

Charles Collins

GENERAL VIEW

OF THE

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A G R I C U L T U R E

OF THE

COUNTY OF GLAMORGAN,

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY MR. JOHN FOX.

DRAWN UP FOR THE CONSIDERATION OF
THE BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT.

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TO THE READER.

IT is requested that this paper may be returned to the Board of Agriculture, at its Office in London, with any additional Remarks and Observations which may occur on the perusal, written on the Margin, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consider itself responsible for any fact or observation contained in this Report, which, at present, is printed and circulated, for the purpose merely of procuring farther information, respecting the Husbandry of this District, and of enabling every one to contribute his mite to the improvement of the country.

The Board has adopted the same plan in regard to all the other Counties in the United Kingdom; and will be happy to give every assistance in its power, to any person who may be desirous of improving his breed of Cattle, Sheep, &c. or of trying any useful Experiment in Husbandry.

London, April, 1796.

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COUNTY OF GLAMORGAN.

INTRODUCTION.

THIS is a maritime county, in the province of Canterbury, and dioceses of Llandaff and St. David's. It is reckoned 50 miles long, 24 broad, and 145⁺ in circumference; containing 660 square miles, or about 422,400 acres. It is bounded by the Severn sea on the South, by Brecknockshire on the North, by Monmouthshire on the East, and by Carmarthenshire on the West.

The county is divided into ten hundreds, having one hundred and eighteen parishes, one city, Llandaff (which is the see of a bishop), and nine market towns, though there are other contributory boroughs; that is to say, Cardiff, the capital borough (which sends one member to Parliament, and gives the title of baron to the family of STUART, now Marquis of BUTE, the owner of the fine old castle there, that has been repaired, and fitted up as a handsome residence, at a great expence, by the present Marquis), Swansea, called in Welsh, Abertawe, Neath, Bridgend, Caer-philli, Llantrissant, Cowbridge, Mirthyr Tidfill, and Aberavon, which two last places, have of late years regular markets, from the iron and copper works established near them; these have brought from different parts of the country such numbers of workmen and their families, as to create a consumption of great quantities of the necessaries of life, and cause a public market once a week.

This

*100 miles of which is
Sea or Navigable R.*

This county sends two members to Parliament, one of which is for the county, and one as before-mentioned. It provides 360 men for the national militia.

GENERAL FACE OF THE COUNTY.

THE northern part is rough, with mountains, which, as they decline southward, gradually grow more improvable, at whose foot a plain extends, open to the south sun in such a situation as CATO preferred to all others, and for which PLINY so much commends Italy. For this is the richest part of the county, and is thick set with towns.

RIVERS.

THE principal within this county, are the Taff, Rumney, Ogmere, Avon, Clydach, and Tawey. The Taff arises out of the mountains, pursues its course by Llandaff, and enters into the sea four miles below Cardiff. The river Rumney, or Remny, also arises out of the mountains: it is the eastern boundary dividing this county from Monmouthshire; it passes near to Caer-philli, and enters into the sea. It derives its name from the British word *remni*, to divide. The river Ogmere arises out of the mountains by Cortie, passes near Newton, and enters into the sea. The Avon, Clydach, and Tawey, also arise out of the mountains, and discharge themselves into the sea at the following places: the Avon, near Aberavon; the Clydach, near Neath; and the Tawey at Swansea.

NATURAL

NATURAL PRODUCE.

A great number of excellent horned cattle, horses, sheep, corn, timber, coppice woods (except near the sea, where the westerly winds prevent their growth), pit-coal, culm, lead and iron ores in vast plenty, with some veins of gypsum and fine marl.

TRADE.

OWING to the contiguity of this county to the ocean, it commands a considerable portion of commerce, the principal mart of which is Swansea, called by the Welch, Abertawe, from its being built at the mouth of the river Tawe (aber being Welch for mouth); a pleasant, maritime, and very improving town, and at this time, in point of tonnage entering into the port (according to the Custom-house books), doubly exceeds that of Bristol, occasioned by the extensive collieries opened within the distance of one to three miles of it; and which, from the cheapness of the coal afforded from thence, has induced several opulent persons to build works for the smelting of copper ore, &c.

This town is situated near the centre of a most beautiful bay, between two hills, which defend it from the N. W. to the N. E. The southerly winds blowing over a vast expanse of sea, renders the air mild, and the soil being rather dry and gravelly, makes it a pleasant and healthy situation.

The adjoining country is truly rich and picturesque, and many parts of the lands capable of great improvement. At present, the country furnishes a great variety of delightful rides and walks. Much company resort to this beautiful country during the bathing season, there being some very good machines, an assembly-room for the accommodation of

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the company, and a plentiful supply of butchers meat, fish, fowl, &c.

Corn and hay have been scarce ; the slow progress made by the farmers (particularly upon old leases) being such, that there is not at present enough grain grown for the consumption of the inhabitants of that town and neighbourhood, which is become very populous ; but large supplies have been drawn from other counties, and from England. The high price of provisions, and the apprehension of again experiencing the distress which had been felt in some parts, induced the principal gentlemen of this district of the county, to meet during the severe season, when they very laudably subscribed 1300*l.* as a fund to buy corn to bring into Swansea, thereby to keep down the price, and supply the poor at a moderate rate. By this means, plenty has been preserved, and peaceful confidence continued. This town has increased much during the last twenty years, and is supposed to contain now between six and seven thousand people.

The coals exported from hence in 1793, amounted to above 100,000 chaldrons ; but since the war, the export has declined considerably. The consumption of coal in the copper-works, is supposed to be not less than 55,000 chaldrons annually. The chaldron is reckoned 36 bushels. This seaport has always been a place of some trade, which furnished frequent intercourse with London and Bristol, Cornwall and Ireland ; and of late years, has partook of some foreign trade, to the Baltic and West Indies. From the immense mines of coal, lime, and iron stone, in the neighbourhood, a great number of manufactories in iron, copper, brass, spelter, tin, &c. have been erected on the banks of the Tawey, and lately, a large extensive brewery and a dry dock. There is likewise near the town, a pottery, carried on with great spirit, in which they now make earthen ware little inferior to that of Mr. WEDGEWOOD. There is also an iron foundry. Ship-building is also carried on, but not to so great an extent as it
was

was formerly, when wood was more plenty, or as it will be when wood can be brought down the canal that is making seventeen miles up into the country. There are two roperies, and a salt work ; the latter unfortunately remains idle, from some disagreement that has arisen between the parties interested, who reside at Liverpool.

Very few places in this kingdom have had so rapid an increase of trade as Swansea ; for from the Custom-house books, it appears, that in the year 1768, there entered 694 vessels ; in 1790, 1697 ; in 1791, 1803 ; in 1792, 1828 ; and in 1793, 2028 ; and that the tonnage had increased from 30,631 to 120,852 tons, register measure. The harbour is a very safe one, but a serious evil exists, which the spirit of some individuals has adopted a plan to remove. It is this : a bar of sand obstructed the entrance of the river, so that vessels drawing ten feet water, could only enter it at spring tides ; but an Act of Parliament has been obtained, to enable trustees to remove the bar, by which, (under the direction of an able engineer, Capt. HUDDART), the same will be done, and vessels of 200 tons burden will have water to sail in and out of the river every day in the year.

There are seven considerable copper-houses built on this river, where about 35,000 tons of copper ore are smelted annually. The copper ore is principally brought from Cornwall, (and a small quantity of it from Anglesea), and coals carried back in the same vessels, to supply the fire engines, &c.

CLIMATE.

THE northern mountainous parts are very bleak and cold ; but on the south, towards the sea, where the country is more level, it is mild, and remarkably fertile. The breezes arising from the ocean, cool the gleam of summer, and the moun-

tains before mentioned, shield the lands in a southern situation from the northern winds. So that the summer is generally genial, not sultry; and the winter is without that inclemency inseparable from less favoured districts. A vast deal of rain generally falls upon this county, in consequence, it is presumed, of its vicinity to the sea.

PLACES OF NOTE.

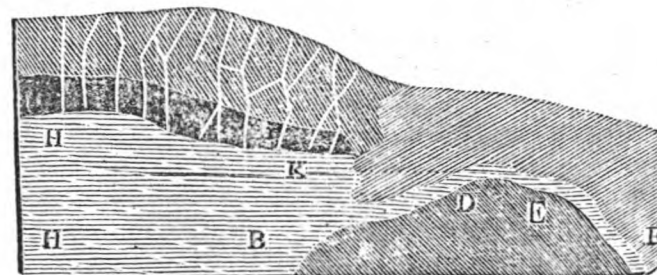
THERE are several ancient monuments in this county, imputed to the Romans and Britons: the old Abbey and Chapter House of Margam, are very striking, and peculiar; and on the coast, are Scilly isle, Barry isle, and Scasker isle, with Breaksea point, Nash point, the Mumble's point, Swansea bay, Caswell bay, Penarth point, Oxwich point, Port Inon point, Wormshead, and Whitford point; the ruins of the ancient and venerable Abbey of Neath, with many castles in different parts of the county, and along the coast.

There is a warm spring, called Tave Well; and at Swansea a mineral spring, besides others of less note. At Newton, on the west bank of the river Ogmor, about 100 paces from the shore of the Severn, in a sandy plain, is a spring, not of the clearest water, but tolerably pure, and fit for use. It never runs over, but you go down some steps to the well. In spring tides in summer time, you can scarce take up a dishfull of water; but when the tide is out, there is enough to fill a large vessel. The same uncertainty continues in winter, but far less visible, by reason of the adventitious supplies of rain, and other causes. The tide being in the Severn, without any body coming to carry away the water, it sunk about three inches; soon after, it rose a foot. The lower diameter of the spring, within the walls, is six feet broad.

broad. POLYBIUS mentions such a spring at Gades, and gives this solution of it—"that the wind wanting its usual vent, returns inward, and stopping up the passages of the spring, confines the water; that afterwards, the water quitting the surface, the spring is no longer obstructed, and then the water rises up plentifully."

Possibly this phenomenon may be caused by the spring percolating through a channel, in the form of a syphon. Since this idea entered the writer's mind, he has referred to ADAMS' lectures on natural philosophy, for information. From thence he has not only received satisfaction on this subject, but also a general principle, that he hopes may be very successfully applied to the purposes of *draining*; he therefore thinks it his duty, accurately to detail the passage from that intelligent author, by whom he has been so usefully instructed.

"The syphon affords a very probable solution of the nature of *intermitting springs*, which I must illustrate by a diagram.



"Let H H K B, represent a cavity in the bowels of a mountain, from the bottom of which proceeds the irregular cavity B D E F, forming a syphon. Now, if by means of rain, springs, or any other cause, this cavity begins to fill, the water will at the same time rise in the leg of the syphon or cavity, till it has attained the horizontal level, when it will

will begin to flow out by means of the leg D E F, and will continue to rise, and increase in the quantity discharged, as the water rises higher, till at length the syphon will pour out a full stream, and thus empty the cavity. The stream will now cease till the cavity fills again, when it will exhibit the same appearance; and these periodical returns of flood and cessation will be regular, if the filling of the cavity be so; but the intervals of the return must depend on the dimensions of the cavity, and many other circumstances. Many instances of this kind occur in nature. At Gravesend, there is said to be a pond, out of which the water ebbs all the time the tide is coming into the adjacent river, and flows during the time that the tide is going out. This appearance probably arises from a subterraneous reservoir, equal in capacity to the quantity of water that rises and falls in the pond: between this reservoir and the pond there may be a natural syphon, by which they communicate with each other, and act as we have already explained; and a second natural syphon may in the same manner convey the water away from the pond, when it is filled to a certain height."—*Adams' Lectures on Natural Philosophy*, vol. 1, p. 96, 97.

