at Gowran and New Bridge - - - - - -		200	—	—
Making and forming 1760 perches of trackways or towing paths - - - - -	3s. 6d.	318	—	—
		19485	16	—
Contingencies unforeſeen, and extra expences on ſaid eſtimate, at 15 per cent. - -		2922	15	—
82 Acres of land, at 1l. 18s. per acre, and eighteen years purchaſe - - - -		2214	—	—
Total - - - -		24622	11	—

Eſtimates.

Eſtimate of the Expenſe of making a navigable Canal from the Colliery, or Queen's County Canal, near Jenkinſtown to Thomaſtown, by Kilkenny City, &c. &c. &c.

Canal to be 33 *f.* water ſurface, and 4 *f* 6 *in.* deep on the cill.

EARTH WORK.	Level	Length in Perches.	Average ſinking &c. *f.* *in*	QUALITY OF SOIL.	*L.*	*s.*	*d*	*L.*	*s.*
Excavation and embanking from Colliery Canal lands at Eſker	1	70	15 0	Clay and gravel	8	8	0	588	0
Ditto, at Greaguerah	2	124	18 0	Ditto	12	10	0	1550	0
Ditto	3	74	15 0	Ditto	8	8	0	621	12
Ditto, lands of Jenkinſtown	4	108	8 6	Ditto	2	14	0	291	12
Embanking, puddling, &c. Dynan valley, aqueduct bridge, &c.		164	20 0	— — — — —	25	0	0	4100	0
Excavation, lands of Dunmore deerpark, &c.	5	370	5 6	Yellow clay, limeſtone, gravel, &c.	1	6	0	481	0
Ditto, and Bonnetſtrath	6	374	3 0	Ditto, and limeſtone	0	12	0	224	8
Glandine	7	162	9 0	Ditto, clay and gravel	3	0	0	486	0
Embanking the low lands, eaſt of Roch Pond	8	238	8 0	—— — — — —	6	10	0	1547	0
Excavation through the lands, eaſt ſide of Mr. Purcell's	do.	100	3 0	Strong yellow clay and gravel	0	12	0	60	0
Embanking acroſs Freeſchool brook and valley	do.	182	10 0	—— — — — —	7	10	0	1365	0
Excavation, lands of Cellerſtown	do.	232	4 0	Ditto ditto	0	17	0	197	4
Ditto, to Templemartin	9	116	8 0	Clay and gravel, ſtrong moorland	2	12	0	301	12
Ditto, Templemartin to Rathboran	10	168	10 6	Strong bog, yellow clay, on gravel bottom	4	5	0	714	0
Ditto, Rathboran, acroſs Turnpike, Ballynamona, Blansfieldstown, Ballynabola, Cloghala, by Dungarvan, &c.	11	1400	12 0	Yellow clay, limeſtone, gravel, moorland and ſome quarry	6	0	0	8400	0
Ditto	12	60	9 0	Ditto, limeſtone gravel and looſe rock	3	0	0	180	0
Ditto, acroſs roads to Gowran, Kilkenny, and Thomaſtown	13	94	6 0	Ditto,	1	10	0	141	0
Lands of Strone	14	236	6 0	Yellow clay, gravel, &c.	1	10	0	354	0
Kilfaine	15	112	8 0	Ditto and ſome ſtone	2	12	0	291	4
Ditto, to Davis's mill and ſalthouſe	16	162	11 0	Ditto, gravel and ſtone	4	15	0	769	10
Thence to Thomaſtown, at Cody's bridge	17	152	14 0	Ditto, and moorland	7	15	0	1178	0
Excavating and emkanking the reſervoir, at Templemartin	-	-	-	- - - - - -				200	0
				Total of earth work				£.24041	2

Estimate of the Expense of making a navigable Canal, &c. continued.

		£.	£.	s.	d.
	MASONRY.				
10	Double locks, with gates, machinery, &c. complete backing, puddling, &c.	2100	21000	—	—
8	Single do. do. do.	1100	8800	—	—
11	Public road bridges, 21 feet in the clear (including turnpikes) 30 feet in the clear	250	2750	—	—
1	Small aqueduct bridge, Comer road, one arch, banking, puddling, &c.	—	400	—	—
30	Occupation and private road bridges	100	3000	—	—
8	Supply tunnels	40	320	—	—
2	Overfalls, &c.	40	80	—	—
1	Off-take tunnel at Kilkenny, &c.	—	200	—	—
18	Lock houses	50	900	—	—
	Harbour walls, excavation, &c. at Kilkenny	—	400	—	—
	Do. do. Thomastown	—	200	—	—
	Making and forming 5280 perch of trackways or towing paths	3*s.* 6*d.*	924	—	—
	Building aqueduct bridge over Dynan river	—	3808	—	—
			66823	2	—
	Contingencies unforeseen, and extra expences of the above estimate, at 15 per cent.	—	10023	—	—
150	Acres of land, average value 1*l.* 18*s.* per acre, at eighteen years purchase	—	8550	—	—
	Total	—	85396	2	—
	Estimate from Thomastown at Cody's bridge, to the tide water at south side Innistioge	—	14352	10	—
	Total amount of estimate, from the colliery canal to Innistioge, by Kilkenny city	—	99748	12	—

Estimates

Eſtimates continued, from Thomaſtown to the Tide Water at Inniſtioge.

Canal to be 33 feet water ſurface, and 4 *f.* 6 *in.* deep on the cill.

EARTH WORK.	Level.	Length in Perches.	Average ſinking &c.	QUALITY OF SOIL.	Rate per Perch.					
					£.	s.	d.	£.	s.	d.
Cody's bridge, by Davis's mill to Dangan	18 or 1	170	3 0	Good quarry, clay, &c. -	1	5	0	212	10	—
By Dangan wood to Brown's barn -	19 or 2	320	4 0	Part quarry, clay and gravel	1	0	0	320	—	—
Ditto - - - - - -	20 or 3	326	4 6	Clay and gravel, by rock -	1	5	0	407	10	—
Thence to Kilcullen, Dobin's mill, &c.	21 or 4	580	7 6	Ditto - - - -	2	10	0	1450	—	—
To ſouth ſide Inniſtioge bridge - -	22 or 5	140	6 0	Ditto - - - -	2	0	0	280	—	—
To meeting tide water 15 feet ſpring tide	23 or 6	80	7 0	Ditto - - - -	2	10	0	200	—	—
				Total earth work -				2869	10	—

Eſtimate

Eſtimates from Thomaſtown to the Tide Water at Inniſtioge, continued.

MASONRY.

	£.	£.	s.	d.
6 Single locks, including ſix ditto, with gates, machinery, &c. complete backing, puddling, &c.	1100	6600	—	—
3 Weirs to pond the river, with draw cloughs, or doors, with complete framing ſet in ſaid weir	526	1578	—	—
Walling the lock ends to ſecure them from floods, &c.	—	250	—	—
2 Large tunnels	50	100	—	—
3 Small ditto, to paſs water from the hills and trackways	25	75	—	—
3 Occupation bridges	80	240	—	—
6 Lock houſes	50	300	—	—
Harbour walls, embanking, &c. at Inniſtioge	—	200	—	—
Making and forming 1536 perches of trackways, or towing paths	3s. 6d.	268	—	—
	—	12480	10	—
Contingencies unforeſeen, and extra expence on ſaid eſtimate, at 15 per cent.	—	1872	—	—
Purchaſe of land uncertain, ſay 15,000. Total	—	14352	10	—

GEORGE JOYCE, ENGINEER.

APPENDIX.

NO. IV.

RESOLUTIONS,

ESTIMATES, AND REPORTS,

RELATIVE TO THE

CANAL

FROM

MONASTEREVAN TO CASTLE-COMER,

WITH

A MAP OF THE LINE OF COUNTRY

THROUGH WHICH IT IS TO RUN.

RESOLUTIONS, ESTIMATES, AND REPORTS,

RELATIVE TO THE

CANAL

FROM

MONASTEREVAN TO CASTLE-COMER,

&c. &c. &c.

Maryborough, Auguſt 14, 1800.

AT a numerous meeting of the gentlemen of the Queen's County, the following reſolutions were unanimouſly agreed to:

THE HON. W. W. POLE IN THE CHAIR.

RESOLVED,

That a canal navigation, from the Grand Canal at Monaſterevan, paſſing through or near to the towns of Portarlington, Mountmellick, Maryborough, Ballyroan, Ballynakill, Durrow, Balliragget, and the city of Kilkenny, to the collieries of Caſtle-comer, would be highly advantageous to the kingdom in general, and to this county in particular.

That it appears from the eſtimates of Meſſrs. Sparks and Killaly, that the ſaid canal may be completed for a ſum not exceeding 80,000*l.*

That it would be moſt convenient for the execution of this undertaking, if that ſum was divided into eight

hundred ſhares, and ſo many ſhares raiſed by ſubſcription as may be neceſſary, together with the aid of government, to make and complete this navigation.

That a ſubſcription be opened for the ſaid ſhares, and that a committee be appointed to receive the ſame, and alſo to prepare a plan and propoſal, to be laid before the ſubſcribers for their approbation, previous to its being ſubmitted to the conſideration of the Directors of Inland Navigation.

That the Hon. W. W. Pole, the Hon. John Veſey, Charles Coote, Eſq. Charles Doyne, Eſq. John Rochfort, Eſq. Richard Grace, Eſq. and Henry Parnell, Eſq. be appointed to act as the ſaid committee.

RESOLUTIONS OF THE COMMITTEE.

WE, the underſigned, purſuant to our appointment as a committee, to prepare a plan for the intended navigation from Monaſterevan to Caſtle-comer, have agreed upon the following reſolutions:

RESOLVED,

That it appears to us, "that the line ſhould commence at or near the firſt lock on the Grand Canal, after it paſſes the river Barrow, and be continued through the town-lands of Clomanny, Kyleemullen, Lea, Bracklin, Portarlington, Corrig, Kilbride, Woodbrook, Tinnekill, Clonterry, Kilnacaſt, Kilmainham, Ballintaggard, Ine, Knockinagrow, Burris, Maryborough, Ballyroan, Rathmoyle, Ballinakill, in the Queen's County;—Caſtlemarket, Ballyouſcull, Ballinvallagh, Tinnelinton, Stralieugh, Garrangolee, Finnan, Glen of Balliragget, Donoughmore, Conahy, Fowksrath, Shanganah, Swiftſheath, Eſkar, Kilcollin, Kilmocar, Madeline, Liſnefunchin, Newtown, Bance, Ballyhimmen, Ballycomie, and Caſtle-comer, in the county of Kilkenny.

"That the canal be of the ſame dimenſions as the Grand Trunk Canal in England, viz. twenty feet wide, and three feet deep.

"That an off-branch be made to the town of Mountmellick; and that other off-branches be alſo made to the towns of Mountrath, Roſcrea, Caſhell, or Kilkenny, if ſufficient ſubſcriptions are raiſed by thoſe perſons immediately intereſted in the ſaid lines of navigation."

That it will be neceſſary to apply to the Directors of Inland Navigation, for aid to carry into effect this undertaking,

undertaking, and alſo for a charter to form the ſubſcribers into a corporation, with power to hold aſſemblies, to make bye laws, to ſummon juries for valuing lands, to levy tolls, to elect directors annually, to remove directors or other officers, and with ſuch other uſual powers as the preſent Canal companies poſſeſs; and that it will be likewiſe neceſſary to provide, that no perſon be elected a director, unleſs he is poſſeſſed of three ſhares at leaſt, nor act as a director, until he takes ſuch oaths as ſhall be required of him; that 20 per cent. per annum ſhall be called for on the ſums ſubſcribed by each perſon; that the ſhares ſhall be transferable at pleaſure; and, *that, when the whole navigation is completed, every ſubſcriber ſhall become entitled to a ſhare of the full profits, anſwerable to the number of ſhares he may be poſſeſſed of.*

That notice be given to the ſubſcribers, to meet at Mr. Stoker's, at Ballyroan, on Wedneſday, the fifteenth day of October, at one o'clock, and that theſe reſolutions be ſubmitted to their conſideration.