It seems, therefore, that the syphon may in many cases be effectually applied to drain lands, and that it may also prove particularly useful for the purposes of irrigation. For wherever pits, locks, lakes, or other depositaries of water, are to be drained, the syphon seems not only the easiest, but also the least expensive mode of draining; and in various cases, it may be made to irrigate some lands, while it drains others.

SOIL.

SOIL.

THIS, for a vast extent, upon the mountains for many miles, and near them, is principally of a black peaty kind; though generally very barren, as much so at present, as perhaps any in the kingdom, yet it is capable of great improvement, and interspersed with fruitful vallies, that afford tolerable good pasture for cattle, sheep, and some few goats; as also small horses: while the southern part, being more level, and a rich good soil, admits of being highly cultivated, and produces large crops of grain, hay, and remarkable sweet grass, turnips, rape, &c.

That part called the Vale of Glamorgan, and that beautiful extensive one adjoining, deemed a part of it, viewed from the eminence near the summer-house erected by the family of the late Sir EDMUND THOMAS, a little upon the right hand of the turnpike road near Winvoe Castle, about five miles from Cardiff, in the way to Cowbridge, commands a prospect of a wonderful large fine tract of land, partly cultivated, and part divided into fine fertile pastures, delightful to behold; and affording large crops of corn, with abundance of hay, as well as exceeding rich pasture, to numerous flocks and herds of sheep and cattle, that are bred, and reared, on that beautiful and delightful spot. This part, indeed, I may say, is in general so fruitful, pleasant, and populous, that it is called (and that too, I think, very deservedly) the *garden of South Wales*, as the Vale of Cluid is reckoned to be that of North Wales.

The soil in this part, is in general, of a fruitful loam; but in the parts lying down towards the sea, it is inclining more to a rich clay. From the hill before recited, coming from Cardiff, there is a strata of excellent lime-stone, running nearly east and west, through the whole Vale, for about twenty miles, as far as Pyle, only a little below this kindly soil.

soil. This useful manure of lime, from its plenty and contiguity, is had at so easy an expence (nine heaped bushels being to be purchased in some places for a shilling), that it may be ascribed to the negligence of the farmer, if he does not obtain good crops. But it is observable, that as plenty is apt to produce waste, in many instances, there is reason to believe they proceed too far in the use of this excellent manure of lime, depending upon this alone, and not considering (perhaps from a want of knowing it) that too much of a calcareous substance spread upon soil of that nature, as well as most others, may prove injurious, unless there is a proper proportion of the oliagenous matter (as dung, &c.) used with it. Land highly limed, will certainly bring a crop or two of corn; but if there is not some dung also used, the land, by repeated white crops, will get exhausted, so that when laid down, it will not produce much herbage; and if kept in tillage, and continued to be cropped year after year (as is often the case with unskilful and poor farmers) it is worn out, so as not to recover itself for a number of years to come.

Several veins of lead have been found among the lime-stone. Many of the mountains and hills are found to abound in iron ore, with plenty of fine coal of excellent quality. That lying in a range next bordering on the lime-stone, is a strong burning large coal, very useful for general purposes, and for smelting of copper, from whence a number of these works have been erected in this county. And beyond this sort of coal, more to the northward, there are veins of the stone coal found, of great magnitude, many feet thick in the sides of the hills, without sinking at all; and canals have been forming, and are still carrying on, at a very considerable expence, to bring down this useful necessary of life, as well as the iron ores, and iron made from them, to the sea coast. The coals, in many places, are found in the sides of the hills in strata, several feet thick, and are brought down, some of them being almost close to the canals, at so easy an expence,

expence, that immense quantities are shipped off to different parts of Europe, as France, Spain, Portugal, &c. and also to Cornwall; and the vessels return with copper ore, to be smelted, in situations near where the coal is raised. Besides, vast quantities are shipped off to Dublin, and many other parts of Ireland. A great deal of the stone coal is shipped off to London, for drying of malt, to send into Surrey, Herts, Berks, and other malting counties, as it burns quite clear, without any sulphur or smoke.

DOMAINS.

THE principal ones in this county, are those of the Right Hon. Lord VERNON, at Bretton Ferry, and that of THO. MANSELL TALBOT, Esq. of Margam, both which properties of lands are contiguous to the main road, and extend from the delightful vale where they are situated, up to the mountains. These estates formerly belonged to Lord MANSELL and his ancestors, who purchased them from King HENRY the Eighth, being the famous Abbey of Margam, and lands pertaining to it.

The noble Castle of Cardiff, belonging to the Marquis of BUTE, Custos Rotulorum of the county, &c.

That of the Right Hon. the Earl of PLYMOUTH.

That of CHARLES EDWIN, Esq. of Llanwihangle, and that of his son.

The seat of THOMAS WYNDHAM, Esq. M. P. for the county, at Dunraven Castle, near the sea.

That of the late ROBERT JONES, Esq. at Fonmon Castle; of DRAKE TURWITT, Esq. of St. Dennis Castle; the late Sir EDMUND THOMAS, Winvoe Castle, since of PETER BERTS, Esq.; the seat of THOMAS MATHEWS, Esq. (late Admiral MATHEWS) of Llandaff; that of JOHN LEWEL-

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Penryn Street

LIN, Esq. at Pentleyir, and Enys y Gerran; that of JOHN MORRIS, Esq. of Clasemont, near Swansea; together with that beautiful and elegant seat of the MACKWORTH family, at Gnoll Castle, near Neath, so much improved by the late Sir HERBERT MACKWORTH, Bart. by its numerous plantations, &c. up to the mountains. The estates of these proprietors, with those of many others of great respectability, are equally ornamental and useful to the country, and afford such specimens of good husbandry, as would do credit to the most improved part of the kingdom.

OCCUPATION.

MANY proprietors farm the whole, or considerable portions of their estates; there are, nevertheless, a numerous tenantry, some of whom hold their farms at will, some upon leases, and others upon lives. The first of these tenures is inimical to improvement: no man likes to lay the foundation of improvements, when caprice may prevent his raising a superstructure thereon, or banish him from it when it is completed. The second, is the true tenure for mutually promoting the interests of landlord and tenant. Leases, by giving an interest sufficiently durable to reward industry, naturally incite this principle; and by plainly pointing out in equitable covenants, the path of duty, go a great way to secure the tenant's attachment to it. Progressive improvement in the estates so held, is therefore generally, and ought always to be, the consequence of this tenure. The tenant looking to that period when his interest is to conclude, anxiously endeavours so to improve his trust, as to gain a renewal of his term: this, the liberal landlord without hesitation grants, knowing that an improving tenant, while he punctually pays his annual rent, is at the same time annually increasing the value

value of the fee-simple of the estate. The proportion of increased rent upon each renewal, may be always fairly graduated by the improved value of the fee-simple, with certain satisfaction to the landlord, and without the least injustice to the tenant.

The third tenure, for lives, appears to be particularly objectionable; on principle, and on account of the miserable aspect that many of the estates thus held, bear in this county. It seems to be as much too confidential, as the tenure at will is too transitory. There is no rule given for cultivation, nor in many cases any other sought after, or practised, than what will secure the tenant's mere maintenance. He loses sight of that relation which he bears to surrounding society, and which is so happily promoted by leases for terms of years. Secure in his possession, he grows indolent in the enjoyment of it, and by failing to cultivate his trust, negatively injures society, and impairs the interest of his successor.

SIZE OF FARMS.

THERE is a great variety in this respect, in the different parts of the county, there being some let so low as five pounds per annum, and from thence rising to one, two, and even as high as five hundred pounds per annum; but there are few of the latter description. One farmer in the Vale, is supposed to hold 800l. per annum; and one proprietor, who I may call one of the first improvers in South Wales, holds at present about two thousand acres of land, a great part of which he has the merit and satisfaction of having himself reclaimed from barrenness, and now occupies in a superior style of cultivation; thus holding out to his neighbours, and indeed to the whole kingdom, an example well

worthy of their imitation. The farms throughout this county, are generally small, mostly under fifty pounds a year, and in many cases, a great number of acres are held for much less per annum than this sum.

There are farms of great extent in the mountainous parts, which are lett at very low rents; many of them upon leases for lives. Much of this land lies in an uncultivated state, particularly where the farm is held by *one old life*. It is mostly grazed between the large patches of furze, bushes, and fern, by their mountainous sheep, and small cattle, with some horses, chiefly of the poney kind.

EMPLOYMENT OF LAND.

MORE of it is appropriated to pasture, than seems to be consistent with the true interest of the county; hence the necessity for applying abroad for that grain, which a more equal distribution of their land to husbandry and grazing, would constantly supply. There is some reason certainly for this preference to grazing, when it is considered how famed this district is for its breed of cattle. The surface damage done to other large portions of land, in working mines of coal and iron ore, is also another reason that impedes the operations of husbandry; but no considerations, however lucrative, or alluring, should divert the attention from such an extensive culture of corn as will be sufficient for the exigencies of every district, and somewhat more, for the casual supply of neighbouring wants. This culture being the principal stay of life, every industrious exertion should be practised to preserve, and prudently extend it.

CULPI-

CULTIVATION OF GRASSES.

CLOVER, trefoil, rye-grass and sainfoin, are cultivated, but to no considerable extent. The latter is a valuable addition to every farm, and when drilled, produces a very luxuriant crop, a single plant often producing half a pound of hay when dry. It is excellent food for cows, and considerably increases their milk. March and the beginning of April, are the best seasons for sowing it, as the severity of winter, and the drought of summer, are equally unfavourable to the young plants. The improvement of the native herbage in every district, should be particularly attended to, by husbanding seeds from the best grounds, and sowing them on lands less fertile. It is not always the most luxuriant looking pasture that turns out the most profitable, or that will be the best liked by cattle. They give you a correct criterion of the nature of pasture, by their conduct when first turned out into the field: if the pasture be choice, they begin at once to feed; if the pasture be in part not good, they blow upon it, and traverse the field till they find the sweetest herbage. Where grass-seeds cannot easily be obtained for the improvement of pasture, certain manures in some degree will answer the purpose. Land manured with marl, will in the second year after, produce plenty of white clover grass. Soapers' ashes will also produce the like effect. So the feeding of cattle on one sort of grass, will, from their manure, produce other grasses, and fine that whereon they are fed. Where sheep are fed on burnet, the ground fills with the natural trefoil, which improves the pasture, and makes it very sweet, insomuch, that the sheep will leave the burnet to feed on the trefoil. An approved mode of laying down lands to grass, is, to sow ten pounds of white clover, and ten bushels of Yorkshire hay-seeds, to an acre: the London price of the former is one shilling per pound, and that of the latter two shillings and sixpence per bushel.

SPECIES

SPECIES OF STOCK.

THIS county is plentifully supplied with horned cattle, horses, sheep, and pigs. The breed of cows is particularly beautiful; they give much milk, and quickly fatten. In general, they are rather small, of slight bone, of a bright brown, and frequently black colour; are short in the legs, and handsome in every point. The horses bred in this district, are active, safe and hardy. The sheep are small, healthy, and afford excellent wool. That the breeds of cattle, horses, and sheep, cannot be further improved, I will not presume to say, as progression to perfection is infinite; but I feel no scruple in declaring, that the native good qualities of each species, are such as to need no aid beyond what the county affords, to continue the course of improvement that is every year advancing.

The pigs bred in this district are chiefly of the china sort; there is perhaps no stock a farmer keeps, that is more profitable than this. A litter of eight or ten pigs, reared and fattened within a twelvemonth, will bring a sum far surpassing what can be obtained for the produce of any other species of stock, at one time, and within the like period. Much benefit might be derived to this county, it is presumed, by curing this food for the supply of the numerous shipping that frequent Swansea, Neath, and Cardiff.

POULTRY.

THE breed of this article of food, is not encouraged as much as it ought to be. Wherever poultry abounds, its influence is considerable in keeping down the price of butchers' meat; and this seems to be an object of great consequence at this period.

WATERING

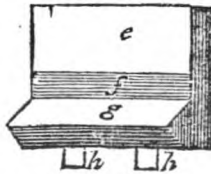
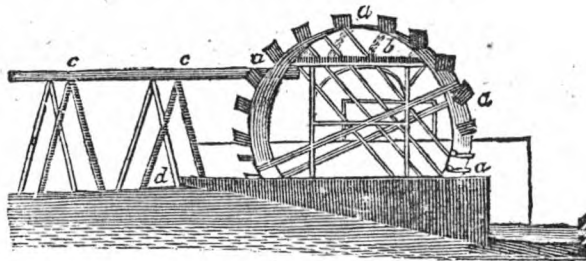
WATERING OF LAND,

Is not practised to any great extent; not owing to the incapacity of the land for receiving this improvement, but rather, it is apprehended, owing to the virtue of the practice not being more generally known. Large tracts of land lying near the rivers and brooks dispersed throughout this county, are very capable of this improvement, and very frequently it might be effected at a small expence, by the skilful management of copious springs. In this art, as in all others, *Nature* should be our guide. We should accurately observe in those periods when the rivers and brooks overflow the adjoining meadows; how long the water rests thereon; how often this effect occurs in each year; how far the periods of the water overflowing agree, when one year is compared with another; and *what effect is produced by each natural irrigation*. Attention to these circumstances, would furnish some rules for advancing this practice to a state of perfection, as certain and unerring as the *source* from whence they would be drawn.

Where land lays so high above the level of the stream, as not to admit of its being irrigated without adventitious aid, the Persian wheel is well adapted to furnish such land with this improvement; of which Mr. WORLIDGE, in treating of meadows, gives the following description—"This wheel is made much after the manner of that of an undershot mill, viz. with a double ring, into which are let two pins, on which the floats are fastened; these floats are made hollow; the half that is most remote from the wheel, holds the water which is taken in at the open place, above the middle of the back of the float; and as the wheel goes round, and the float laden with water rises, so the water by degrees tends towards that part of the float which is next the wheel; and as the float surmounts the cistern or receiver, the water empties itself into it, every float succeeding the one the other, emptying
itself

itself into the receiver; so that if one float contain a gallon of water, and there be thirty floats on the wheel, at one motion round it delivers thirty gallons of water into the cistern. Such a wheel will be about fifteen feet in diameter, the floats at eighteen inches distance, and will deliver the water at eleven or twelve feet above the level of your stream; and will go four times round in one minute, and carry up about an hundred and twenty hogsheads of water in an hour, with twelve or eighteen inches penning or stopping of but an ordinary current of water, which will water very well thirty or forty acres of land; for if your land be cold and clayey, too much water does it hurt; and if it be light, warm, or sandy, a little water does it much good. It is also to be observed, that this motion is constant, and will last many years without repair, so that it stand not still, the one side drying and waxing lighter than the other; also observe, that the slower it moves, the better it delivers the water.

“ The view of this wheel is below delineated.”



‘ a,

‘ a, a, a, a, signify the wheel; b, the cistern that receives the water; c, c, the troughs standing on tressels, that convey the water from the cistern to the place you desire; d, the hatch, or penstock, that bays up the water to a reasonable height, under which the water drives the wheel; e, one of the floats presented to your eye, apart from the wheel; f, the open place that is to receive the water; g, the open place out of which the water issues; h, h, the two pins, or ledges, rivetted on to the foreside of the float, and wherewith you are to fix the float to the two rings of the wheel.’

The description of this machine is as complimentary to Mr. WORLIDGE for its clearness, as the work from whence it is taken is to that author, for its perspicuity and utility.

The Persian wheel, it is submitted, might be so formed as to act in working a mill, as well as for the purpose of irrigation.

Effectual as this machine is for the purpose of irrigation, it is surprising that it has been so little used. But without proper patronage, it is the common lot of improvements, however excellent, to be neglected. This, however, it is trusted will not happen in future; as a Board of Agriculture is established, it is to be hoped that all inventions of utility in this science will be communicated to them, as they will certainly receive consideration from that respectable body, and patronage, if of real service.

WHAT GRAINS ARE CULTIVATED.

WHEAT, barley, and oats, are the grains chiefly cultivated. The following account respecting the culture of wheat and barley, which I received from one of the first improving farmers in the county, will shew that the most striking disadvantages of barrenness are no obstacles, but rather incentives

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to well regulated industry and judgment. A piece of ground containing near thirty acres (which had formerly been divided into eleven closes), consisting of loam, clay, and full of large stones, roots of trees, and bogs, was thus treated: the intermediate fences were removed, a deep ditch sunk round the boundary fence, drains cut in all the wet spots, and carefully filled with the above-mentioned stones, by skilful masons; such part as had never been ploughed (and was overgrown with rushes, fern, and furze), were burnt, and the whole dressed with lime, after the rate of eight chaldrons per acre, each containing thirty-six bushels, that is, two hundred and eighty-eight bushels per acre; the dry loamy part was well dunged; the peat carried on the clay, and *vice versa*, the clay on the peat; and sown in an early season with wheat, at the expence (all charges included, viz. of lime, dung, burning, draining, ploughing, grubbing of hedges, and seed) of 17l. per acre. The first year's produce was one thousand and eighty bushels of wheat from about ninety bushels sown broad cast, which sold for about 324l. The next year, the same land was sown with barley, and the crop produced nine hundred and sixty bushels, which sold for 146l.; with this crop, clover and rye-grass were sown; and a farmer in the neighbourhood, who would not before have given four shillings an acre for this ground, offered to take a lease of it for twenty-one years, at twenty shillings an acre, and to pay all taxes, according to the custom of this part of the country. From this account, we learn that no expence, in a reasonable way, is hardly too great to pay for the cultivation of neglected lands, in situations where the produce will bear a good price.

DRILLING AND DIBBLING.

THE culture of grain by drilling, or dibbling, cannot be too strongly recommended. The saving of the seed is an object of great importance at all times, and particularly when grain is not so plentiful as it has been. Upon a moderate calculation that I have made, of the saving of seed, and the superior increase of the drilled and dibbled crops throughout the united kingdom, it might make to the amazing amount of *ten millions five hundred thousand pounds a year extra produce* upon the various crops of grain.

This calculation is proved to me by my own experiments, although made but upon a small scale (which nevertheless may have given more distinct data to my apprehension), and the observation that I have made on the progress of this grand improvement for some years past. It will not appear exaggerated, when it is considered that at least ten shillings per acre in seed and in the extra produce, are saved by the drilling system. To me it seems to be one of the first objects that ought to receive attention for promoting plenty of grain. It may be worthy the consideration of government, how far it may be eligible to encourage *dibbling by premiums, and drilling, by reducing the price of the machines*. The latter might be effected by buying out Mr. COOKE's patent, and getting his drill machine made in every part of the kingdom where they can be made cheapest. In the manufacturing counties of Warwickshire, Staffordshire, &c. they might be sent by the canals to most parts of the kingdom, at a small expence. At present, they are made in the dearest place, and the freight, added to the original cost, to this and other places far distant from the metropolis, so enhance the expence, as to deter many from purchasing them, who, if they were cheaper, would be disposed to adopt this course of culture. It might also extend the use of this machine, if the Board of

Agriculture was to recommend to the respective Agricultural Societies throughout the united kingdom, to bestow drill machines as premiums of honour for extraordinary exertions in husbandry.

PULSE.

BEANS, pease and vetches, form a part of the culture of this district, and are frequently very judiciously introduced as ameliorating crops alternately with grain; but hitherto, it has not been determined with sufficient accuracy to support a general system, how far any particular pulse or green crop, interveniently used with white crops, is so superior to others, as to give it the preference upon principle. The following mode may possibly throw light upon this inquiry, and form the result into system. Divide a ground into four parts, and sow in distinct spaces, beans, pease, vetches and turnips: as the respective crops of each are cleared, prepare the whole ground to receive one crop of grain, and attentively observe the comparative produce of it, from the four portions of land. This trial upon various soils, and with the addition of other green crops, will afford some satisfactory rules to the intelligent agriculturist.

TURNIPS,

ARE found, when compared with hay, to be worth about six shillings a ton; a common crop is about twenty tons per acre, often thirty tons. The former, therefore, would make each acre worth from 6l. to 9l. This culture is recommended by their ameliorating quality, and the excellent food that they furnish for cattle and sheep, particularly ewes and lambs.

lambs. Another advantage results, from the manure deposited on the land by the sheep folded thereon. The *flat turnip* will not endure severe frost; but the *turnip rooted cabbage*, the *Swedish turnip*, or *roota baga*, and the *tankard turnip*, are proof against it. It is a good practice to draw turnips before the frost sets in, that they may be stacked, and dealt out as wanted upon the land during the severity of the winter. They are eaten with less waste when cut into quarters, and put into flakes for the sheep.

ROTATION OF CROPS.

THEY are very various throughout this county, and conducted in many instances with much credit to the agriculturist. Rather than attempt to detail the different rotations, I have thought it better to combine such a one from all, as will be likely to meet the general approbation of the respective occupiers; be most profitable to them, and that will be most likely to produce plenty to the nation. I shall submit it with deference to the public opinion, and with the hope, that those industrious individuals to whom it is more particularly offered as a rule, will consider it with that freedom of judgment, which enlarges the sphere of knowledge, and correct it wherever they may conceive it not fully answerable to the best interests of their county.

Let all lands that want it, be broke up this year pretty deep, and sow oats as soon as convenient at one ploughing, harrowed in.

Upon the stubbles of oats, barley, and wheat, of the past year, 1795, or upon light lands intended for fallow in this year, 1796, let pease be drilled in early, in rows, at eighteen or twenty inches apart; or upon stiff lands, beans (the small tick kind seems to merit the preference), drilled, or dibbled:
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if drilled, the saving of the seed will be great; if dibbled, still greater; and will furnish a great deal of employment for poor women and children; so as to help those who have large families to a support, now provisions are at so high a price.