W. W. POLE,
J. VESEY,
C. H. COOTE,
C. P. DOYNE.
J. ROCHFORT.
R. GRACE,
H. PARNELL,

Subſcriptions may be entered with any member of the committee; or, in Dublin, at the bank of Sir T. Lighton, Bart. and Co.

Eſtimate

EARTH WORK.	Canal, 40 feet water surface, and 5 feet on lock cills				
	Length in Perches.	Depth of sinking, &c.	QUALITY OF SOIL.	Rate per Perch, &c.	Amount.
		F. I.		£. s. d.	£. s. d.
Excavation, &c. from head of twenty-fifth lock to river Barrow	15	5 0	Clay, gravel, &c.	3 — —	45 — —
——— from river Barrow to the first lock -	80	10 0	Clay and gravel	7 10 —	600 — —
——— from thence to second lock - - -	1080	8 0	Clay, bog, &c.	5 — —	5400 — —
——— from thence to Maryborough road -	380	8 0	Clay and gravel	5 10 —	2090 — —
——— from thence to Woodbrook rivulet -	320	12 0	Ditto - -	9 2 —	2912 — —
——— from thence to third lock - - -	100	6 0	Ditto and bog	3 10 —	350 — —
——— from thence to point of partition at Kilnacast	540	7 0	Clay and gravel	4 12 —	2484 — —
——— from thence to fourth lock - - -	170	5 0	Clay and loose rock	2 18 —	493 — —
——— from thence to fifth lock - - -	235	4 3	Clay and gravel	2 4 —	517 — —
——— from thence to sixth lock - - -	306	4 3	Ditto - -	2 4 —	673 4 —
——— from thence to seventh lock - -	162	4 3	Ditto - -	2 4 —	356 8 —
——— from thence to eighth lock - - -	142	4 3	Ditto - -	2 4 —	312 8 —
——— from thence to ninth lock - - -	118	4 3	Ditto - -	2 4 —	259 12 —
——— from thence to Maryborough - -	340	5 0	Ditto - -	2 15 —	935 — —
——— from point of partition to Treeogue river	45	4 3	Ditto - -	2 4 —	99 — —
Embankment over Treeogue river - - - -	30	7 0	- - -	5 — —	150 — —
Excavation thence to beyond Nursery - - -	235	5 0	Clay, gravel, &c.	2 12 —	611 — —
——— thence to Mountmellick - - - -	90	12 0	Clay and gravel	9 2 —	819 — —
Making trackways - - - - - - - -	4330	- - -	- - -	0 4 —	866 — —
Sinking foundations for locks, bridges, &c. - - -	- -	- - -	- - -	0 — —	1000 — —
Making boundary drains - - - - - -	9000	- - -	- - -	0 2 6	1125 — —

Eſtimates for propoſed Canal from Monaſterevan to Maryborough and Mountmellick, continued.

MASONRY.	Rate. £.	s.	d.	Amount. £.	s.	d.
* Seven ſingle locks, &c.	950	—	—	6650	—	—
Two ditto, with bridges on tails	1150	—	—	2300	—	—
Nine public road bridges	250	—	—	2250	—	—
Ten private or accommodation bridges	150	—	—	1500	—	—
Aqueduct over river Barrow, &c.	—	—	—	4000	—	—
Aqueduct over Treeogue river	—	—	—	500	—	—
Five large tunnels	100	—	—	500	—	—
Eight ſmall ditto	60	—	—	480	—	—
Two overfalls, two ſupply-tunnels, two offtake-tunnels	—	—	—	160	—	—
Harbours, ſtores, &c. at Maryborough and Mountmellick	—	—	—	6000	—	—
* One hundred and eighty-ſix acres of land, at 1*l.* 18*s.* per, and 18 years purchaſe	31	10	—	5858	—	—
				52295	12	—
Contingencies at 10 per cent.				5230	—	—
Total				57525	12	—

LARGE CANAL.

Line to Maryborough	£.51465
—— to Mountmellick	37500
—— to ſtop at Kilnacaſt	31500

Eſtimates

EARTH WORK.	Canal to be 20 *f.* water surface, and 3 *f.* 6 *in.* deep. Length in Perches	Depth of sinking, &c.	QUALITY OF SOIL.	Rates per Perch.	Amount.
		f. i.		£. s. d.	£. s. d.
Excavation, &c. from Athy canal to the second lock	80	7 0	Clay and gravel	2 10 0	200 0 0
from thence to third lock	1080	6 0	Clay, bog, &c.	2 0 0	2160 0 0
from thence to Maryborough road	380	6 0	Clay and gravel	2 0 0	760 0 0
from thence to Woodbrook rivulet	320	9 0	Ditto	4 0 0	1280 0 0
from thence to fourth lock	100	4 0	Ditto and bog	1 0 0	100 0 0
from thence to point of partition at Kilnacast	540	5 0	Clay and gravel	1 10 0	810 0 0
from thence to fifth lock	170	3 3	Clay and loose rock	1 0 0	170 0 0
from thence to sixth lock	235	3 3	Clay and gravel	0 16 0	188 0 0
from thence to seventh lock	306	3 3	Ditto	0 16 0	244 16 0
from thence to eighth lock	162	3 3	Ditto	0 16 0	129 12 0
from thence to ninth lock	142	3 3	Ditto	0 16 0	113 12 0
from thence to tenth lock	118	3 3	Ditto	0 16 0	94 8 0
from thence to Maryborough	340	4 0	Ditto	1 0 0	340 0 0
from point of partition to Treeogue river	45	3 3	Ditto	0 16 0	36 0 0
Embankment over Treeogue river	30	7 0		4 15 0	142 10 0
Excavation thence to beyond Nursery	235	4 0	Clay and gravel	1 0 0	235 0 0
—— from thence to Mountmellick	90	9 0	Ditto	4 0 0	360 0 0
Making trackways	4330	0 0		0 2 6	541 5 0
Sinking foundations for locks, bridges, &c. &c.	—	0 0		—	1000 0 0
Making boundary drains	9000	0 0		0 2 6	1125 0 0

Eſtimates for the propoſed Canal, &c. continued.

MASONRY.	Rate. £. s. d.	Amount. £. s. d	£. s. d.
* Seven ſingle locks, lock-houſes, backing, &c. - - - -	950 — —	6650 — —	
† Three ditto, ditto, with bridges on tails - - - -	1150 — —	3450 — —	
‡ Nine public road bridges, backing, &c. - - - - -	200 — —	1800 — —	
Ten private or accommodation bridges, &c. - - - - -	100 — —	1000 — —	
Aqueduct over Treeogue river - - - - - - -	—	400 — —	
Five large tunnels - - - - - - - - -	80 — —	400 — —	
Eight ſmall ditto - - - - - - - - -	50 — —	400 — —	
Two overfalls, two ſupply tunnels, two off-take tunnels - - -	—	120 — —	
Harbours at Maryborough and Mountmellick, &c. - - - -	—	800 — —	
140 Acres of land, for canal, lock-gardens, harbours, &c. at 1*l.* 18*s.* per acre, and 18 years purchaſe - - - - - - -	31 10 —	4410 — —	
		29460 3 —	
Officers' ſalaries, incidents, &c. at 15 per cent. - - - - - - -		4419 — —	
Total - - - - - - - - - - -			£.33879 3 0

* The locks to be built in the ſame manner, and of the ſame dimenſions, as thoſe on the Grand Canal.
† The bridges on *public roads*, to be 21 feet wide within the parapets, and to have no trackways under them.
‡ The private bridges to be eleven feet wide within the parapets and have no trackways.

JOHN KILLALY.

EARTH WORK.	Canal to be 20 feet water surface, and 3 *f.* 6 *in.* deep. Length in Perches	Average sinking, &c.	QUALITY OF SOIL.	Rates per Perch.	Amount.
		f. *i.*		*£.* *s.* *d.*	*£.* *s.*
Excavation, &c. from proposed harbour at Maryborough to 12th lock	30	5 0	Clay and gravel - -	1 17 6	56 5
——— from thence to 13th lock - - - -	28	9 0	Ditto - - -	5 0 0	140 0
——— to 14th lock - - - -	71	6 0	Ditto - - -	2 10 0	177 10
——— in townparks - - - -	86	4 0	Ditto - - -	1 5 0	107 10
——— Coolakipparoo (chiefly embankmt.)	64	6 6	- - - - -	5 10 0	352 0
——— to 15th lock - - -	232	3 3	Clay and gravel -	1 0 0	232 0
——— to 16th lock - - -	108	3 9	Ditto, and bog - -	1 0 0	108 0
——— to 17th lock - - -	132	5 0	Moorfoil and gravel -	1 5 0	165 0
——— to 18th lock - - -	62	5 6	Ditto and ditto - -	1 10 0	93 0
——— to Cullinagh ſtream - -	100	4 0	Clay and gravel, ſome moor	1 5 0	125 0
——— to near Ballyroan - -	328	12 6	Bog, clay, and gravel -	7 5 0	2378 0
——— in lands of Ballyroan, Ballymoneen, and Clonbrin -	196	4 0	Bog, clay, and gravel -	1 2 6	220 10
——— Clonbrin and Mounteagle (emb.)	108	9 6	- - - - -	8 10 0	918 0
——— Ballyeagle to Mountrath Road (uneven ground)	204	5 0	Clay and gravel - -	3 0 0	612 0
——— In Rahinabrogue - - - -	80	5 0	Ditto - - -	1 10 0	120 0
——— Ditto - - (embankment) -	30	7 6	- - - - -	5 15 0	172 10

Eſtimate for propoſed Canal, &c. continued.

EARTH-WORK.	Length in Perches.	Average ſinking, &c.	QUALITY OF SOIL.	Rates per Perch.	Amount.
		F. I.		£. s. d	£. s.
Excavation, &c. in Rahinabrogue - (excavation) -	80	3 9	Clay and gravel - -	1 12 6	130 0
Ditto and Rathmoyle (embankment) -	47	8 9	- - - - -	7 10 0	352 10
Rathmoyle - - (excavation) -	158	3 9	Clay and gravel - -	1 5 0	197 10
Ditto - - - (embankment) -	8	5 0	- - - - -	4 10 0	36 0
Ditto to harbour Abbeyleix - - -	18	5 0	Clay and gravel - -	2 10 0	36 0
Ditto - - - (embankment) -	34	11 6	- - - - -	11 7 6	386 15
Ditto Roſebrook and Ballymullan - -	230	4 0	Clay & gravel, ſome ſandy ſoil	2 5 0	287 10
Ballymullan - - (ſide of hill) -	110	3 6	Clay, gravel, and ſome ſlate	1 15 0	192 10
Ballymullan, Raliſh, and Raggitſtown -	212	3 3	Moorſoil, clay, and gravel	0 16 0	169 12
To Ballinakill - - - - - -	216	3 3	Clay and gravel - -	1 0 0	216 0
In Moneyclear - - - - - -	194	3 6	Ditto - - - -	1 5 0	242 10
Moneyclear and Caſtlemarket (embankment)	33	7 0	- - - - -	5 0 0	165 0
Caſtlemarket - - - - -	114	4 0	Clay and gravel - -	1 15 0	199 10
Ditto a long valley of Ironmill's river -	110	3 3	Ditto, - - - -	1 0 0	110 0
Ditto (embankment acroſs valley) -	50	18 0	- - - - -	35 0 0	1750 0
Ditto a long valley (excavation) -	100	3 3	Clay and gravel - -	1 0 0	100 0
Ditto - - - - - - -	64	5 6	Ditto, - - -	2 10 0	165 0

Eſtimate for propoſed Canal, &c. continued.