Let pease and beans be both hoed twice; the last time, by the moulding-board, to throw up the earth to the root of the plants. This will increase the crop, and clean the land from weeds. The pease, if an early sort, may be ripe to come off in June or July. As soon as this is done, let the land be directly ploughed, and dragged with harrows or couch rake, so as to gather out all the couch, and the roots of other weeds: all these should be put into heaps, and burnt. Spread the ashes, and make furrows two and a half to three feet apart, into which put some wet horse or cow dung, with the wet litter taken out of the stable, or farm-yard; upon which, in the furrows, let the sets of potatoes be dropped, at about eight inches apart, and let them be covered up on both sides with the plough. When they come up, let them be hoed, once, or twice, with a small plough; the last time by the moulding-board, throwing up the earth quite to the root of the plants. Let the weeds also be taken off between the rows of the plants by women and children, at the last time of hoeing, so as to make a perfect clean fallow. These potatoes, I judge, from an experiment I made last year (which were set so late as about the middle of July), will be a plentiful good crop, and of a large size, by October, or early in November 1796, when they may be taken out by the plough.

Thus will two very beneficial crops be obtained in the course of the present year; and the land, by being cross-ploughed and harrowed, will be brought into the finest order for barley in the ensuing spring; or if the weather may happen to suit to drill, or dibble, upon a part of the land, some white Dantzick, or cone wheat, in the month of March, so as to be ripe in autumn 1797; so that in two years, there will

will be three valuable crops. If barley is sown in the spring, and clover with it, the barley will be a most useful crop of grain, and the clover may be cut twice in 1798. Then wheat may be sown, or dibbled on clover ley, so as to produce a crop in 1799. The stubble being broke up, and turnips directly sown, will be spring food in 1800. Besides, a crop of barley, sowed after turnips are eaten off, make another crop, with grass-seeds to lay down. Thus there may be obtained eight crops in five years, or nine crops in six years; and the land hereby be greatly improved, instead of being run out. Between the rows of beans, turnips may be drilled the last time of hoeing them, to great advantage.

Another mode, probably equally good, will produce twelve crops in eight years.

No. of
Crops.

- | | | |
|-------|---|------|
| 1 | Suppose oats, or any white crop during the past year | 1795 |
| 2 | Let pease, or beans, be put upon the stubble, and after, potatoes upon the former, and turnips upon the latter, will be two crops in | 1796 |
| 1 | Then barley in the spring, or the white or cone wheat, drilled or dibbled | 1797 |
| 2 | After this wheat mowed close, sow turnips to eat off in spring: upon this land, so well prepared, sow barley; makes two crops in | 1798 |
| 2 | If clover is sowed with barley, cut twice in | 1799 |
| 1 | Upon clover ley, drill or dibble wheat, for a crop in | 1800 |
| <hr/> | | |
| 9 | | |
| 2 | To proceed; break up wheat stubble as soon as mowed, and sow winter vetches for spring food, which will be off in time to sow turnips, or plant potatoes in | 1801 |
| 1 | Sow barley with grass-seeds, so as to lay down in | 1802 |

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By this course of culture, the land will be well cleaned and improved, instead of being worn out and exhausted by repeated white crops. Good crops of grass will be produced by land so cultured, for several years after the rotation recommended expires. Oats seem justly to have the first station in a course of culture to be pursued on lands newly broken up: it is a hardy grain, affords a profitable crop, and its straw furnishes good food for cattle.

The adoption of the rotation previously suggested, will considerably augment the quantity of grain, and consequently reduce its price.

GREEN CROPS.

THE more frequent introduction of these crops, is certainly among the first improvements in modern agriculture. They fertilize and cleanse the land, and contribute much to the health of stock, by affording them a change of diet. In addition to those already mentioned to be grown in this county, I must notice the growth of the Mangell Worzell root, rape, and cabbages. The farm of JOHN FRANKLYN, Esq. of Lannihangle, affords a fine specimen of the growth of the Mangell Worzell: he obtains twenty-five tons from an acre; many of the roots weigh twenty-two pounds. This gentleman gives a valuable piece of information respecting the culture of the Mangell Worzell, which is, that *he has never found in any season, that any insects injured either the root or leaf of this plant.* To prevent the want of winter and spring keep, Mr. FRANKLYN recommends, and enforces by his practice, cabbage seed to be sown in autumn, potatoes and Mangell Worzell in April, and rape and turnips at Midsummer. As it is advantageous to cultivate a variety of green crops, particularly on spacious farms, I shall recommend the culture

culture of a few, that I hope will be found of great service. The *Anjou cabbage* is superior to any other; it grows fast, stands the most severe winter, and produces a succession of many sprouts in the spring; and after repeated gatherings, will give a great quantity of seed. Cattle like this plant, and thrive upon it.

Carrots afford a fine food for cattle and sheep, horses and pigs. Four pounds of seed will sow an acre broadcast, but drilling is the best mode of sowing it, as the seed, from its lightness, and being very small, is difficult to separate, and disperse equally on the ground: when drilled, little more than half the quantity of seed will be sufficient. This mode is also preferable, on account of giving space to hoe the carrots as they advance in growth. The profit annexed to this culture is very great.

Scotch kail is another plant of much virtue: it is luxuriant in its growth, is not injured by frosts, possesses a very nutritious quality, and is much liked by cattle and sheep.

Chinese vetches produce four crops in a year, of excellent food for cattle; they grow erect in tufts from eighteen inches to two feet high.

The growth of *parsley* for sheep, is a culture that would amply repay every attention that could be paid to it. Part of it may be fed when young, and the remainder left to run to seed, when it may be cut, and stacked for winter use. The propriety of giving such warm diet to sheep in that season, will appear evident, if we reflect on the nature of the food of our sheep in wet weather, and during the cold winter months. Careful attention should be paid to the culture of those plants that experience has proved to be particularly beneficial to animals. The *narrow leaf'd plantain*, or *ribwort*, and the *common yarrow*, or *milfoil*, are much liked by sheep, and by their tap roots, they are fitted to retain their verdure, when grasses which have fibrous roots are burnt up. The milfoil blooms and retains its vigour on dry banks, in the driest weather,

ther, which seems to shew that its leaf attracts nourishment from the air.

FALLOWING,

Is but little practised, and will soon entirely give way to the valuable improvement of constant cultivation. Nature gives us an unerring rule on this subject—she shews us that there is no inaction in her laws—All constantly work together for the general good. If fallows are not prepared to bring forth fruit, weeds will be produced by them during their neglected state. Surely then we should profit by this instruction, and become equally anxious to cultivate the soil entrusted to us, as we are to strengthen our habits of social virtue. So essential does the culture of land accustomed to lay in fallow in various parts of the kingdom, appear at the present period, that it seems to be an object well worthy the consideration of the legislature, how far it may be prudent to interdict fallowing, as the admonitions of reason are found insufficient wholly to prevent it. The appropriation of such land to the growth of corn, would speedily obviate all apprehension of exigency at home, and furnish us with a surplus sufficient to restore to a level the balance of trade, that in this article preponderates so materially against us with respect to foreign nations.

Such interference could not justly be esteemed harsh, as the consequence of it would be salutary to all who were obedient to it, by substituting industry in place of indolence, plenty for scarcity, and riches for poverty.

MANURES.

MANURES.

THOSE principally used in this county, are lime, marl, and compost from the farm-yard. Lime, from the abundant and cheap supply that this district affords, is used frequently to excess, so as to form in some degree a new separate strata, instead of a perfect union with the soil which it is intended to fertilize. Wherever this is the case, the intention is entirely defeated, and the lime renders the soil more barren than it was before this manure was introduced upon it. Moderation is a principle of universal utility, whose governance guides unerringly to progressive improvement. It teaches us how far the aid of manure may be serviceable to land, and shews us the point where it ceases to be useful. This point may with certainty be thus discovered: let a piece of ground be divided into six, or more parts; manure one part with three bushels of lime, or any other quantity deemed more likely to form a better origin for the course of manure I am about to prescribe; and let the quantity of lime to be deposited on the other parts, increase in the regular progression of three or four bushels per acre: let the whole be sown with one sort of grain, and let an accurate account be taken of the comparative produce from the respective divisions. From hence, the quantity of manure most congenial to the nature of the land, will be discovered, and a rule established, to govern the use of it in respect to future culture.

The qualities of lime are found to be superior to every other species of manure, as it not only sweetens the soil, and corrects and neutralizes that mineral acid that in many places pervades the earth, but it also guards vegetation from the ravages of the fly and grub.

Marl is plentifully dispersed in various parts of the county. Its efficacy as a manure is too well known to need any commendation to recommend it, but possibly a few leading prin-

ciples, whereby it may be distinguished from some kinds of clay that nearly resemble it, may prove acceptable. The true marl is discovered by the action of air, fire, water or vinegar. If true marl be exposed in a lump of three or four pounds weight, to the air, the nitrous quality of the latter, and its dews, will break the marl into small parts, and there will be an hoary, or white congelation, on that part of it which is exposed to the sun. Real marl, when thrown into the fire, crackles like salt. To try marl by water, place a piece of it dried, in a glass, and thereon pour as much water as will cover it: if it be true marl, it will gradually moulder, and dissolve into a liquid soap, and an ebullition will be apparent, as it unites with the water. In vinegar, the truth of marl is evinced by an effervescence much stronger than that produced by water. Marl is of various colours, viz. blue, white, yellow, red, and other colours; but difference of colour makes no alteration in its virtue, if its truth is proved by either criterion before set forth. As to the quantity used per acre, it is so variable, as to preclude the establishment of a general rule in adopting it; I shall therefore recommend it to be ascertained how much is proper, by a process similar to that which I have suggested for determining in what quantity lime should be used as a manure.

Compost, or manure from the stables and farm-yards, is chiefly relied upon as a general manure; but much of the virtue to be produced by it, depends upon its union with lime, and the use of it in a proper state. By incorporating it with lime, its fertilizing power is increased, and it is prevented from becoming a harbour for insects. This union also destroys the seeds of weeds, which, more or less, are inseparable from dung. It should be kept for some time, until it grows mild, as its salts are of so powerful a nature, as to be injurious to all roots, if it be applied before it has undergone proper fermentation. When mixed with earth in the course of its fermentation, it is rendered more fertilizing.

lizing. To these manures, may be added a few others of nearly equal utility, but which are in a great measure disregarded. One of the best improvers of land, abounds in *its own strata*; if this be accurately examined, a corrective will be found for almost every imperfection in the surface soil.

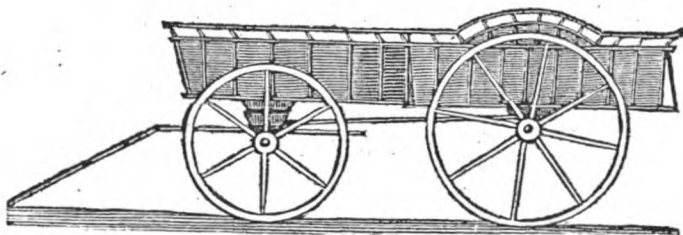
Sea sand is another manure of great advantage to land, and easily to be supplied in this county, at a small expence. It is particularly well adapted for cold strong land, and loam inclining to clay. *Shells* from the sea side, form another valuable manure. The *sea weed* that is there found, is also very fertilizing when burnt, and the ashes distributed upon the land. *Corals*, and such kind of stony plants, that grow on the rocks, are filled with salts which are very beneficial to land; but as these substances are hard, the improvement is not the first or second year after they are laid on the ground, because they require time to pulverize them before their salts can mix with the earth, to impregnate it. The consequence is, that their manure is lasting. Sand, and the smaller kind of sea weeds, enrich land for six or seven years. Corals, and other hard substances of the like nature, will continue many years longer.

Dung-heaps are not so well formed; or deposited, as they might be; frequently they are made on level land, sometimes on that which is inclined, and often even on elevated spots: in each case, the juices of the dung, which form the most fertilizing part of it, escape from it, and are either washed away by rains, or left to evaporate. The form of ground whereon dung is intended to be laid, should, in order to obviate this objection, be excavated, so as to resemble the internal part of a shield, and the dung should never be placed beyond the skirts of it, for then the juices could not be lost; they would precipitate into this excavated space, and be again absorbed by the dung deposited within it.

PLOUGHS, CARTS, AND IMPLEMENTS OF
HUSBANDRY.

THERE is nothing peculiar in the construction of the ploughs commonly used in this county; possibly, if the plough-beam and share-beam are made a few inches longer between the sheath and the plough tail, they will go with more ease to the horses and oxen employed to work them. Constant attention should be paid to the coulter and share, that they be so tempered as to cut the ground clean, that it may be laid close to the furrow that was ploughed immediately before; for without care in this particular, a small ridge is left standing between, which breeds thistles and other weeds. The plough should also be varied in the strength of its make, to suit the different lands upon which it is to work.

The carts are convenient and strong, but so small, that I think the introduction of a neat light waggon would answer much better; I have therefore subjoined a sketch of the Gloucestershire waggon, which is as perfect a carriage of this kind as I have ever seen.



The implements of husbandry are simple, well constructed, answer the purposes for which they are designed, and are, in general, similar to those in common use throughout the kingdom.

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In respect to the implement for paring soil, the working with it is of so laborious a nature, that I have long studied to devise a substitute for it, that might be drawn by cattle: perhaps a simple broad *share*, thus formed,



and annexed to a light plough, in place of the common share, might answer this purpose: the dimension of it would of course be proportioned to the breadth of the line pared by the common implement. By means of two coulters, fixed so as to act at due distances above the share, the sward would, I think, be cleared from the plough as it advanced; but possibly this might be better effected by raising, and giving an edge to the centre of the share, so that it might divide the turf, and throw it off equally to the right and left.

THE USAGE OF OXEN AND HORSES IN
TILLAGE.

BOTH are used in this county, and frequently in the same team, wherein they work together with much docility. By habit, the natural inequality in the pace of these animals seems obviated, and they draw together with uniform exertion. In many parts, however, horses and oxen are worked separately, but without any superior advantage, unless where speed and great power is required, and then the horse team is certainly to be preferred.

SEED

SEED TIME AND HARVEST*.

OATS are sown early in March; barley in April; and wheat about Michaelmas, or the beginning of October. Harvest commences from the middle of August, and continues to the first or second week in September. But there is too much attention paid to custom herein, and too little regard given to nature, from whom only, certain rules can be drawn, and by whom they are offered to all who wish to be benefited by them. That we may derive information from this sublime source, let a small portion of the growth of every field of different grains be preserved beyond harvest, to operate as a rule to govern succeeding sowings; for when the grain begins to fall naturally from these stalks, the propriety of sowing will be proclaimed by the truest testimony.

It is observed, that when the oat catkins begin to shed their seed, it is a proper time to sow barley; and as Dr. LINNÆUS states, that in Sweden, barley is sown when the birch tree leaves, why might not some other tree serve to direct the farmer as to other seeds? Nature always takes the easiest and shortest way in all her operations; he therefore, who would imitate her, must do the same. The same Power which brings forth the leaves of trees, will make the grain vegetate, and early sowing must accelerate harvest. If a

* As a proof how attentive the ancient Jews were to husbandry, the following may be quoted.

"Doth the ploughman plough all day to sow? Doth he open and break the clods of his ground?"

"When he hath made plain the face thereof, doth he not cast abroad the fitches, and scatter the cummin, and cast in the principal wheat, and the appointed barley, and the rye, in their place?"

"For his God doth instruct him to discretion, and doth teach him."—Isaiah, xxviii. 24th, 25th and 26th verses.

Thus, it was not any seed that was sown, but the *principal* wheat, and the *appointed* barley and rye; and the great attention that was shewn to such particulars, may account for the extraordinary fertility of Judea, which modern unbelievers affect to doubt.

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course of observations were made on the leafing of trees, for the purpose of governing the periods of sowing various sorts of grain, some principles of universal utility would be established.

It might also be advisable to note the different days in the season, on which the same sort of grain was sown on similar and various soils, that, upon the respective crops being reaped, it might be ascertained which period was most proper for sowing such grain. Nature is intelligence upon all subjects; happy, truly so, are those who with virtue's view, read her in all her works. Principle will be their guide, and success their reward.

 OPEN FIELDS.

THE land in tillage, or appropriated to grazing, is generally inclosed; open, or common fields, are rarely met with in South Wales. It is a mode of occupation only practised there in some few instances, where ecclesiastical and private property are blended.

 ADVANTAGES OF INCLOSURES.

THESE are various and great; immediately as new inclosures are completed, rent rises considerably above the expense of inclosing, and continues progressively to increase in proportion as the culture of the land is improved. The quantity and quality of produce are augmented by inclosures, as they protect the crops from blight and winds, and when formed by hedges, purify the air. Every plant attracts and absorbs phlogistic vapour, and generates pure air; hedges, by
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being higher than the crops that they fence, have a superior attractive and absorbent power; and hence are frequently found to arrest a blight, and prevent its baneful influence on the crop; and they always extend health to the crops that they surround. Particular attention should be paid to the north and east fences; they should be planted thicker than those on the south and west, as they are more liable to decay, or be injured by bleak winds. In respect to stock, they are certainly improved by inclosures; they become less wild, and fatten faster than in open land; they are more immediately in the farmer's view, and are more readily obtained for the purposes of the farm; as to milch cows in particular, this is a great advantage.

SIZE OF INCLOSURES.

THEY are very variable; from two to thirty acres; upon a grazing farm they are principally large. A clump of trees should be more frequently planted in the centre of them, as they contribute much to the comfort of cattle in hot weather, by shading them from heat, and keeping off the flies. Ditches should be more frequently made within the fence; they serve for drains, and they protect the hedges from being injured by the cattle. In laying out inclosures, the spring that is to supply the grounds with water, should be so left, in respect to the boundaries, that the same pond might accommodate two, three, or four grounds with water, by which means a considerable expence would be saved, and less ground wasted for this purpose. Ponds should also be so formed, as to be emptied with ease by means of a flood-gate. Manure would be furnished each time that the pond was cleaned, and the water would be rendered more pure for cattle by this practice.

INFLU-

INFLUENCE OF INCLOSURES ON POPULATION.

INCLOSURES increase farms, and consequently promote population. By building small houses, population is also increased, as is particularly evident in the case of *Morris Town*, within this county, upon the scite of which not a single house was erected sixteen years ago; now there are 141 houses, containing 218 men, and 129 women, 120 male children, and 152 female children; in all, 619 souls. The public spirited proprietor of these buildings, has erected and endowed a chapel, wherein English Service is performed to his tenants.

The land contiguous to this place, formerly lett for four shillings per acre; it now produces thirty shillings per acre.

As one great means of augmenting population, it is particularly essential that marriage should meet with every reasonable encouragement. It is this honourable rite that gives a rising generation to a nation, who will equally prove its ornament and safeguard. Much to the praise of the British Nation may it be said, that this rite receives a respect, and reigns with a purity, that few other kingdoms equal, and that no one can surpass throughout the world.

EXTENT OF WASTE LANDS, AND USAGE OF THEM.

THE waste land in this county is considerable; computed to amount to upwards of 120,000 acres; upon which common, without stint, is exercised by the occupiers in the vicinity of such waste land. The clear definition of rights, tends very

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much

much to their security, and to the most profitable exercise of them. With respect to this assumed right of common without stint, its fallacy is evinced by its indefinite character. In truth, no right of common can legally go beyond this rule—that the estate creating it, shall be able to support in winter the stock that is depastured upon such waste in summer. The common rights annexed to houses and cottages, are generally limited, and fairly exercised. Those for estates should also be reduced to equal certainty. This, it is trusted, will be effected by the General Inclosure Bill now pending before Parliament, a measure which, whether considered in its tendency to promote the public good, or to substantiate and render more valuable private rights, does equal honour to the noble institution under whose auspices it is brought forward.

IMPROVEMENT OF WASTE LANDS.

A LARGE portion of these lands consists of a rich loam, fitted for the growth of every sort of grain, pulse, &c. Other parts, that consist of a limestone soil, might be converted into pastures for feeding sheep, for which purpose they are well adapted, from the healthy herbage that they produce for such animals, insomuch that sheep are rarely known to rot on this soil. There are other considerable portions, whereon timber would grow to great advantage.

As to correcting the present mode of commonage on these waste lands, it might certainly be done, so as to give an equitable establishment to the respective rights of the commoners; but not without a considerable expence, and an application to Parliament. But it is presumed that the Inclosure Bill before-mentioned, will preclude the necessity of such an application, by inducing the parties interested, to act under its salutary and plain directions.

THE

THE RATE OF WAGES, AND HOURS OF LABOUR.

THE lowness of husbandmen's wages at the present period, appeals persuasively to humanity for redress: where they have wives and young families, the price paid for their labour is insufficient to procure them the common necessaries of life. It may be said, that if this be the case, their respective parishes must, and in many cases do, give them relief proportionate to their wants. But it seems to me to be a hardship of great magnitude, that those whose daily industry furnishes plenty to others, should be driven to solicit as a boon, that portion of food which is essential to the preservation of their strength. It is a right to which they have an honourable claim, and which cannot be withheld without violation of the first principles of justice, or be administered to them as a matter of favour, without shame to those who thus dispose of it. The peasant and his family require but few comforts, and all that are supplied to them, they receive with a gratitude that augments the general happiness of the nation. Let not, therefore, the farmer neglect to improve the situation of those to whom he is so much indebted. Let him follow the example of those nobility and gentry in this, and other parts of the kingdom, who have given such humane attention to the peasantry, and whose well-timed liberality hath so much alleviated their distress. At a time when grain is at a price hardly ever heard of before, let not the price of that toil by which it was secured, be forgotten. I am the anxious advocate of the peasantry, because I admire their virtues. These have shewn to me, subordination in all its native beauty, and proved to me, that this principle is the stamina of all good government. A British peasantry would rather resign their existence to the gracious Author
who

who gave it, than seek to prolong it by disturbing the peace of society.