EARTH-WORK.	Length in Perches.	Average ſinking, &c.	QUALITY OF SOIL.	Rate per Perch.	Amount.
		f. i.		£. s. d.	£. s.
Excavation, &c. to boundary, Ballycuſcal, and Ballinvallagh -	590	3 3	Clay and gravel -	1 0 0	590 0
Acroſs valley of Oldcourt (embankment) -	17	9 6	- - - -	7 10 0	127 10
To Kilcormick church ruins - - -	422	3 3	Clay and gravel -	1 0 0	422 0
Acroſs valley to Garrangolee (embankment) -	15	5 6	- - - -	4 0 0	60 0
In Garrangolee - - - - -	140	3 6	Part ſandy ſoil -	1 10 0	210 0
Acroſs Ravine to Finnan (embankment) -	7	9 0	- - - -	6 10 0	45 10
To Glen of Ballyragget - - - -	170	3 6	Clay and gravel -	1 0 0	170 0
Acroſs Glen - - (embankment) -	5	6 9	- - - -	6 0 0	30 0
To boundary of Conaghee - - - -	263	3 0	Clay, gravel, and ſtones	1 0 0	263 0
In Conaghee - - (ſide of hill) -	96	3 6	Rotten rock -	2 0 0	192 0
Ditto to boundary Fowks's rath - - -	244	3 3	Clay and limeſtone rock	1 15 0	327 0
In Fowks's rath, Shangana, &c. to Douglaſs river - -	756	3 3	Clay and gravel -	1 0 0	756 0
Embankment, &c. acroſs the Douglaſs river - - - -	12	13 6	- - - -	25 0 0	300 0
Excavation, &c. from the Douglaſs river to Caſtle-comer -	1053	3 3	Clay and gravel -	1 0 0	1053 0
Extra work in excavation, &c. of five harbours - - -	—	0 0	- - - -	0 0 0	300 0
Making trackways - - - - - - - -	7427	0 0	- - - -	0 3 0	1114 1

Estimate for the proposed Canal, &c. continued.

MASONRY.	Rate. L. s. d.	Amount L. s. d.	L. s. d.
Five single locks, with gates, machinery, backing, &c. complete	1100 0 0	5500 — —	
Two ditto, ditto, with bridges over tails of each	1250 0 0	2500 — —	
One double lock	——	1800 — —	
One turnpike road bridge, 32 feet between parapets } Bridges to have no track-ways.	——	450 — —	
Eleven public road bridges, 21 feet between parapets } Bridges to have no track-ways.	200 0 0	2200 — —	
Nine private road, or accommodation bridges, 11 feet between parapets } Bridges to have no track-ways.	130 0 0	1170 — —	
Five tunnels	70 0 0	350 — —	
Seven ditto	35 0 0	245 — —	
Supply tunnel, regulator, and cefs-pool at Cullinagh	——	150 — —	
Supply tunnel at Caftle-comer, and cefs-pool	——	100 — —	
Regulator near Jenkinftown	——	100 — —	
Feeders for taking in fmaller ftreams	——	100 — —	
Aqueduct over the Clonbeg, or Iron-mill's river	——	750 — —	
Ditto over Douglafs river	——	500 — —	
Quay walls for 4 harbours, viz. Ballyroan, Ballinakill, Abbeyleix, and Ballyragget	100 0 0	400 — —	
Ditto for harbour at Caftle-comer	——	200 — —	
			16515 — —
Purchafe of land, houfes, &c. &c.	- -	-	5000 — —
For fuperintendance, incidental expences, &c. &c. 15 per cent.	- -	-	5743 7 —
	Total	- -	44032 — —

Dublin, Auguft 12, 1800.

MITCHELL J. SPARKS, *Engineer.*

MR.

MR. JOHN KILLALY'S REPORT.

Dublin, June 10, 1800.

SIR,

ACCORDING to your deſire, I have laid out lines of canal of different dimenſions, from Monaſterevan to Maryborough and Mountmellick, a map, ſection, and eſtimates of which I have the honour to lay before you.

From a cloſe examination of the country between Monaſterevan and Kilnacaſt, I could not perceive room for any material deviation from Mr. Chapman's line; I therefore depend on him at that place, and by carrying on the level of three locks to the propoſed Barrow aqueduct, am enabled, with but little difficulty, to enter the town of Mountmellick cloſe to the bridge.

In purſuing the line to Maryborough I return to the rock of Kilnacaſt, and from thence to within thirty perches of the town meet no obſtruction worth mentioning, further than what its high ſituation prepares me for, namely, the riſing of ſix more locks, making in the whole nine from Monaſterevan.

I tried two lines to Maryborough from the two mile bridge, one to the right, the other to the left of the ridge; the laſt is the moſt adviſeable. To the right you muſt either keep in the bottoms, where you can have no tap, and are ſubject to great annoyance from floods; or elſe on the ſide of the ridge, which, being compoſed of open gravel, will not hold water; beſides, by keeping this ſide, you are obliged to take in the Maryborough river as a ſupply, and have to purchaſe two mills. By going to the left of the ridge you

ſhorten

ſhorten the diſtance, have a choice of cutting, and get abundantly ſupplied, free of expenſe, by a ſmall river, that comes from Rathleague, and flows into the Treeogue at the two mile bridge. There appear to me very ſtrong inducements for the proſecution of this canal. The country it paſſes through is extremely fertile, and the materials neceſſary for the work very convenient and abundant.

With reſpect to an extenſion of the line from Maryborough towards Kilkenny, I have tried the country for ſome miles in different directions, and find the ſummit, that (in my mind) ſhould be adopted, is at Ballyruane, four miles from Maryborough and one from Ballyroan; to aſcend this will require nineteen locks from Monaſterevan, of nine feet fall each.—There is a lower paſs on the Limerick road, about one mile and a half from Maryborough, that would require two locks leſs, but it would be very difficult to bring water to it—The level of Ballyruane may be carried a conſiderable diſtance towards Kilkenny, by ſkirting along the hills, and can in its courſe get amply ſupplied with water.

It is probable that, on a more minute examination of the country, conſiderable improvements may be made in the propoſed line of canal to Maryborough; I preſume, however, this is ſufficiently correct to ground a general eſtimate thereon.

I HAVE THE HONOR TO BE,

SIR,

WITH GREAT RESPECT,

YOUR VERY OBEDIENT SERVANT,

JOHN KILLALY.

To Henry Parnell, Eſq.

REPORT

REPORT ON THE COLLIERY CANAL

FROM

MARYBOROUGH TO CASTLE-COMER.

BY MITCHELL J. SPARKS, ENGINEER.

SIR,

IN obedience to your inſtructions I proceeded to Maryborough, examined and took levels of the country, from thence to the town of Caſtle-comer, on which I beg leave to report as follows :—

Taking up the level at the point, which was ſhewn me as that, at which Mr. Killally's line terminated, I proceeded through the town, and townparks of Maryborough, to the ſouthward of Meelickmill, through favourable grounds, with a gradual aſcent, ſo as to require ſeven ſingle and one double locks to Lawler's-mill, where the ſummit level commences.

Above the lock through the lands of Ballycarney, to the ſtream from the manufactory at Cullinagh, the line is remarkably favourable; from thence, through Ballyruan, to near the town of Ballyroan, we are obliged to go through the only part of the line, that can be called deep ſinking, but as the whole of it is through a firm bog, which does not require any preparative drainage, it will be done for a comparatively ſmall expenſe; from thence we have near two hundred perches of very favourable line through the lands of Ballyroan, Ballymoneen, and Clonbrin; after which, there is an embankment, but not high, acroſs the ſtream from Ballyroan, of about one hundred perches in length;

the remainder of the line, (except the croſſing of three ſmall ravines, which altogether do not exceed one hundred perches in length, and are none of them deep) for upwards of five miles, through Ballyeagle, Rahinabrogue, Rathmoyle, Roſebrook, Ballymullan, Raliſh, Raggitſtown, Drimaterril, paſſing within leſs than a quarter of a mile of the town of Ballinakill, through Moneyclear, to the boundary of the Queen's County and county of Kilkenny, is more eaſy of execution than any line of canal I know of in Ireland *for the ſame diſtance*—here there will be a ſhort embankment, but of no importance, and we have then a choice of level in the lands of Caſtlemarket, to the edge of the Aonbeg, or Iron-mills river; but as the place, where we meet the river, would require a high embankment, it becomes neceſſary to turn up the edge of the valley, about one hundred perches, to a point where we meet with a favourable place of croſſing it, by an aqueduct about twenty feet higher than the bed of the river—this is the loweſt level, at which I would think it adviſeable to croſs ſuch a river, as a lower line could not admit of ſufficient archway for the paſſage of the great and ſudden floods, to which it is in winter ſubject.

Returning again by the valley of the river, we meet with a glen, which offers us a favourable line through the lands of Caſtlemarket, Ballyeuſcul, over a ſmall ravine near the ruins of Old-court, to Ballinvallagh, acroſs another ſmall ravine near Kilcormick Church Ruins, through Garrangolee, and Finnan, within leſs than half a mile to the eaſtward of the town of Ballyragget, through the lands of Donoughmore, to the boundary of Connahee; hitherto we have met with very favourable ſoil, except a ſmall part of Rathmoyle and Roſebrook, which, being ſand, will require puddling, but at Conahee we muſt cut through rock for

ſome

ſome diſtance. However, as our line is by the ſide of an inclined plane, we have it in option to chooſe the depth of ſinking, which need not in any place exceed three feet; therefore, the expence of this part of the line will be trifling indeed, conſidering the nature of the ſoil, and, beſides, as it is chiefly limeſtone, the quantity excavated will turn to ſome account, and in great meaſure pay the company the extra expenſe of cutting through it inſtead of clay-ſoil—from this point, through the lands of Fowkeſrath, Shangana, Swifts-heath, and Gragara, leaving the houſe of Jenkinſtown about half a mile to the right, we turn up the valley of the Dynan river, through the lands of Eſker, Kil-collin, and Kilmacar; here the river Douglas obliges us to wind ſome diſtance to the left, in order to meet an advantageous place for croſſing the valley it runs in; after which, returning a ſhort way down the ſame valley, we proceed with a choice of level and excellent canal ſoil, through the lands of Madeline, Liſnefunchin, Newtown, Bance, Ballycomie, and Ballyhimmen, to the town of Caſtle-comer, where it takes in the Deean river.

This level is nearly twenty-ſix Engliſh miles in extent, without either deep ſinking, high embanking, wet bog, hard rock, or any other obſtacle to render it either expenſive, tedious, or difficult of execution. The croſſing of the Iron-mills and Douglas rivers, are the only works of conſequence in the whole way; and at theſe two points we may chooſe the height at which to croſs them, and conſequently the aqueducts may be made at a ſmall expenſe. It ſhould alſo be conſidered, that both thoſe ſtreams, with many others in the ſeveral ſmall ravines the line croſſes, offer very great ſupplies of water, ſhould the trade of the canal require them all to be taken in, which may be done for

a very trifling ſum, the falls in each of them being very rapid. The only quarry, we are obliged to cut through, I have already ſhewn to be ſo ſituated, that we can chooſe our level through it, ſo that it is far from being an obſtacle of conſequence; on the contrary, may rather be an advantage, by affording a conſiderable article for future traffic; upon the whole, I cannot heſitate to pronounce it the moſt favourable line for the diſtance I ever met with; and I can pledge myſelf, that the works may be done for the eſtimate, within a ſpace of five years, provided they are conducted with judgment, a proper regard paid to economy, *and that other obſtacles are not unneceſſarily thrown in the way of the engineers entruſted with the execution*—by *unneceſſary obſtacles* muſt be underſtood, a ſcarcity of money at the PROPER SEASON *for puſhing on the works*, or any undue interference of *inexperienced*, though perhaps well meaning, *individuals* in the execution; cauſes, which I have often known to render works of this nature tedious and expenſive, by which the eſtimates both of time and money have been exceeded, and the blame ultimately thrown on the framer of the eſtimates, when, perhaps, the only perſons really to blame are thoſe, who are foremoſt in heaping unjuſt and unearned odium on the engineer. This, I hope, will not be the caſe with the Colliery canal, which I am happy to ſee taken up by gentlemen of liberal minds, who, I truſt, will profit by the dear bought experience of others.