Wages in this district, are from 5 or 6l. to 8, 9, and 10l. per annum. Labourers receive 1s. 1s. 6d. and sometimes 1s. 8d. per day. Piece-work is more profitable to the labourer, and is also advantageous to the farmer, as more of it is generally done within a given time, than when the common course of employ is pursued; but there is not much performed in this way. In summer, labourers work from six in the morning till seven or eight in the evening. In the winter, they work from seven in the morning to six in the evening.

DRAINING.

THE inclined situation of a great part of this country, supersedes the necessity of draining. In parts where it is necessary, this improvement is not so frequently introduced as it ought to be, but it is well done where it is practised. The depth of the drains is governed by the situation of the springs, the nature of the soil, and the quantity of the water to be carried off. They use both open and covered drains; the latter are filled with stones, and the turf laid upon the surface. The stones from the sea side are adapted for this purpose, for being smooth, and generally round, the water passes more freely between them.

PARING AND BURNING,

Is practised for the purpose of converting ancient pasture, or barren land, to tillage. The turf is cut in lines of about
a foot

a foot in breadth, collected into heaps, burnt, and the ashes distributed equally over the land. As an introduction to culture, it certainly answers well, and seems to be the best course that can be taken; a frequent repetition of it might possibly prove injurious, but the skilful farmer does not expose himself to this risk, but pursues his course of culture by such ameliorating means as render it unnecessary to resort to the practice of paring and burning a second time.

WOODS, AND THE SYSTEM OF THEIR MANAGEMENT.

THE plantations in this county are numerous, and managed in a way that does great credit to the respective proprietors. JOHN MORRIS, Esq. of Clasemont, is one of the first improvers in this line: to him I am much indebted for the following interesting particulars respecting his own practice. He has been a planter about twenty-five years, in which period he has planted above 500,000 trees, principally beech, oak, and ash; many sycamore, firs, larches, and birch, besides Spanish chesnuts, plane, elm, &c. and Lombardy poplars. He has raised nearly all his trees from the seed: when they are about three feet high, he plants them out about a yard distant; when the trees increase in size, so as nearly to touch each other, they are taken out to make further plantations; so that every young wood is in fact a nursery. His fences are particularly strong, and are constantly attended to. The trees are annually examined, and such as are not thriving, are hoed round as you would turnips. When the soil is particularly adhesive, Mr. MORRIS introduces a crop of potatoes, which produces an excellent effect. All stagnated water is carefully drained off. He plants trees of various kinds in each acre of ground, by
which

which he observes the sort that best suits the soil, exposure, &c. Open to the sea breezes, he finds sycamore and elm particularly prosper. This gentleman's regular course of planting, is now about 10,000 trees annually, which he proposes to continue as long as he has any ground on his estate most suitable to that purpose.

Where any large tract of land is intended to be appropriated for planting spring wood, it should be divided into portions, and so planted at successive periods, or at once, by trees of different ages, that they may be felled in succession, one by one every year, and so managed, that when the last portion has been felled, the wood on the first may be in train to fell again in the succeeding year. In removing trees to set again, the roots should be carefully preserved; if any are broken or bruised, they should be cut off, otherwise such roots will die. If the trees removed are ash, elm, or oak, the lower boughs should be cut off, as they prevent the trees from thriving, for the trees will be loosened at the roots by every wind, if they are encumbered with boughs. The tops should be carefully preserved. It is also recommended, to make a mark which side of the tree stood toward the sun, that the tree may be reset in the same direction. If there is occasion to cut off the tops of timber trees, they should be cut about three or four feet above any timber: trees have a property to grow to a certain height, after attaining which, they increase in breadth. When they have attained this height, by being properly lopped and cropped, they will bear much more wood than if they had not undergone this operation.

The cultivation of osiers is very profitable, as appears by the account I obtained in this county, of the produce of this article from one acre of land, originally of the value of six shillings per annum. About fifteen years ago, it was planted with sets brought from the neighbourhood of London, at about a yard from each other. Since the second year, the willows

willows have been cut regularly, and the produce has been generally about 20,000 rods annually, selling at five shillings per thousand, and bringing the annual rent of five pounds, with very little trouble. The sets should be taken from two years old shoots, about three feet long, cut pointed at the great end, and thrust into the banks of rivers, or other wet spots, one and a half, or two feet deep, and in two years they will be fit to cut for use. The cultivation of the osier will be far more desirable now than heretofore, on account of the increased demand there is for this article. The scarcity of it has induced the Society for the Encouragement of Arts, &c. in London, to offer a premium, in order to increase the growth of osiers, for making baskets, &c.

It is principally owing to the confined culture of the osier in this kingdom, that the present scarcity originates; but it will soon be obviated, as the public attention is now so particularly directed to the growth of this article. There is some information in my Report for Monmouthshire, upon the cultivation of the osier, that may possibly be useful to those who wish for further instruction respecting it.

**THE PRICE OF PROVISIONS,
AND WHETHER IT IS LIKELY TO BE STEADY, TO RISE,
OR TO FALL.**

THE abundance of all sorts of provisions, excepting grain*, with which this county abounds, has considerably counteracted that increase of price which has been so general throughout the kingdom; and I believe it will be generally found,

* The cause, in some degree, of the scarcity of grain in this county, I have before explained, in p. 20.

that those counties wherein small farms are prevalent, have been able most successfully to encounter and subdue this evil. The custom of hoarding corn, which is too commonly practised by large farmers, contributes much to enhance its price, while their inattention to the breed of pigs and poultry (which are hardly ever unattended to by the small farmer), renders the demand for corn greater, by lessening the variety of provisions. Whenever provisions are high in price, it seems to be a first principle in good policy, to increase the articles of them. The more frequent establishment of fisheries upon the sea coast, would be very conducive to this end, and open to those engaged in them a profitable source of commerce, by which other parts of the kingdom might be aided in their laudable endeavours to lower the price of provisions.

The present price of provisions within this county, may be stated nearly as follows:

Wheat, from 7s. to 9s. 6d. per bushel of ten gallons.

Barley, from 3s. 6d. to 4s. ditto.

Oats, from 2s. to 3s. ditto.

Beef, from 3d. to 5d. per lb.

Mutton, from 3d. to 5d. ditto.

Bacon, from 3d. to 5d. ditto.

Cheese, from 4d. to 5d. ditto.

Butter, from 6d. to 10d. ditto.

There is every reason to believe, that these prices will not rise; and there is good ground to hope, that by the wise and humane exertions of the affluent in this county, to obtain supplies of grain from foreign markets, the price of provisions will speedily be reduced. It will also be a subject of great comfort, not only to the inhabitants of this county, but to the whole kingdom, to reflect, that the General Inclosure Bill will afford them a means of preventing any serious rise of the price of provisions from happening in future; for as the value of all articles of provision is increased by their scarcity, that proceeding which will promote an extended culti-

cultivation, must doubtless produce plenty, and render the cheapness of provision permanent.

THE STATE OF THE ROADS,
BOTH PUBLIC AND PAROCHIAL, AND OBSERVATIONS
ON THEIR MANAGEMENT.

THE public roads are good. That which leads from Cardiff to Cowbridge, Pyle, Neath, and Swansea, is excellent. The prospect from it, in various parts, is beautifully picturesque, extending over diversities of hill and dale, fertile meads, enriched with numerous herds and flocks, well-cultured corn fields, luxuriant plantations, modest churches, neat buildings, mouldering ruins, and terminating with the Bristol channel and the coast of Devon. At once to see the swelling sails of commerce, and the steady chearful operations of the husbandman; to view the sublimity of nature, and observe the elegant efforts of art, arising out of nature's instruction, inspires a grateful adoration of Divine Power, Wisdom and Goodness, and improves our principles while it enlarges our happiness.

The inns on this road afford the best accommodation; the comfort of which is enhanced by the respectful civility of their proprietors to travellers. That at Pyle, is a distinguished instance of the exercise of private munificence for the convenience of the public.

Applications to Parliament, for the improvement of the roads in this county, have within a few years past, been attended with an expence of 1200l. Certainly, great good has been derived from the powers so obtained; but it is to be regretted, that there is not a mode prescribed, by which they may be obtained at a less expence. Possibly a General Road Bill might answer this purpose. Such a measure

must be very desirable to the landed interest, and would tend much, it is presumed, to facilitate and encourage the improvement of roads. Most of the parochial roads in this county are imperfect, and some of them in a very ruinous state. There is no excuse for this neglect, as materials for their repair are at hand, and the statute-labour, if fairly given, would obviate all complaint. But there seems to be a general failure in pursuing the directions of the statutes upon this subject—they have wisely directed a controuling power to be appointed in every parish, to attend to this duty; and without such a power, it never will be properly done; for where many are equally interested in a business, and no particular person has the direction of it, irregularity is substituted for system, and industry gives way to indolence. Surveyors of the highways were first ordered to be chosen *in every parish*, by an Act passed in the reign of PHILIP and MARY: therein they were to be appointed by the constable and church-wardens of the parish; but by a subsequent statute, the 13th GEO. III. c. 78, they are to be constituted by two neighbouring justices, and may have salaries allotted them for their trouble. The duty of these officers is so clearly pointed out by the latter statute, and the instruction contained in it is so well calculated to accomplish the purposes for which it was designed, that I am surprized the inhabitants of so many parishes should neglect to avail themselves of the benefit hereby conferred. Let them for a moment, estimate the advantages of good roads, independently of the safety, ease, and pleasure that they experience in travelling over them;—let them consider the benefit accruing to our trade and commerce, by rendering the carriage less expensive upon all sorts of goods and merchandize, whether consisting of provisions of any kind, that are the immediate growth and produce of our lands, or of any other sorts of wares which must have conveyance by land;—let them compare the former rates of carriage with what are now paid, and they will find that land-

land-carriage is now thirty per cent. cheaper than it was before the roads were amended by turnpikes; for a team of six horses can now draw twenty hundred weight more on such roads than they could formerly, and with less exertion. Scotland, in this, as in various other cases of political economy, affords us an example well worthy of our imitation—they have done more than admire Roman ingenuity and industry in this particular; for they have preserved both, by their own practice. If we compare the remains of the Roman roads with the best of our modern ones, we shall find many of the former, that have stood firm and entire for above 1500 years, *without any repairs*; while ours want reparation two or three times, and frequently oftener, in a year. If some of the Roman roads, through any neglect to repair them in time, are decayed in some places, yet there are others that still remain perfectly entire.

The Appian way, which was first carried from Rome to Capua, and afterwards continued from Capua to Brundisium, is still in good condition, though it has been a high road above 1900 years; and there are some Roman ways in France, which have subsisted upwards of 15 or 1600 years. As their durability may possibly be ascribed to their particular structure, I hope that an account of their practice may tend to improve our own.

They first of all laid open with a plough, two parallel furrows; then the soldiers carried away the light loose earth that they found between the furrows, and dug till they came to a hard, firm bottom: they then filled up the fosse, or bed, which they had hollowed, with a more dense and weighty matter; as for instance, with a sort of hard sand, or gravel, taken out of the rivers, or dug out of the quarries: this done, they rammed the whole hard down, and smoothed it with heavy rollers. Nor did they always end their work here, but oftentimes (to facilitate the draining off the water, and to prevent any dirt or mud from soaking in, which would
infinitely

infallibly undermine and loosen the whole), raised a terrace, or causeway, several feet above the level of the plain, consisting of four layers, or stories, of strong masonry.

On the foundation of earth which, as said before, was firmly compacted and levelled, they spread a covering of cement, made of lime and sand, or hassock, about an inch thick. The first layer which they placed upon the cement, was of large flat stones, laid one upon another ten inches high, and cemented together with well-tempered mortar. The largest stones were ranged along the sides of the causeway. This layer was called *statumen*.

The second layer consisted of stones of a cubical, round, or oval figure, and of many rough, irregular stones, sometimes mixed with potsherds, and pieces of broken tiles and bricks; all these were spread with a shovel over the first coat of stones, and rammed down into the mortar, which cemented them together. This second layer was about eight inches thick, and was called *rudis*.

The third layer consisted of a foot of mortar, not made of beaten tile, for that would have been too expensive, but of chalk, sand, or hassock, mixed with lime, as any of these materials were near at hand. This layer, which was called the *nucleus*, or kernel, filled up all the cavities or interstices in the inferior layers, and settled into a hard, level coat. The great difficulty we find in breaking it now, sufficiently proves how firm a support this was to the upper covering, especially when we consider the extreme hardness of the inferior strata, with which it is so firmly incorporated as to form one compact, impenetrable body, capable of sustaining the greatest weight imaginable.

The fourth and last layer, which they called the crust, sometimes consisted of great hard stones cemented together, as we find in the Appian way; and sometimes of gravel, or small flints mixed with gravel, as we find in most of the Roman military ways. The hardest stone of all, the free
stone,

stone, and the largest sort of flints, they reserved for their towns. This layer was called *summa crusta*.

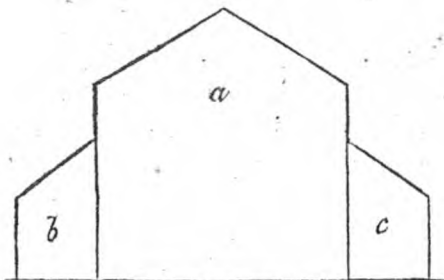
The small stones, flints and gravel, were often brought from other parts, the country people being ordered to gather them in their vineyards, their heaths, and ploughed lands, on the banks of rivers, and the sea shores, and to bring and lay them by the highway side, where the soldiers had occasion to use them in their work. Of these materials, the Romans made a covering six inches thick upon the third layer, and secured it on the sides with two borders of earth, which they consolidated with heavy stones, which they laid sloping, for the water to run off the causeway on the plain beneath, to prevent its soaking into, and thereby loosening the gravel. By means of this precaution, the traveller and carrier in all seasons enjoyed the benefit of a hard dry road. It sometimes happened, that the flint pavement was loosened, by the falling down of the banks and borders which should support the road on the sides; but the internal layers were so closely bound and cemented, that they did not suffer much by it, and the damage was easily repaired.

As useful rules may be drawn from the practice thus cited, I hope the insertion of it will not be deemed foreign from my duty.

THE STATE OF FARM-HOUSES AND OFFICES.

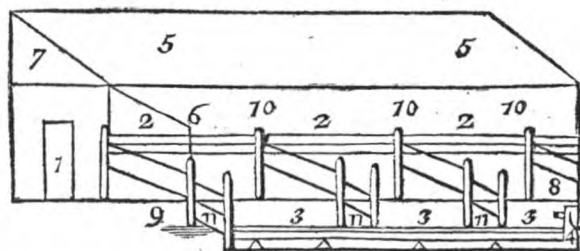
THE buildings in general, throughout this county, combine nearness with strength and convenience; but they are not so extensively commodious as the various purposes of husbandry and grazing require. Additions to the barns for housing cattle, might be made with very little expence, and would be found of great utility on grazing farms. The lines
below,

below, shew the manner in which this improvement is to be effected.



a, represents the front of the barn, and b and c the additions laterally to be annexed to it.

The more frequent introduction of ox stalls on farms, and improvement of those that are at present used, would be beneficial to every proprietor. Possibly the sketch below, of the ox stalls that are built in Gloucestershire, may convey some satisfactory information upon this subject.



EXPLANATION.

1, is the door opening into the passage through which the attendant goes to feed the cattle;—2, is the manger into which their food is thrown;—3, is the watering trough, which is bounded

bounded by a low wall;—4, is the pump by which the trough is supplied with water;—5, is the roof of the stalls, which would be more complete, if it extended to 6, as it would then shelter the cattle from inclement weather;—7, the loft in which hay is deposited for feeding the cattle.

It would be an improvement, if these stalls were erected upon a declivity; and near to a brook, so that by means of a flood-gate at 8, a stream of water might daily be admitted to rush through the stalls, thereby cleansing them, and forming a good manure by the diluted compost running off at 9, into a bed of loose earth (such as scrapings of roads), prepared for its reception.—11, are gates of communication from one stall to the others. The number and size of these stalls are proportioned to the number and sort of cattle to be annually fattened in them. Shelves are erected against the wall at 10, for depositing oil cake for the cattle.

THE NATURE OF LEASES,
AND COVENANTS MOST ADVANTAGEOUS BETWEEN
THE LANDLORD AND TENANT.

LEASES are granted for lives, and for the common terms of seven, fourteen and twenty-one years. The covenants in the former are not so particular, salutary and restrictive as in the latter, wherein the tenant covenants to keep the fences in repair; not to plough up meadow land under a certain penalty; to expend upon the farm the dung arising from it; to lay down a certain portion of the arable land to grass; to crop the land according to the husbandry of the country; and not to assign his lease without his landlord's consent. The landlord agrees to keep the buildings in repair, and to supply the tenant with fence and plough bote. The term that seems to me most conducive to the interests of the landlord and tenant,

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is that for twenty-one years, with a mutual power to dissolve it at the expiration of the first seven or fourteen years, upon giving six months notice in writing; for when a course of cropping is prescribed in a lease, which ought always to be done where the general husbandry of the country is an imperfect guide, the tenant is incited to be obedient to it, from a conviction that this conduct will prevent a premature dissolution of his term. He may also be glad to avail himself of this power, if he finds the taking inadequate to his expectations. The tenant should covenant never to take two white crops in succession, but always to introduce an ameliorating or green crop after every crop of grain. He should also covenant to haul and disperse upon the land, any kinds of manure that the landlord may judge likely to improve the staple of the land, so that such manure is to be obtained within a limited distance; and to plant, and fence from the cattle, a certain number of trees annually, on such parts of the farm as are the least adapted for other culture.

THE EFFECTS OF COMMERCE AND MANUFACTURES UPON AGRICULTURE.

So long as commerce and manufactures acknowledge agriculture to be their parent, and act in subordination to her interests, so long will they contribute to enrich, strengthen and ornament every nation; but when the latter is neglected that the former may be pursued, a foreign dependence is created, even for the necessaries of life, which dependence takes from us the balance of trade, and lessens the dignity of the nation. Those who can supply corn, may always command the price of all other articles. What I have expressed on this subject, naturally arises from the state of things in
this

this county: commerce and manufactures have rapidly increased therein for some years past; as these have advanced, agriculture has declined, consequently the demand for corn being beyond the produce of the county, the expensive mode of importation has been by necessity resorted to for redress. From hence we learn the duty of a more extended culture of this article, and that commerce and manufactures can only permanently flourish, where they are succoured and protected by agriculture.

AGRICULTURAL PRACTICES IN THIS COUNTY, THAT MAY BE USEFUL IN OTHERS.

In order to judge of the supply of food necessary for the cattle and other stock, the ricks of hay are measured every year before the cattle are taken in for the winter season. By such practice it is ascertained, that one cubic yard weighs 1 cwt. 1 qr. 21 lb.; hence it is easily calculated whether the stock of hay is equal to support the number of cattle intended to be kept throughout the winter.

Bruised furze they use as food for horses, and it is found to answer very well. It is bruised in a machine worked by water, and which also cuts straw. It is attended by one man, and cuts two hundred bushels of straw per day into chaff, and bruises four hundred bushels of furze, which is greedily eaten by the horses, and seems very nourishing. During the severe winter of 1795, when hay was so scarce, it was particularly useful. The following is a statement of the weekly expence of such keep, mixed with a bushel and an half of oats.

	s.	d.
21 bushels of bruised furze per week, valued at	2	6
7 bushels of cut straw and chaff, - - -	0	7
1 $\frac{1}{2}$ Winchester bushel of oats, at 2s. per bushel	3	0
	6	1

Fern is cut when green, put into stacks, and kept for littering cattle in winter; when hay is scarce, it is also used as food for them. This practice may be useful while land continues in a state so uncultivated as to bear only fern, but it is certainly improvident, that such land should not be appropriated to a more profitable purpose.

The buildings throughout this county, small as well as large, have a peculiar air of neatness, owing to their being frequently white-washed: this is a commendable practice, as cleanliness contributes to health. This principle also shews itself in the pavements of the principal towns, which are washed daily, and sand thrown over them, as is done upon the floors of kitchens.

INSTITUTION FOR THE IMPROVEMENT OF
AGRICULTURE.

THERE is a society of great respectability established in this county, for the improvement of its agriculture: the distinguished attention of the members who form it, to the advancement of this science, does honour to themselves, and must prove highly beneficial to their country.

GENERAL

GENERAL DISPOSITION FOR IMPROVEMENT.

By many, this is manifested by the best of proofs, the beautiful appearance of their farms; others, less active and intelligent, are by slow degrees copying their example, and all, it is believed, will in time be governed by it. The display of improvement naturally incites us to emulate it.

IMPROVE-

IMPROVEMENTS.

TYTHES.

A GENERAL commutation for tythes would produce much good. Whatever measure tends to preserve peace among any particular class of men in society, strengthens the common interest, and increases the harmony of the nation.

WASTES.

THE inclosure of these will prove an object of great wealth and comfort. This being done, industry will never want employment, and provisions will become cheaper, and more plentiful.

RELIEF OF THE POOR.

IT would be humane and politic, not to suffer overseers to estimate the distresses, and extend relief to the poor; it is too great a power to rest in such hands. The grievances of our fellow-creatures should be inquired into with intelligence, calmness and kindness, and be *effectually* relieved; not by the encouragement of indolence or licentiousness, but by awakening them to industry, and fairly rewarding their practice
of

of it. Possibly this might be effected by appointing a commission of inquiry into the state of the poor, for every parish, to be composed of five, or more, respectable inhabitants, among whom the clergyman to be constantly one. The appointment might take place annually, at the quarter sessions. These commissioners might meet monthly, to hear and redress grievances among the poor; to provide work for them, and order proper relief to their families. Such commissioners should be empowered to make rates upon the parish, to be ratified as at present, by two magistrates, and should keep regular accounts, and duly pass them at the quarter sessions. The illiteracy, in general, of the present overseers, totally disqualifies them for the consequential office with which they are invested; and I am sorry to add, that it has been too often exercised with an inhumanity that has brought it into deserved disgrace.

THE SEA - COAST.