The utility of inland navigation in general, and the benefits, that reſult to any diſtrict through which they run, are now ſo univerſally known and acknowledged, that it is unneceſſary for me to ſay any thing on that ſubject, while the particular advantages to be derived by the neighbourhood, from the canal we have now under conſideration, muſt neceſſarily be ſo much better

known

known to the gentlemen reſiding in the country, and who are conſequently better acquainted with local circumſtances than I can poſſibly be, renders it unneceſſary, nay would give it rather the appearance of impertinence, were I to attempt enumerating them. I ſhall, therefore, only ſtate, that I know of no canal whatever, that bids more fair for being of general utility to the nation than this, as it may be extended ſo as to open navigable communications between the metropolis and the ſouthern counties, and thereby bring the great market of the nation in a manner to every man's door; and alſo by conveying fuel (that grand and indiſpenſible article for the comfort of man, as well as for carrying on of manufactures) at a cheap rate, to thoſe parts of the country, where the poor inhabitants are now in the utmoſt diſtreſs for want of it. But one matter is more particularly my province to point out, and which the committee ſeem to be already perfectly acquainted with, that is, the great advantage of adopting a ſmall canal, *(ſuch as the Grand Trunk Canal in England*, which they have choſen as their model) inſtead of the large canals, which have hitherto been uſed in Ireland. It muſt not be underſtood, that I think thoſe companies acted wrong, who have hitherto conſtructed their canals on the larger ſcale, becauſe that in a canal ending at the metropolis, and where the paſſage-boat trade is a matter of importance, both as a ſource of revenue to the proprietors and great convenience to the public, it may perhaps be adviſeable to make it ſo; but where commerce alone is the object in view, a canal of twenty feet water ſurface, and three feet depth of *navigable water*, which will admit boats, each carrying, if properly conſtructed, from twenty to twenty-five tons burthen, is fully ſufficient for every beneficial purpoſe: two of thoſe boats may with eaſe be drawn by one horſe

horſe and navigated by three men, which is as much as one horſe and the ſame number of men in a general average bring on the larger canals.

I am aware that it may be aſked by ſome, "if the trade on the canal will be ſo great as you ſeem to expect, will not large boats be neceſſary to carry on that trade?" To this I anſwer, that the canal is capable to admit the paſſage of as many boats as will fit in it from one end to another, and as the trade increaſes, ſo may the number of boats be increaſed alſo; conſequently, the canal and boats are fully competent to any quantity of trade, which can poſſibly be expected by the moſt ſanguine friend to the undertaking—the ſucceſs, which has attended the Grand Trunk Canal in England, is a ſufficient illuſtration of the truth of the above aſſertions.

By adopting a ſmall canal inſtead of a large one, the expenſe is reduced above one-third, and, conſequently, the proprietors can afford to take a ſmaller toll on the goods conveyed by it; for, if a large canal were made from Monaſterevan to the collieries, ſuppoſing it to coſt only 130,000*l.* and I believe it would come to more money, inſtead of the ſmaller one, which can be made for 80,000*l.*; in the latter caſe the company will be paid a better intereſt for the money they expend in the execution, by a toll of one penny per ton per mile, than in the former by a toll of three half-pence, which, on a diſtance of thirty-four miles, makes a ſaving to the public of one ſhilling and five-pence on every ton weight of coals, or other articles conveyed by the canal. This conſideration, together with the ſaving of ſeveral acres of valuable land, which a large canal would require, will ſufficiently ſhew the great advantage to be derived from adopting the ſmaller—and the gentlemen of the Queen's County will have the merit

of

of firſt introducing the uſe of this great improvement into Ireland.

Before I cloſe this report it is neceſſary to ſtate the reaſon "why the communication has not been made in a direct line from Athy to the collieries," which is, that it appears by the ſlighteſt inſpection of the country, that the ridge of mountains between Caſtle-comer and Cooper-hill is ſo very high, as to preclude any poſſibility of carrying any ſuch ſcheme into execution—nor is there any practicable line, by which ſuch communication can poſſibly be obtained, ſave by the very line of country, to which this report refers.

I beg leave to add, that in laying out the canal for execution, ſeveral improvements may be made, and deviations from the exact line I took may be adopted with advantage—as it is utterly impoſſible for any engineer to make out the beſt line on firſt taking the levels.

I HAVE THE HONOR TO BE,
WITH THE GREATEST RESPECT,
SIR,
YOUR MOST OBEDIENT
AND VERY HUMBLE SERVANT,

DUBLIN, MITCHELL J. SPARKS, *Engineer.*
AUGUST 28, 1800.

To Henry Parnell, Eſq.

EXTRACTS

EXTRACTS FROM AN ACT,

&c. &c. &c.

10. AND be it enacted, that no aid out of any public money ſhall be given for making any new canal or works, or altering or completing any canal already begun, or any works relating thereto, or for improving the port or harbour of Dublin, unleſs the ſcheme thereof ſhall have been laid before the ſaid Directors, and approved of by them, nor unleſs the ſame ſhall have been approved of by the Lord Lieutenant, or other chief Governor or Governors of Ireland, and by three of the Commiſſioners of his Majeſty's treaſury; and no memorial, propoſal, or offer for making any new canal or works, or for altering or completing any canal or works already begun, ſhall be laid before the Lord Lieutenant or other chief Governor or Governors of Ireland, or the Lords Commiſſioners of his Majeſty's treaſury, by the ſaid Directors, unleſs the perſon or perſons, who ſhall make any ſuch application, ſhall have obſerved and complied with all the regulations and conditions in this act preſcribed to be done in ſuch caſe.

11. And be it enacted, that when any propoſal for making or improving a navigable canal, or making or improving the navigation of a river, or for altering the line of any canal ſpecified in any act of parliament, ſhall be preſented to the ſaid Directors, a deſcription of the line of ſuch intended canal or navigation, and the land through which the ſame is intended to be carried, ſhall be laid before the ſaid Directors therewith; and

that

that one month at the leaſt previous to the preſenting of ſuch propoſal, notice ſhall be given by advertiſement in the Dublin Gazette, and two or more other newſpapers publiſhed in the city of Dublin, and in ſome country newſpaper, if any ſuch newſpaper ſhall be publiſhed in any county or town, through which ſuch line is propoſed to be carried, or in the next adjoining county where any newſpaper is publiſhed, if no newſpaper be publiſhed in the county, through which it is to paſs, then by advertiſement to be poſted on the door of the court or ſeſſion-houſe of the county, through which ſuch canal is intended to paſs, ſpecifying the baronies through, to, and near which reſpectively ſuch canal is intended to be carried; and that a ſchedule be preſented with ſuch propoſal, ſtating the tolls and duties intended to be taken on ſuch canal or navigation, and before any ſuch propoſal ſhall be preſented, ſuch notice as aforeſaid ſhall be given to the treaſurer of every county, through which ſuch navigation is intended to paſs, one month before the ſame ſhall be preſented to ſaid Directors.

12. And be it enacted, that when any ſuch propoſal ſhall be preſented, an eſtimate ſhall be annexed thereto of the expence of ſuch undertaking, ſigned by the perſon or perſons making the ſame, ſpecifying whether any and what aqueducts, locks, or bridges are to be made, with their ſeparate expenſe, and an account of the money ſubſcribed for carrying the ſaid work into execution, and the names of the ſubſcribers, with the ſums ſeverally ſubſcribed by them; or if the expenſe of ſuch work is not intended to be defrayed by ſubſcription, then an account of the manner, in which the expenſe of the ſame is propoſed to be ſupplied, and a copy of every propoſal, and of the ſeveral matters aforeſaid required to be preſented with or annexed to

the

the ſame, be at the ſame time tranſmitted or preſented to the Lord Lieutenant or other chief governor or governors of Ireland for the time being, and to the ſaid lords commiſſioners of his majeſty's treaſury.

13. And be it enacted, that where the making or improving of any navigable canal, or the making or improving of the navigation of any river, ſhall be undertaken by ſubſcribers, who ſhall agree to defray the whole or part of the expenſe of ſuch works, all depoſits and payments of inſtalments made by them reſpectively ſhall be forfeited, in caſe default ſhall be made in the payment of the whole of the ſums by them reſpectively ſubſcribed to be paid, if the ſame ſhall be demanded.

14. And be it enacted, that when any perſons, propoſing to make any of the works aforeſaid, ſhall be deſirous of obtaining a charter, to enable them more effectually to carry on or perfect the ſame, all the particulars deſired to be granted in ſuch charter, ſhall be ſtated to the ſaid Directors, in order that they may report upon the ſame to the Lord Lieutenant, or other chief governor or governors of Ireland, and to the ſaid lords commiſſioners of the treaſury.

15. And be it enacted, that the members of any corporation ſo created by charter, or any ſeven or more of them, ſhall have power to make bye laws, provided the ſame are not contrary to the laws of the land, and provided the ſame ſhall be approved of by the Lord Chancellor, or any two of the chief judges of Ireland.

16. And be it enacted, that whenever the undertakers of any of ſuch works ſhall be conſtituted and created a body corporate for carrying on any navigation, they ſhall be inveſted with all ſuch powers, privileges, advantages, and authorities, for carrying on the ſame, and off-branches therefrom, as were before veſted in the

the corporation for promoting and carrying on inland navigation, and as now veſted in any company for making any canal in this kingdom, and for enabling them to purchaſe, and ſummon juries for valuing lands, houſes, tenements, and hereditaments, except orchards, the produce whereof is not intended for public ſale, yards, gardens, lawns, walled deer-parks, and planted avenues, as may be neceſſary for completing ſuch navigations, and making wharfs, quays, ſtore-houſes, market-houſes, locks, baſons, docks, and other conveniencies, as to them ſhall ſeem neceſſary, and may be enabled to hold ſuch lands, tenements, and hereditaments as they ſo purchaſe; and every ſuch corporation ſhall be inveſted with like powers to take, turn, and draw into ſuch navigation, and off-branches, waters of all rivers, rivulets, lakes, and brooks, neceſſary for carrying on the aforeſaid works, and ſupplying them with water, firſt making compenſation, as by the ſaid acts is required, to owners and proprietors of mills, or bleach-greens, damaged by ſuch works, or by carrying off ſuch waters, and to all other perſons injured in their property thereby; provided that all valuation of lands and houſes, and other property, be made according to the real value of ſuch lands and houſes, and other property, bore on the day, on which notice ſhall have been given in the Dublin Gazette, of the intention of making and carrying on ſuch canal; provided that nothing herein contained ſhall prevent any ſuch corporation from purchaſing any garden, orchard, yard, lawn, walled deer-park, or planted avenue, or any part thereof, by agreement with the proprietors thereof, provided that if ſuch canals ſhall not be carried into execution within ſuch time as ſhall be limited by the ſaid Directors, there ſhall in ſuch caſe be a new valuation

tion at the requeſt of ſuch owners and proprietors as aforeſaid.

17. And be it enacted, that every ſuch corporation ſhall be capable in law to purchaſe any lands and houſes, beſides thoſe to be uſed for ſaid navigations, to the annual amount of five hundred pounds, and no more, and to grant and demiſe the ſame.

18. And be it enacted, that in conſideration of the expenſe and trouble, which any corporation or company, which ſhall be erected, ſhall be put to in making and maintaining any navigation, and the off-branches thereof, it ſhall and may be lawful to and for ſuch corporation or company, and their ſucceſſors from time to time, and at all times hereafter, to aſk, demand, receive, and ſue for to the uſe of ſuch company and their ſucceſſors, the ſeveral rates and duties herein after mentioned, that is to ſay, for every boat or veſſel navigating the ſaid navigation, and off-branches, or any part thereof, either upwards or downwards, in which any goods, merchandizes, or commodities, or other matter whatſoever ſhall be carried, and ſuch rates and duties as by any charter to be granted as aforeſaid, ſuch company ſhall be authorized to ordain and appoint, not exceeding the ſum of two-pence for every mile, for and upon every ton of the burthen or tonnage of ſuch boat or other veſſel, or for every ton weight of ſuch goods, merchandizes, or commodities whatſoever, which ſhall be carried upwards or downwards upon any ſuch navigation, at the diſcretion of ſuch company; provided always, that no higher toll than one penny per mile be charged upon each ton weight of corn, meal, malt, flour, potatoes, lime, ſand, fuel, or manure, nor more than three-pence per mile for each paſſenger.

19. And

19. And be it enacted, that all ſuch companies, their agents, and ſervants, be and are hereby inveſted with all and every of the ſame powers and authorities for raiſing and carrying away gravel, ſtones, earth, and other materials for the works of any navigation and off-branches, as are veſted in overſeers of public roads, by ſeveral acts of parliament in that caſe made and provided, ſubject to the ſame regulations and reſtrictions, to which overſeers are by ſuch acts made ſubject.

20. And be it enacted, that it ſhall be lawful for any ſuch company to take up, and borrow, upon the credit of their works and their eſtate therein, any ſum not exceeding the amount of ſubſcriptions then actually expended on their reſpective works, at any rate of intereſt not exceeding legal intereſt, which ſums ſo borrowed ſhall be a lien on their reſpective eſtates.

21. And be it enacted, that at the end of every year, the ſaid Directors ſhall make an account of all the works, that have been performed in ſuch year, the expenſes thereof, the money paid for the ſame, together with a ſtatement of the works purpoſed to be executed in the enſuing year, diſtinguiſhing ſuch as have been approved of and recommended to the Lord Lieutenant, by the ſaid Directors, and an eſtimate of the expenſes thereof, and that the ſame be laid before the Lord Lieutenant, or other chief governor or governors of Ireland, and the lords commiſſioners of the treaſury, both for the time being.

22. And be it enacted, that the ſaid Directors ſhall have power to contract with all bodies corporate or otherwiſe, and with all individuals, for the joint execution of any work, for the purchaſe or rent of lands or tenements, neceſſary for the carrying on of any navigation,

navigation, and for the purchaſe of tolls now levied or intended to be levied on any canal made or to be made in Ireland, or any part thereof; and that all ſuch bodies corporate ſhall be empowered to ſell their lands and tenements, or tolls, or any part thereof, to the ſaid Directors.

LIST OF THE SUBSCRIBERS

TO THE

COLLIERY CANAL.

RIGHT Hon. Sir J. Parnell	£. 1000
Hon. John Veſey - - -	500
Hon. W. W. Pole - - -	500
Henry Parnell, Eſq. - - -	500
C. H. Coote, Eſq. - - -	500
Arthur Moore, Eſq. - - -	500
Thomas Kemmis, Eſq. - -	500
John Carr, Eſq. - - -	500
Henry Weſtenra, Eſq. - -	500
Hon. A. Veſey - - - -	300
C. P. Doyne, Eſq. - - -	300
Richard Grace, Eſq. - -	300
Richard Warburton, Eſq. - -	300
Thomas Kavanagh, Eſq. - -	300
Bernard Delany, Eſq. - -	300
Edward Stapleton, Eſq. - -	300
Sir John Freke, Bart. - -	300
Richard Seale, Eſq. - - -	300
James Bryan, Eſq. - - -	300
Mr. A. Jacob - - - -	200
Mr. Andrew Galbraith - -	200
Mr. Alexander Stoker - -	200
Mr. Neale - - - -	200
J. Bland, Eſq. - - - -	200
William Pigott, Eſq. - -	100
William Gore, Eſq. - - -	100
T. Fitzgerald, Eſq. - - -	100

Matt. Caſſan, Eſq. - -	£. 100
Henry Moore, Eſq. - - -	100
Charles Ward, Eſq. - - -	100
Mr. James Moore - - -	100
Geo. Pigot, Eſq. - - -	100
Mr. Anthony Goſs - - -	100
Mr. Joſeph Wall - - -	100
Mr. P. Mooney - - -	100
Mr. H. Dyer - - - -	100
Rev. Edward Taylor - -	100
Mr. John Bradbury - - -	100
Mr. Charles Hendy - - -	100
Mr. John Ward - - -	100
Mr. Martin Juſtin - - -	100
Mr. James Leach - - -	100
Mr. David Alſton - - -	100
Mr. James Purcell - - -	100
Mr. Michael Hibbits - - -	100
Dr. Cahill - - - -	100
Mr. Edward Comerford - -	100
Mr. John Butler - - -	100
Mr. Thomas Thompſon - -	100
James Price, Eſq. - - -	100
Rev. V. Griffith - - -	100
Samuel Anderſon, Eſq. - -	100
Mr. Francis Coyle - - -	100
Mr. William Stephens - -	100
Mr. Edward Hart - - -	100
Mr. Edward Payne - - -	100
Arthur Roberts, Eſq. - -	100
John Halpin, Eſq. - - -	100
Geo. Armſtrong, Eſq. - -	100
General Dunne - - -	100
Mr. Andrew M'Mahon - -	100
Mr. Owen M'Mahon - -	100

Mr.

Mr. Arthur M'Mahon -	£.100
Mr. Samuel Deverell - -	100
Col. Cowley - - - -	100
Mr. Con. M'Daniel - - -	100
Mr. Richard Dunn - - -	100
Iſaac Humphreys, Eſq. - -	100
Mr. Thomas Seale - - -	100
Mr. George Henlon - - -	100
Mr. Richard Seale - - -	100
Mr. Richard Morris - - -	100
Mr. William R. Steale - -	100
Mr. John Lalor - - -	100
Mr. Edward Stephens - -	100

MARYBOROUGH SUBSCRIBERS.

Mr. G. Clegg - - -	£.300
Mr. Thomas Thornnell - -	300
Dr. Smith - - - -	300
Mr. G. Pringle - - -	300
Mr. G. Hyland - - -	300
Mr. William Meyhan - -	300
Mr. Joſ. Stoker - - -	300
Mr. Richard Hill - - -	300
Mr. Robert Graves - - -	300
Mr. Lewis Moſs - - -	100
Mr. J. Clarke - - - -	100
Mr. W. Doyle - - - -	100
Mr. D. Phelan - - - -	100
Mr. Richard Neale - - -	100
Mr. J. O'Neale - - -	100
Mr. William Stoker - - -	100

Mr. James Hill - -	£.100
Mr. Thomas O'Neil - - -	100
Mr. Peter Brennan - - -	100
Mr. S. Martin - - - -	100
Mrs. Anne Fitzgerald - -	100

APPENDIX.

NO. V.

RESOLUTIONS OF THE COMMITTEE,

AT

MARYBOROUGH,

ON

MONDAY THE 15TH OF SEPTEMBER.

AT A MEETING OF THE COMMITTEE,

AT

MARYBOROUGH,

ON MONDAY, THE 15TH OF SEPTEMBER,

THE FOLLOWING RESOLUTIONS WERE AGREED TO:

FIRST,

THAT the following propoſal, for making the projected canal from Monaſterevan to Caſtle-comer, be laid before the ſubſcribers to the ſame, on the fifteenth of October; and preſented to the directors of inland navigation, with ſuch amendments and alterations as they ſhall think proper to adviſe, &c. &c.

The propoſal contains a deſcription of the line and land, through which the canal is to be carried—eſtimates of the expenſe—an account of the money ſubſcribed—and the names of the ſubſcribers. That the ſubſcribers are willing to complete the ſaid canal on the following conditions:

Firſt—That it ſhall be twenty feet wide at the water ſurface, fourteen feet at the bottom, and three feet deep over lock cills; and the locks of ſuch dimenſions, that boats ſixty-five feet long, and ſix feet wide, may navigate it.

Second—That the tolls to be taken ſhall not exceed, upon each ton weight of corn, meal, malt, flour, potatoes, lime, ſand, fuel, or manure, one penny per mile.

For each paſſenger, one penny halfpenny per mile.

And

And upon each ton of other goods, &c. two pence per mile.

Third—That the entire computed expenſe being 80,000*l.* the work ſhall be completed in five years, provided two-thirds of that ſum, or 53,332*l.* is given by the directors to the ſubſcribers.

Fourth—That a charter ſhall be granted to them, granting the following particulars:

Subſcribers to be formed into a body corporate—to make bye laws—ſummon juries for valuing land, &c. To take into the navigation all rivers, &c. neceſſary for the works—to receive the above tolls—to raiſe and carry gravel in the ſame manner as overſeers of roads—to be enabled to borrow money on the credit of their works.

The joint ſtock of the company to be 27,000*l.* together with ſuch future ſums as ſhall be ſubſcribed.—To be divided into ſhares at 100*l.* each.—Said ſhares to be transferable and deemed perſonal eſtate.

The proprietors of ſaid ſtock to be entitled to the tolls, duties, and profits, in proportion to their reſpective ſhares; ſubject to ſuch charges as the company ſhall think fit to make for completing and preſerving the works.

The names and proper additions of the proprietors, and the number of ſhares they are entitled to hold, to be entered in a book for that purpoſe.

Secretary to enter in books all the acts, proceedings, and tranſactions of the company—to which every proprietor ſhall have recourſe; or demand and have copies thereof.

Every proprietor to be enabled to bequeath, ſell, or aſſign his ſhares—ſuch transfers to be regularly entered by the ſecretary.

Every proprietor to have one vote for each ſhare, not exceeding twenty. The majority of votes to determine

mine all queſtions. Votes to be given by proxy. Oaths to be taken by proprietors and proxies if required.

To be fifteen directors elected by ballot at the firſt general aſſembly: any ſeven, or more of them, to make bye laws; any five, or more of them, to be a court of directors, to have all the powers and privileges granted to the company veſted in them. No perſon to be a director unleſs he poſſeſſes three ſhares.

Directors to call a general meeting once in every ſix months, to report to the company the ſtate of the works and declare the dividend.

Directors to make ſuch calls for the payment of ſubſcriptions as they ſhall think neceſſary—provided ſuch calls ſhall not exceed 20*l.* per cent. on the ſeveral original ſubſcriptions in one year. In caſe any of the proprietors ſhall neglect or refuſe to pay the ſum ſo called for, within ſixty days after the time appointed—they to forfeit their ſhares, and all money advanced.

SECONDLY,

That a conſiderable ſum having been expended, for the purpoſe of procuring eſtimates, maps, &c. relative to this canal, it is adviſeable to open a ſubſcription to raiſe a fund to repay the ſame, and to defray farther neceſſary expences;—and that the money ſo ſubſcribed, ſhall be allowed to the ſubſcribers in part payment of their original ſubſcriptions.

APPENDIX.

NO. VI.

LETTER

FROM

HENRY PARNELL, ESQ.

TO THE

CHAIRMAN

OF THE

MEETING OF THE SUBSCRIBERS

TO THE

COLLIERY CANAL.

TO THE

CHAIRMAN

OF

THE MEETING OF THE SUBSCRIBERS

TO THE

COLLIERY CANAL.

London, March 20, 1801.