THE frequent wrecks that have happened upon that part of it which bounds this county, suggests to me the propriety of an improvement, that I hope may prevent this calamity in future. If a light-house was erected upon such part of the coast, between Swansea and Cardiff, as seafaring men at both places shall judge most likely to preserve a safe offing to shipping, the navigation, which is now perilous, would become free from danger.

FERRIES.

REGULATIONS respecting those at Breton, Swansea, and Llŵghor, are much wanting, for the improvement of the proprietors' interests therein, and the accommodation of travellers.

FRIENDLY SOCIETIES.

REFLECTION upon the utility of these institutions, has introduced to my mind a plan somewhat similar, the establishment of which may be in conjunction with the former, and I trust will be found to be of equal benefit to the kingdom: it is, that the same societies, who by their monthly subscriptions are guarding against the distresses of sickness, should also create a fund for increasing the comforts of themselves and families in a state of health. Their subscriptions for this purpose might be suffered to accumulate for three years, at the expiration of which period, each member should be allowed to receive a share equal to two years subscription, for the express purpose of repairing their dwellings, or purchasing such articles of furniture as might make their homes more comfortable. Thus, by making a division of the subscriptions every third year, reserving at each period one year's subscription, and never receiving more out of the latter than the interest, they would in a few years supply themselves with many conveniencies, and have the pleasure of seeing substantiated for the accommodation of their families, those earnings which, without such an institution, might have been squandered in idleness. As to the principal of the untouched fund, it might, in the course of a certain number of years, be divided among the members, for the purpose of each of them appren-

apprenticing one of their sons to some useful trade. Every regulation that gives to character, in whatever station, additional respect, makes mankind more anxious to preserve it, and consequently promotes the best interests of virtue.

CONCLUSION.

IT would be doing injustice to my own feelings, if I concluded this Report, without expressing my sincere gratitude for the high honour that the BOARD of AGRICULTURE have conferred on me, by appointing me to survey this and the adjoining county. It has been my anxious ambition to deserve so estimable a mark of their favour, and to render that service to my country, which the duty of the office demanded.

My grateful acknowledgments are also due to the respectable proprietors of Glamorganshire, for the assistance that they so readily rendered to me in the execution of this work. They will further oblige me, by correcting it when sent to them, with equal freedom.

I must not omit to notice the conduct of the community in this county, during the late trying period, when the scarcity of grain was so severely felt: it evinced a religious regard for the inestimable blessings of peace and order; proved the goodness of their hearts, and did honour to their king, their constitution, and country.

A P P E N D I X

TO THE

GLAMORGANSHIRE REPORT.

NUMBER I.

THE following intelligent Answers to the Queries proposed by the BOARD of AGRICULTURE, were obligingly communicated by JOHN FRANKLEN, Esq. of Lannihangle, for insertion in the previous Report; but they did not arrive until after it had been sent to the press. This gentleman having about 40,000 acres of land within the county under his care, his agricultural data are very valuable.

1. *Soil.*—A blueish clay on a blue lime-stone, from one to three feet below the surface.
2. *Occupation.*—This being the level, or flat part of the country, near Bristol channel, the farms are from 50l. to 200l. and a few larger.
3. *Kinds of Land.*—A mixture, though some jobbers and graziers rent grass and hay land only.
4. *Grasses.*—Mostly clover, rye-grass and trefoil, with some saint-foin. *Stock*—Horses, cattle and sheep, and hogs of a tolerable breed, though improveable.
5. *Watering Land.*—Very little well watered, though much may be done, if the law was amended to empower the turning of the water.
6. *Grains cultivated.*—Wheat, barley, oats.
7. *Rotation of Crops.*—Of late, beans, pease, turnips, clover, &c. are cultivated as alternate crops, and answer exceedingly well.
8. *Fallowing* is practised.
9. *Manures.*—Lime is mostly used; too little attention is paid to dunghills.
10. *Implements of Husbandry.*—The plough mostly used, is an old-fashioned, long, clumsy one. The carts too large—waggons the common form, for four or five horses.

11. *Oxen and Horses.*—Oxen in yokes are more used than horses, though I use them both double in yokes and single in collars, and horses both single and double, as they do best on roads too hard for the oxen, without shoeing. Oxen are cheapest, but both are useful on a large farm.

12. *Seed Time and Harvest.*—We sow wheat in October, oats in March, barley in April—Harvest in September.

13. *Wastes.*—No common fields, but many commons or wastes, and about three-fourths of the country inclosed.

14. *Advantages of Inclosures.*—The rents doubled, and often more, consequently a great increase of produce, and improvement of stock.

15. *Their Size.*—From two to twenty acres, according to the size of the farm.

16. *Influence of Inclosures on Population.*—Certainly increased by employing more people.

17. *Common Fields.*—There are none; but a cheap power, and mode of dividing and inclosing wastes and commons, is much wished.

18. *Usage of Wastes.*—Mostly grazed in commons, by half-starved horses, cattle and sheep, that yield very little profit.

19. *Improvement of Wastes.*—When divided and enjoyed in severalty, each part will be used as is most suitable, in arable, pasture, or planting.

20. *Wages.*—From one shilling to one shilling and six-pence per day, but men often get two shillings and six-pence by the job in mowing, reaping, &c. About one-fourth less in winter. It will find its level in every country.

21. *Draining.*—Too little attention is paid; the covered drains are filled with stones or faggots, as is found cheapest, stones being scarce in many places.

22. *Paring and Burning.*—Much less used than formerly, as we find lime answer much better.—Landlords forbid it.

23. *If well Wooded, and under what System.*—Not well enough, nor have we any good system of preserving the woods.

24. *Price of Provisions.*—Much raised in the last twenty years, owing to the increase of copper and iron works, and the increase of taxes, and price of labour.

25. *Roads.*—Generally very good, owing to the introduction of turnpikes, since which the parishes have raised the middle, and made drains. Lime-stone is the best covering, broke small.

26. *State of Farm-Houses.*—Not very good, and not well situated, owing probably to want of civilization when men herded in villages for mutual protection.

27. *Leases.*—Are too seldom granted on arable farms, to the injury of the community, the landlord and the tenant; for no prudent man will grub, moot, drain, fallow, lime, and sow land, at an expence of eight or ten pounds per acre, without a certainty of enjoying his farm long enough to be repaid his expences, and some profit for his risque and trouble. All experienced land-stewards, know how to insert covenants to prevent the tenant from injuring the farm, and to secure a gradual improvement of it :
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twenty-one, or at least fourteen years, is necessary, as much out-set expence may be expedient.

28. *Commerce and Manufactures.*—Copper, coal, and iron trade, and canals, increased so as to raise the price of labour; but the price of the produce of the land is raised in proportion.

29. *If the Agricultural Practices within the County can be servicable to other Counties.*—We are superior to some counties, and inferior to others, in our practice.

30. *Agricultural Societies.*—A society to encourage agriculture has been beneficially established above twenty years.

31. *Turn for Improvement.*—The rising generation have a turn for improvement, which is best excited by honorary and pecuniary rewards.

32. *Improvements.*—A commutation for tythe, leases to be granted, and premiums both for the best stock and the best husbandry.

33. *What situations, &c. occasion the Rot in Sheep.*—Flat low wet land, where water stands in winter, and where a blueish grass, called carnation grass, is found.

34. *What Herbage causes such effect.*—Carnation grass is the worst symptom; sheep should lie dry, and feed in winter on dry land, where no water stands.

35. *To prevent the Rot in Sheep.*—The best way, is to lay it in broad high ridges, with drains to carry off the water; and if the land be well limed, it becomes more dry, and produces more healthy and sweet herbage for sheep.

36. *The nature of Soil, and Herbage, where Sheep took Rot last Winter, &c.*—We had little or no rot last winter, or at any time in my memory, owing, I think, to the use of lime, and the care we take not to keep sheep in winter on low flat land where water lodges, and where the blue carnation grass is found.

37. *Are those Lands old Sward, or sown with Seeds, or both?*—Generally old sward, where the above-mentioned grass is mostly found; and if the land has been ploughed, it is ridged and water-furrowed, and limed, and laid down with rye-grass and trefoil, which will not rot the sheep.

38. *Are there any obstacles to Improvement?*—Yes, three: the want of leases; a power to inclose wastes; and a commutation for tythes.

The want of room and time, as well as my present indisposition, prevent my being more particular in answering each question; but I have long managed some of the largest estates in this county, and farmed pretty largely, and always promoted the Agriculture Society, and the general improvement of my native country, and the general benefit of the community; and I think that few counties of the same size in this island, have been more improved in the last forty years, in regard to manufactories, agriculture, roads, canals, gentlemen's houses, &c.—So that I conceive, if there was a Provincial Society in every county in this island, to correspond and co-operate with the BOARD of AGRICULTURE, and if Government would assist the Board to obtain such Acts of Parliament and aids, as are very judiciously recommended in many well
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wrote Agricultural Surveys from all parts of the island, we shall never again be obliged to import corn at an immense expence, or to tax the British farmer to pay bounties for importing corn from other countries, to enrich those countries, when we might with less expence and encouragement promote plenty at home, and have a surplus to export, and supply other countries with the necessaries of life. Some years ago I troubled Mr. YOUNG with one or two letters on this subject, which he inserted in the Annals; and I shall be glad if I can at any time promote the public good, which I trust will be more increased by the patriotism of the BOARD of AGRICULTURE, and Royal Patronage, than by any other institution that now is, or ever was in this Island.

I have the Honour to be,

The Honourable Board's

Most obedient humble Servant,

JOHN FRANKLEN.

Lamihangle, April 7, 1796.

NUMBER II.

ON THE USE OF COAL SLACK BY ITSELF, AND MIXED WITH LIME.

BY RICHARD CRAWSHAY, ESQ.

Parish of Myrther, Glamorganshire.

ABOUT four years ago, I tried the following dressings of a piece of meadow land; quantity about eight acres: the whole field is equally a dry soil, the form oblong, lies on a hill side, dipping from West to East. I divided it into three parts, thus, and manured as under:

No. 1.	No. 2.	No. 3.
Stable muck mixed with braes, a small coak which drips from the air furnace grates.	Wholly the slack of coals, that we generally throw away in large quantities.	Half lime, mixed with road or pond dirt.

No. 2, exhibited grass like a green ribbon, before the others shewed any spring. No. 1 followed. No. 3 was last, and proved the smallest crop of hay. Since that time, I dress the dry lands every year with the coal slack alone, or mixed with lime, and have better crops than formerly from the same lands, which are very poor, and used to give only short hay fit for cows. I now carry from 20 to 30 cwt. of good horses' hay, and have the stable muck left for the ploughed lands. On wet and boggy soils, I find the

the braes mixed with lime answers better than any other dressing we have. The braes, where there is a fall on lands (*i. e.* an inclined plain) make the best drain in the world, thus:



On these poor hill sides, which are the tumble down of the mountains, more of stone than soil, when I break up first, the crop is oats, or oats with vetches, for green fodder in summer; or hay, if the season will permit. Second, wheat, winter fallow and dressing. Third, barley with clover. Fourth, clover; winter fallow, well dressed; vetches with oats. These, I believe, are the only fallows needful. The lands, with us, should after this product be laid down with seeds.

Sir JOHN SINCLAIR, Bart.

President of the Board
of Agriculture.

FINIS.