SIR,

I BEG leave, through you, to acquaint the ſubſcribers to the Colliery canal, that, in obedience to their reſolution of the fifteenth of laſt October, I laid the draught of the propoſal, to which they upon that day agreed, before Mr. KEMMIS, and then before the DIRECTORS-GENERAL of *Inland Navigation*. I now have the ſatisfaction of informing the ſubſcribers, that their propoſal was received in ſuch a manner by the directors, as at once teſtified a due ſenſe, on their part, of the duty they owed the public, and a firm conviction of the great advantages, which the canal held out to every deſcription of perſons, by being calculated to ſecure ample profit to the ſubſcribers—to open numerous and extenſive markets to the farmers, and thereby to enſure certain and lucrative ſales for the produce of their land, and enable them to improve and reclaim, to the joint benefit of themſelves and their landlords—to afford the raw materials of manufactures at the

loweſt

loweſt poſſible price—and to give employment to a numerous body of peaſantry——which circumſtance, under ſuch peculiar times of want and ſcarcity, muſt, of itſelf, be a ſtrong inducement to every one, to promote and expedite the progreſs of this undertaking.

In the firſt communication, which took place relative to the propoſal, I was given to underſtand by the *Chairman* of the *Directors-general*, that, the Board having taken it into conſideration, he was authoriſed to acquaint me, that they were willing to grant an aid of one-third of the eſtimated expenſe, viz. 26,666*l.* 13*s.* 4*d.* —and permit the rates of tolls to be for each paſſenger 3*d.* per mile—upon each ton weight of corn, meal, malt, flour, potatoes, lime, ſand, fuel, or manure, 1*d.* per ton per mile—and upon each ton weight of all other goods, merchandize, &c. &c. 2*d.* per ton per mile.

To this offer on the part of the Board, I replied by letter to the *Chairman*, wherein I ſtated the probable annual expenſes neceſſary for maintaining the canal in repairs and officers' ſalaries, and ſecuring to the ſubſcribers at leaſt 6*l.* per cent. for their capital—and alſo the probable income to be deſired by acceding to the terms offered, and by ſtating accurately the ſtate of the different *Canals'-companies* in the kingdom:—I proved, as far as this would enable me, that it was incumbent on the Board to grant a larger aid than one-third, to meet the expectations, and ſecure the capital, of the ſubſcribers—and, at the ſame time, required of them to accede to the terms, on the expectations of which theſe ſubſcriptions had been raiſed, viz. *a grant of two-thirds, and a rate of tolls of one penny per ton, per mile, on all articles whatever.*

In conſequence of this letter, I had a ſecond perſonal communication with the *Chairman*, in which he informed me,

me, that the Board had obſerved, that ſome gentlemen of conſiderable property, to whom the canal would be of very material advantage, had not ſubſcribed, therefore, were of opinion, that a larger ſum than one-third might be raiſed on the part of the gentlemen of the county, at the ſame time that the Board were ready to remove the objections I had made to their offer, as far as they could, conſiſtent with their duty to the public, which impoſed upon them the two-fold neceſſity of being parſimonious of the public money, and careful to ſecure to the community a low rate of tolls.

As I conſidered this communication as demonſtrative of a readineſs on the part of the Board, to give every liberal and fair aſſiſtance in their power, to promote the views of the ſubſcribers; and, as I alſo conſidered, that the wretched ſituation of the labouring poor rendered it obligatory upon the ſubſcribers to expedite the commencement of the works; and further, as I was aware, that the ſubſcribers were more actuated in their conduct by a deſire of ſecuring a great public benefit, than by any determination to ſeek a larger grant, or a more favourable bargain, than was conſiſtent with a due and proper attention to make ſure of a ſufficiency of tolls to return a reaſonable profit, I conceived I ſhould meet their approbation, by taking ſo good an opportunity of bringing the negociation to a ſpeedy iſſue. And accordingly, I undertook on my part, to agree to raiſe ſuch further ſubſcriptions as had offered, if they, on their part, would grant an aid of half of the eſtimated expenſe.

The following extract from a letter of the *Secretary* to the Board will make it appear to the ſubſcribers, that my offer was ſo far ſucceſsful in the firſt inſtance, as to produce an immediate compliance on the part of the Board, to grant an aid of 40,000*l.* and an arrangement

of

of ſuch nature, that conſiderable progreſs has already been made in *locks, ſurveying the line,* and other ſtages taken preparatory to the beginning of the actual execution of the works:

"*The outline of the agreement to be as follows:—That an aid of* 26,666*l.* 13*s.* 4*d. be given out of the fund granted by parliament, to be paid by inſtallments at the cloſe of each year, according to the proportional value of the work executed—and that a grant be made of a further ſum of* 13,366*l.* 6*s.* 8*d. to be paid in like manner, in conſideration whereof the rate of tolls in the propoſal is to be reduced in the ſame proportion as the aid is thereby encreaſed; the reduction of the tolls to be made on the articles of corn, grain, malt, flour, meal, and potatoes, and to be ſpecifically aſcertained hereafter by mutual agreement. The ſubſcribers to be incorporated by charter, nearly as they have propoſed—ſubject to ſuch amendments as ſhall be thought expedient, upon a reviſion of the draught prepared. The work to be begun at the ſummit level, ſo that the country may have the uſe of the canal as it proceeds; which will alſo facilitate the tranſport of the materials for the execution of the work itſelf. With a view to ſecure this advantage to the country, it will be the rule of this Board (making the firſt payment at the cloſe of the firſt year) not to order payment for the ſecond year, until they ſhall be certified that the works of the firſt year are complete and in operation; nor to order payment for the ſubſequent years, until the works of the preceding years ſhall, in like manner, be in complete operation—nor to make the laſt payment, until the whole ſhall be finiſhed.*

"*The ſum of* 40,000*l. is therefore propoſed to be the full amount of the public grant, as herein before expreſſed—for which ſum the ſubſcribers are, with their contributions, to enter into recognizance, to execute and complete the canal in all its parts, according to ſuch ſurvey, ſection, and place, as ſhall hereafter be finally approved within five years.*

"*As*

"*As ſoon as you ſhall be ready to order the lines to be pointed out, the Board will direct their engineer to make his ſurvey, and return his report to the Board.*"—

In conſequence of its being required, that a reduction ſhould be made of the tolls upon corn, grain, malt, flour, meal, and potatoes, I ſubmitted to the Board the neceſſity of relinquiſhing this demand, and afterwards agreed with the *Chairman*, that the following ſhould be the rates allowed to the company:

Paſſengers, per mile, each. - - -	*Three-pence.*
Wheat, barley, coals, malt, colliery-lime, lime-ſtone, turf, ſand, and manure,	*One penny per ton per mile.*
Flour, meal, potatoes, and oats, - -	*One halfpenny per ton per mile.*
All other goods and merchandize, ſuch as timber, ſlates, wool, manufactures, &c. &c. &c. &c. - - - -	*Two pence per ton per mile.*

The difference, therefore, between the terms propoſed, and thoſe agreed to, though apparently material, as there is a reduction in both the rate of aid and of tolls, is, in fact, perfectly immaterial—for, conſidering the ſubject in the light, in which it ought to be conſidered, that is, by comparing the original terms, on which the ſubſcription was raiſed, viz. with the expectation of an aid of two-thirds, and a rate of toll of *one penny per ton per mile*, indiſcriminately, upon all articles, with the terms now made—the difference will appear to be in favour of the ſubſcribers; in as much as, notwithſtanding the rate of aid has been diminiſhed one-fourth, the tolls upon paſſengers have been increaſed three-fold, and thoſe upon all goods, merchandize, &c. &c. doubled,——which rate of tolls not only leaves ample compenſation to the ſubſcribers, for augmenting their

their ſubſcriptions, but enables a reduction to be made on the four articles above mentioned.

As it it is, however, altogether impoſſible to form a correct opinion on the advantages and diſadvantages, that may reſult from a work of this nature, or of the propriety or impoſſibility of any particular rates of tolls, and without the aid of the beſt eſtimates and calculations of expenditure and revenue, which the nature of the ſubject will permit, and as many perſons may be inclined to imagine, that a much greater income is neceſſary for the annual expenſes of repairs and officers' ſalaries, and for the neceſſary profit that the capital requires; and, likewiſe, as many may have formed their opinions upon this ſubject, by looking only to the canals in Ireland, without having an opportunity of being aware of the circumſtances, in which they ſtand in England—the following calculation of what expenſes will be annually neceſſary, and of what trade is likely to take place on the canal—and the following illuſtrations of the manner, in which canals are conducted in England, will, I truſt, prove equally ſatisfactory to the ſubſcribers, as it is to me, affording, as it does, incontrovertible demonſtration, that no undertaking was ever begun under more favourable proſpects of ultimate ſucceſs:—

The intereſt of 40,000*l. at* 6 *per cent. is*	£.2,400
Repairs, officers' ſalaries, - - -	1,650
Making together an annual expenſe of	£.4,050

As it has been ſtated to me, by a perſon capable of giving the beſt information on the ſubject, that from thirty to forty thouſand tons of coals are annually raiſed at the pit of Caſtle-comer, and that they might be worked ſo extenſively, as to produce twice that quantity;

quantity; it will be a very moderate eſtimate to ſuppoſe ſixty thouſand tons will be raiſed hereafter, by the pits both of Doonane and Caſtlecomer, and it will be equally moderate to calculate, that fifteen thouſand tons of this number, and five thouſand tons of culm, will be annually conveyed by the canals to Monaſterevan, (or what will be of the ſame import, as affecting this calculation, that the whole coal and culm trade, whether of twenty thouſand tons to Monaſterevan, or of a larger quantity for a ſhorter diſtance, ſhall yield to the company the tolls, which twenty thouſand tons on the whole line would pay) which, at one penny per ton per mile, for thirty-ſix miles, would be 3000*l.* per annum—a ſum only deficient of the total annual expenſes by 1050*l.*—which circumſtance is alone ſufficient to prove, that, even if the coal trade ſhould fall ſhort of this eſtimate, or the annual expenſes exceed what is here calculated on, the tolls on all other articles muſt inevitably make a moſt profitable return to the ſubſcribers.

If it is conſidered, how great the conſumption of *Kilkenny-coal* is in the ſeveral towns, through which the canals will paſs—what a quantity is now carried through thoſe towns, and ſold in every part of the kingdom—if it is conſidered, how much culm is uſed for burning lime, and how much more will certainly be conſumed, when the carriage of half a ton will not much exceed what is now paid for the carriage of one barrel—if it is further conſidered, that there is every reaſon to expect from the nature of the country, in the neighbourhood of the Mount Colliery, that new ones will ſooner or later be opened—I ſhould hope, that many will agree with me in thinking, that the coal and culm trade will alone be ſufficient to ſupport the canal.

The tolls, that will be received on turf, will probably be as high as thoſe upon coal, or will certainly rank next to them in their amount. For, notwithſtanding a ton weight of turf will only yield to the proprietors of the canal, ſo low a toll as *one penny*—yet, upon looking over the line, and ſeeing how many towns are ſituated near, or on it, and the bogs, through which it will paſs, it cannot but be evident, that every particle of turf, which will be conſumed hereafter, in each of thoſe towns, will be conveyed one, two, or more miles on the canal, and thus, by the prodigious quantity, that is annually conſumed in them, make a return of a very large income to the company. By the ſubſcribers concurring in an alteration of the line, as laid down in the plan, ſo that it may paſs near the bog of *Clonneagh*, and nearer to, or through, the town of *Mountmellick*, a very eſſential advantage will be derived by the inhabitants of that town and of *Maryborough*, in reſpect to fuel—as the ſupply of turf will hereafter be ſecure, and at a much lower rate than at preſent;—at the ſame time the ſubſcribers will derive their advantages by the tolls they will receive. This bog will likewiſe ſupply *Portarlington*. The bogs of *Ballyroan* and *Grallow* will ſupply *Ballyroan*, *Ballinakill*, *Balliragget*, and even *Kilkenny*, when the continuation of the canal is completed to *Inniſtioge*. So that it is manifeſt, on taking a circumſtantial view of this part of the ſubject, that a trade of very great importance, in an article which might be overlooked, will be one of the moſt certain and beneficial conſequences of the propoſed navigation.

The flour and corn trade muſt, undoubtedly, be very extenſive and profitable. The demand in Dublin will always act as the ſtrongeſt inducement, with the farmers and millers, to take advantage of the canal to ſecure a market. But in addition to this demand, which

which ariſes from the great population of the metropolis, another of a more enlarged nature, muſt, in future, exiſt——ariſing from the incapacity of Great Britain to grow ſufficient corn for her own conſumption; a fact clearly eſtabliſhed by the regular and prodigious importation of corn, which annually takes place, to the amount, in quantity, in the laſt year, to *two million quarters*, and, in value, to near *five million pounds*.

The trade in lime and limeſtone, will be productive of no inconſiderable advantages to the proprietors. The eaſy and cheap conveyance of culm will promote, generally, the burning of lime for manure, and convert ſuch rocks or quarries, as are immediately contiguous to the line, into mines of wealth to the owners of them. The firſt five miles of the canal will be of as great utility to the country contiguous to *Caſtle-comer*, in conſequence of its paſſing through lime-rocks, at *Connahee* and other places, as it will be to the reſt of the country, by its advantages in reſpect to the coal-trade. The boats, that are firſt laden with coal, will return laden with limeſtone; and thus a tract of country may ſhortly be reclaimed from its preſent unprofitable ſtate; and every ton of lime, which may apparently pay to the company a trifling toll, in the end will pay them very largely, by creating a new and more enlarged trade in corn, and other productions of the land improved by it.

The trade on goods, on which a toll of *two-pence per ton per mile* will be paid, from the great variety of neceſſary and indiſpenſable articles, of which it is compoſed, ſuch as timber, ſlates, iron, lead, groceries, merchandize of all ſorts, materials of manufactures, manufactured goods, bricks, &c. &c. will, in all probability, contribute, in a great amount, to the revenue of the company. It may be ſafely ſtated, that every thing

bought in Dublin, for the ſupply of the country, will be carried a certain diſtance, more or leſs, on the canal; and, therefore, it may be concluded, that this part of the whole trade will not fall far ſhort, in its extent, of thoſe already mentioned.

The tolls to be derived from paſſengers will likewiſe be very conſiderable—particularly on thoſe coming to, or going from, *Maryborough*—as very convenient boats may ply regularly for their convenience, notwithſtanding the narrowneſs of the canal, and as proportional profit may be expected to thoſe received from this trade by the *Grand Canal Company*, which, in the ſix months previous to laſt Auguſt, amounted to 12,000*l.*

Theſe ſeveral branches of trade are ſuch, as muſt immediately reſult from the completion of the canal, but are not the only ſources, that ought to be reckoned upon. The ſubſcribers muſt keep it in their recollection, that, as inland navigation is at all times attended with increaſing wealth and improvement, in the parts of a country, that experience its benefits, ſo will that increaſed wealth and improvement contribute to increaſe the trade, and thereby their revenue. And, therefore, in eſtimating the probable amount of the tolls, it would be inaccurate and unfair not to pay due attention to thoſe circumſtances, which, although in the firſt inſtance not apparently connected with the ſubject, yet muſt, at ſome future period, be of very weighty importance. Such, for example, as the plans, that are on foot for continuing the canal in one direction to *Inniſtioge*, and in another to *Caſhel*—the opening of new collieries—the great probability, that in a few years the vaſt quantities of iron ore, and excellent potter's clay, which abound in ſeveral parts of the country, will become articles of extenſive trade—the almoſt certain extenſion of the manufactures already eſtabliſhed—and the great

improvements,

improvements, which are daily taking place in agriculture, and particularly in tillage. All theſe are, perhaps, ſubjects of eſtimation, and ought to ſatisfy, (if any thing was wanting to ſatisfy) the ſubſcribers, that this calculation of the expenſes, which will be annually neceſſary, and of the trade likely to exiſt on the canals, is, in every reſpect, of ſuch a nature, as to prove to demonſtration both the public and private advantages, which muſt reſult from this undertaking.

But, to illuſtrate the nature of the terms more thoroughly, and make them appear in the light, in which they ſhould be viewed, the attention of the ſubſcribers is requeſted to the following ſtatements, extracted from *General Philips's Hiſtory of Inland Navigation in England*, by which they will perceive, that, even where the *whole* expenſes are defrayed by private ſubſcription, the tolls are limited by parliament to a rate even lower than ours, although *one-half* only of the expenſes are defrayed by private ſubſcription.

On the *Lancaſter-canal*, of which the eſtimated expenſe was 414,000*l.* the tolls are on coals, per ton per mile, *three half-pence;* on limeſtone, ſlates, ſalt ores, bricks, ſtone, flags, iron ſtone, coal ſleck, iron cinders, gravel, ſand, clay, marle, and manure, *one halfpenny:* on timber, other goods, and merchandize, *two-pence* per ton. Its length is ſeventy-ſix miles, and depth ſeven feet.—(*See Philips's Hiſtory, p.* 256.)

On the *Grand Junction Canal*, of which the eſtimated expenſe was 500,000*l.*—the rates of tolls are not to exceed—

For lime and limeſtone, one farthing per ton per mile.

For cattle, ſheep, ſwine, and other beaſts—all flint and other ſtones—all bricks, tiles, ſlates, ſand, and fuller's earth—all iron-ſtone, pig-iron, and pig-lead—and all kinds of manure (except lime,) - - - - - } *One half-penny per ton per mile.*

For

For coals and coak, three farthings per ton per mile.

For all other goods, merchandize, &c. one penny per ton per mile.

This canal is ninety feet long, and has ſeven hundred and ninety-ſix feet of lockage on it.

It may be ſaid, however, that the trade and wealth of England is ſo great, that theſe very low tolls are more beneficial than ours can be. But, before ſuch an opinion is formed, let there be a fair contraſt made between the circumſtances of the *Colliery Canal* and the *Grand Junction Canal*. In the one, the private capital is only to be 40,000*l.*—in the other, it was at leaſt 500,000*l.* On the one, the tolls are *three-pence*, *two-pence*, and *one penny*—where they are on the other, *one penny*, *one halfpenny*, and even *one farthing*. On the one, a length of canal of thirty-ſix miles only, is to be kept in repair—when, on the other, the length is ninety miles. On the one, the lockage is only 171 feet—when, on the other, it is 796 feet. And, although the Engliſh canal may have the benefit of the wealth and trade of England—the Iriſh canal will have the benefit of a colliery, and of a direct communication with Dublin, and of paſſing through the moſt improved part of this kingdom.

I have thought it neceſſary to enter into this circumſtantial detail of argument, in order to prevent a poſſibility of any unfavourable opinion being entertained, either in reſpect to the terms, which have been agreed to, or the general policy of the canal, and ſhall now be as brief as poſſible, in ſtating the reſolutions, which appear to be requiſite for carrying this undertaking into effect.

The firſt ſet of reſolutions muſt be calculated to expedite the progreſs of the works, by ſetting forth a concurrence in the terms entered into with the *Direc-*

tors-

tors-general, and by opening a new ſubſcription for the additional ſum of money, that is hereby neceſſary.

The other reſolutions will go to inform the *Grand Canal Company*, of our having received their offer to ſubſcribe; and to expreſs our opinion on the conditions they require for their conſent to the junction of our canal with the Grand Canal — which are, that we ſhould build, at our own coſt, an aqueduct, eſtimated at 6,000*l.* over the river *Barrow*; and either make the canal of the ſame ſize as theirs, as far as *Maryborough*; or, if on the propoſed ſmall ſcale, with bridges and locks ſimilar to thoſe on the *Grand Canal*.

Another reſolution will be neceſſary, to provide a fund for the neceſſary expenſes attending the locks, fitting of the line, and for defraying the fees on procuring the charter.

Another, in conſequence of its appearing, on reconſidering the beſt line to take between *Maryborough* and *Monaſterevan*, that the canal would be more generally beneficial, by paſſing nearer, or through, *Mountmellick*, than in the direction laid down in the map.

I ſhall, therefore, conclude, by aſſuring the ſubſcribers, that no attention or exertion ſhall be wanting, on my part, to carry this undertaking into complete operation—and ſubmitting the following RESOLUTIONS to their conſideration.

RESOLVED,

Firſt.—That we approve of the general outline of the agreement entered into with the *Directors-general*, as ſtated in the letter of their ſecretary of the 18th of December. It being underſtood, that the only reduction, which is to be made in the rate of tolls, is to be on the four articles of flour, meal, potatoes, and oats, from *one penny* to *one halfpenny* per ton per mile.

Second.

Second.—That a ſubſcription be opened to raiſe a ſum, which, together with the ſum already ſubſcribed, ſhall amount to ſuch aid as ſhall be ultimately agreed upon to be granted by the *Directors-general.*

Third.—That the Rev. *Valentine Griffith*, *Andrew Delany*, Eſq. *Edward Stapleton*, Eſq. *Lewis Moſs*, Eſq. *William Gatchell*, Eſq. and Sir *Thomas Lighton*, Bart. be requeſted to receive the ſaid ſubſcription, and to make weekly returns of the ſame to the Hon *John Veſey.*

Fourth.—That we are highly ſenſible of the flattering approbation of the propoſed canal, expreſſed by the offer of the *Directors* of the *Grand Canal Company* to ſubſcribe a ſum of 500*l.* towards the ſame, and that the name of *Richard Griffith*, Eſq. be the firſt on the new liſt of ſubſcribers, as repreſentative of the *Grand Canal Company.*

Fifth.—That having conſidered the conditions, on which the *Directors* of the *Grand Canal Company* propoſe to grant their conſent to the junction of the *propoſed canal* and the *Grand Canal*, we are willing to conſtruct the bridges and locks, that ſhall lie between *Maryborough* and *Monaſterevan*, in the ſame manner and ſize as the locks and bridges have of late been conſtructed on the *Grand Canal:*—but that, as the aqueduct over the *Barrow* will be of equal advantage to the trade of the *Grand Canal* on the line to *Athy*, as to that on the propoſed line, we deem it juſt, that, where the advantages are equal, the expenſes ought to be equally defrayed by both parties.

Sixth.—That the following names, with the ſeveral ſums annexed to them, be added to the new liſt of ſubſcribers Their offers to ſubſcribe having been made, ſince the laſt ſubſcription was filled:

The

The Marquis of Lanſdowne,	-	£.500
Sir Thomas Lighton,	- -	- 500
Jonathan Chetwood, Eſq.	-	- 200
Mitchel Sparks, Eſq.	- -	- 200
Morgan Kavenagh, Eſq.	- -	- 100

Seventh.—That the Hon. *W. W. Pole* and *Henry Parnell*, Eſq. be requeſted to wait upon the noblemen and gentlemen reſident in *London*, poſſeſſing landed property in this county, and lay before them the reſolutions and plans, which have been prepared.

Eighth.—That 5*l.* per cent. be paid by each ſubſcriber, on the amount of his ſubſcription, either to

* * * * * * * * * * *

or into the bank of Sir *Thomas Lighton*, Bart. The ſums ſo paid to be drawn for by *Henry Parnell*, Eſq. on account of the ſubſcribers, and accounted for by him to the *Directors*, when appointed, and to be allowed to the ſubſcribers in part of payment of their ſubſcriptions.

Ninth.—That every poſſible precaution be taken to prevent unneceſſary expenſe, by the works being begun before the moſt accurate and approved plans are made out; and, in order to ſecure this—that an engineer be provided from England, to inſpect and report upon the line, after it is laid down by Mr. *Sparks*.

Tenth.—That inſtructions be given to Mr. *Sparks*, to carry the line as near to the town of *Mountmellick*, as the nature of the country will admit—and in laying it down from *Maryborough*, to do ſo in ſuch a manner, as will be moſt convenient for making a branch at ſome future period, to the *Grand Canal*, at or near to *Tullamore*.

Eleventh.

Eleventh.—That copies of these resolutions be laid before the *Directors-general*, and the *Directors* of the *Grand Canal Company*.

I HAVE THE HONOR TO BE,

&c. &c. &c.

HENRY PARNELL.

APPENDIX.

NO. VII.

THE

CONSTITUTIONAL INSTITUTES

ADOPTED BY THE

INNISTIOGE ASSOCIATION CLUB,

AND

DEDICATED TO THE PATRONAGE OF

ST. COLLOM KILL,

BY WHICH THEY ASSUME THE NAME OF

ST. COLLOM KILL'S SOCIETY.

COMMENCED ON MONDAY, THE THIRD OF NOVEMBER, 1794.

PREFACE.

A NUMBER of reſpectable houſe-keepers of the town of Inniſtioge, and its vicinity, who are amenable to the diſcipline of their church, and the ordinances of the ſtate, join together in an inſtitution, whoſe only object is to lay up a joint fund or ſtock in the hands of one of their reſpective members, or in the hands of ſome other perſon, whom they ſhall unanimouſly appoint, or otherwiſe choſen by a majority of voices, for the purpoſe of relieving any of their members, when afflicted by Divine Providence, with a weekly ſupport, and purchaſe funeral neceſſaries for the more decent interment of their members.

THE

CONSTITUTIONAL INSTITUTES

ADOPTED BY THE

INNISTIOGE ASSOCIATION CLUB,

&c. &c. &c.

FIRST ARTICLE OF THE INSTITUTES.

THAT after the firſt meeting, being the third day of November, one thouſand ſeven hundred and ninety-four, no perſon ſhall be admitted into this ſociety, who ſhall exceed the age of forty-five years, and that there ſhall be no more in number in this ſociety than one hundred, and that every new member, or candidate, muſt be propoſed a month before he is balloted for, in order to give the members time to deliberate on his moral character; and if a majority be for or againſt him, he is ſo elected or rejected.

ART. II.

That this ſociety ſhall meet on the firſt Saturday of every month, at whatever houſe in Inniſtioge, that may be agreed upon, and put one Britiſh ſhilling in the treaſury-box, and ſpend three pence per member. That one preſident or chairman ſhall be appointed, at the concluſion of every three months, as by priority they

they appear in number on the regiſter or book, or otherwiſe choſen by the majority. That twelve councilmen ſhall be choſen in like manner, to aſſiſt the preſident for adjuſting all controverſies, and other matters whatſoever, that may happen and occur in the ſociety; and that the preſident and councilmen for the time being, refuſing ſo to act, and neglecting their duty therein, ſhall be ſubject to the fines, forfeitures, &c. indiſcriminately with their brother members, and as hereafter mentioned.

ART. III.

That ſobriety and every moral virtue muſt inviolably be adhered to—that every member muſt comply with his Chriſtmas and Eaſter duties, within the time appointed by his church—that if any member ſwears an unlawful oath, or is guilty of other miſdemeanors too tedious to inſert, the preſident muſt enforce a fine, as he and the council think fit; and that fine, if leſs than a Britiſh ſix-pence, and ſo recovered, muſt be given to the poor, by the direction of the clergyman; but if ſaid fine be more than ſix-pence, it muſt go to the box. That for more culpable or infamous tranſgreſſions, ſuch as the detraction of a brother member, or baſe actions, which favour or tend to public ſcandal, and which may bring an odium on the ſociety, the delinquents for the firſt tranſgreſſion, to be fined by the then preſident and council, for the ſecond, to be doubly fined, and for the third, to be expelled the body, and thereby forfeit his or their title to the fund or ſtock.

ART. IV.

That every member get credit to the third general meeting appointed by the body, at the expiration of which he muſt diſcharge his debts to the treaſurer, under pain of being expelled the whole body, unleſs that unavoidable neceſſity or buſineſs occaſions him to leave the kingdom for one or more years, and that at his return he would wiſh to be reinſtated, that then ſuch abſentee member, or members, ſhall be received into the ſociety, provided they return without a blemiſh in either health or character, and he or they pay the treaſurer the whole amount due, during his or their abſence.

ART. V.

That every member, who is afflicted by any ſickneſs, *the gout and venereal diſeaſe excepted*, ſince his incorporation, and who is thereby incapacitated to earn bread, muſt be entitled to a Britiſh crown per week, during ſix months illneſs; and if his illneſs continues any longer, even for life, to be entitled to receive a Britiſh half crown per week, out of the joint fund of the ſociety, provided that his ſhare of the fund, or ſubſcription money, be full two years in the treaſurer's hands, previous thereto. That upon due notice being ſerved upon the preſident by the deceaſed member's friends, if the preſident and council, upon proper inveſtigation, find ſaid member an object of ſuch proviſion as above mentioned, then the ſaid proviſion to be taken out of ſaid fund, for ſuch and the like uſe. That the preſident

ſident and council muſt be active to prevent fraud, or loſs at either ſide, or elſe ſubject themſelves to be fined by the reſt of the ſociety, adequate to their miſconduct. That thoſe, who are, or ſhould be hereafter, conſtantly afflicted with the gout, receive no benefit during their illneſs, but be allowed their ſubſcription to the box, if they ſhould be ill a month previous to a meeting night.

ART. VI.

That all and every one of the incorporated members, ſhall attend the funerals of the Inniſtioge clergymen, brother members, members' wives, parents and children, from the age of twelve years, until the ſaid children are married; provided they live in the ſame houſe with their parents, or then in their ſervitude or apprenticeſhip, within the diſtance of five computed miles of Inniſtioge; and the ſaid attendance to continue from the dwelling houſe of the deceaſed, to the burying-place, if within the above mentioned diſtance of Inniſtioge; otherwiſe any abſentee member, unleſs detained by ſickneſs, or being more than the ſaid diſtance from the deceaſed, ſhall forfeit a Britiſh half-crown, to defray the expenſe of the attending members, provided that the abſentee member be occaſionally informed of the ſame, or that he be ſerved with timely notice, by either the preſident or clerk, or any member, or by their meſſenger. That the clerk and preſident, ſo refuſing to act, or neglecting to give ſaid notice, muſt be liable to ſaid fine, provided that the deceaſed's ſurviving friends give notice of the ſame, to the preſident and clerk, twenty-four hours previous to interment.

ART.

ART. VII.

That no member ſhall be permitted to bring into the club, council, or committee-room, any ſtranger, or any other perſon whatſoever, except an incorporated member, without forfeiting an Engliſh half-crown to the body, as directed by the preſident for the time being; but no perſon, for any penalty, to ſit in the council, or committee-room, except the preſident and council.

ART. VIII.

That no member ſhall be balloted for, that is not a reſpectable houſe-keeper; and that every ſuch approved member ſhall be voted in by ballot, and ſhall pay into the treaſurer the amount of ſubſcription, which any other member hath paid from the very firſt commencement of the members in this inſtitution, to the day of the members incorporation; otherwiſe he muſt pay an Engliſh half-crown entrance money to the treaſurer, together with the amount due, as if incorporated from the beginning of the year, or time of commencement, in which he, the new member, hath been incorporated, and that to the very day of his incorporation—but the preſident and council ſhall be permitted to give any indulgence, not exceeding ſix months, for the payment of the ſubſcriptions as above recited.

ART. IX.

That if any member of this ſociety ſhould be intentionally concerned in any riots, or unlawful combinations, ſo as to diſturb the peace and good order of the country, ſpeak any treaſonable or ſeditious words againſt his Majeſty's perſon, crown, or dignity, or againſt the government of this kingdom; that then any ſuch member, ſo offending, ſhall be tried by the then preſident and council; and if it ſhould appear to them, by proper information, that he be guilty of ſuch offence or tranſgreſſion, then he the ſaid offending and convicted member, ſhall be totally excluded from the ſaid ſociety, without any further title or benefit to him, ariſing from the fund in the hands of the ſaid aſſociated body.

ART. X.

That the preſident, clerk, treaſurer, (if a member) and councilmen, or their reſpective proxies, or deputies, ſhall attend on the monthly meeting nights, in the club-room, at the hour of eight during the ſummer half year, and at ſeven during the winter half year, otherwiſe ſubject themſelves to be fined, as the attending part of the councilmen, and other members think fit.

ART. XI.

That if any member of this ſociety ſhould bring himſelf to any ſickneſs, or diſorder, by his own forwardneſs,

wardneſs, unlawful exerciſe, drunkenneſs, quarrelling, &c. provided that he himſelf was the chief promoter thereof, that then upon information being received by the preſident and council of the ſame upon oath, the ſaid offending and afflicted member ſhall receive no benefit from the fund during his ſickneſs; but if one perſon informs, he muſt prove his accuſations on oath, as no perſon's conſcience will be taken leſs than three proſecutors, and them to be members.

ART. XII.

That at the deceaſe of any of the members, or their wives, forty ſhillings is to be laid out of the fund, to defray *funeral expenſes, together with the expenſe of one high maſs*, for the ſaid deceaſed, by the direction of the preſident; provided that the money of the deceaſed member, or member's wife deceaſed, be two years in the treaſurer's hands previous thereto. That no benefit for the funeral expenſes, nor for high maſs, ſhall ariſe to a member upon the death of a ſecond, third, or fourth wife, ſince his incorporation, until three years ſhall elapſe after marriage. That the relict of any deceaſed member ſhall be paid (before two months are expired of her widowhood) a ſubſcription of one Britiſh ſhilling, by every member of the ſociety; and the ſame, in like manner, to be paid to a widower member; and that if both parents ſhould happen to die before them, or any of them, ſhould receive ſuch ſubſcription, that then the firſt ſurviving iſſue muſt be entitled to one or both ſubſcriptions. That the widow of any member muſt be buried at the uſual expenſes, as the members are, provided ſhe dies during her widowhood.

ART.

ART. XIII.

That the clerk (who is already appointed to this ſociety) be always continued, and his ſon, and no other; and, when an incorporated member, be always free, and exempt from any expenſe, ſubſcriptions, or contributions whatever, to either box, fund, or entertainment, every meeting night, or nights, or days, that he is occaſionally called upon, but ſhall be entitled to every privilege and benefit, as any other member is, as a gratuity to his department or office; but liable to the ſame fines for tranſgreſſions as any other members are.

ART. XIV.

That the firſt or next ſurviving male iſſue of any deceaſed member, or in caſe of no ſuch iſſue, an adopted heir, ſuch as a nephew or firſt couſin, ſhall be entitled to occupy and fill the place of the deceaſed, and poſſeſs the benefit thereof in ſaid ſociety, the clerk's ſon, or adopted heir (ſo as he is able to act as clerk) excepted; and he or they, ſuch heirs or ſucceſſors, paying one month's ſubſcription money to the treaſurer; and that he joins the body without blemiſh in health or character; and then he ſhall be incorporated, and ſupport the fund with his ſubſcription, as every other member doth:—If the child, at the death of his father, be ſeventeen years of age, he muſt join the body, or forfeit his title thereto, if in the kingdom, provided he be not an apprentice; and if ſo, immediately in twelve months after his apprenticeſhip is ſerved,

ſerved, or death of his father, if the child (at the death of his father) be under age, and complies with the above rules, when he arrives to the aforeſaid age, he ſhall be entitled as above mentioned.

ART. XV.

That no preſident, councilman, or other members, ſhall lay out or expend any money out of the joint fund of ſaid ſociety, without the unanimous conſent of the whole body, or a majority thereof, for any uſe or purpoſe whatſoever; ſave that upon an unavoidable call or neceſſity, the preſident, treaſurer, clerk, and a few of the council, may lay out one crown only, for the uſe of the ſaid ſociety; and that no preſident, councilmen, or other members, ſhall make any other rules or inſtitutes but theſe; neither ſhall they add any thereto, nor diminiſh any therefrom, without the conſent of the whole body or ſociety, which ſhall never be diſſolved ſo long as fourteen brother members do ſurvive and remain aſſociated.

JEREMIAH HICKEY, CLERK.

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