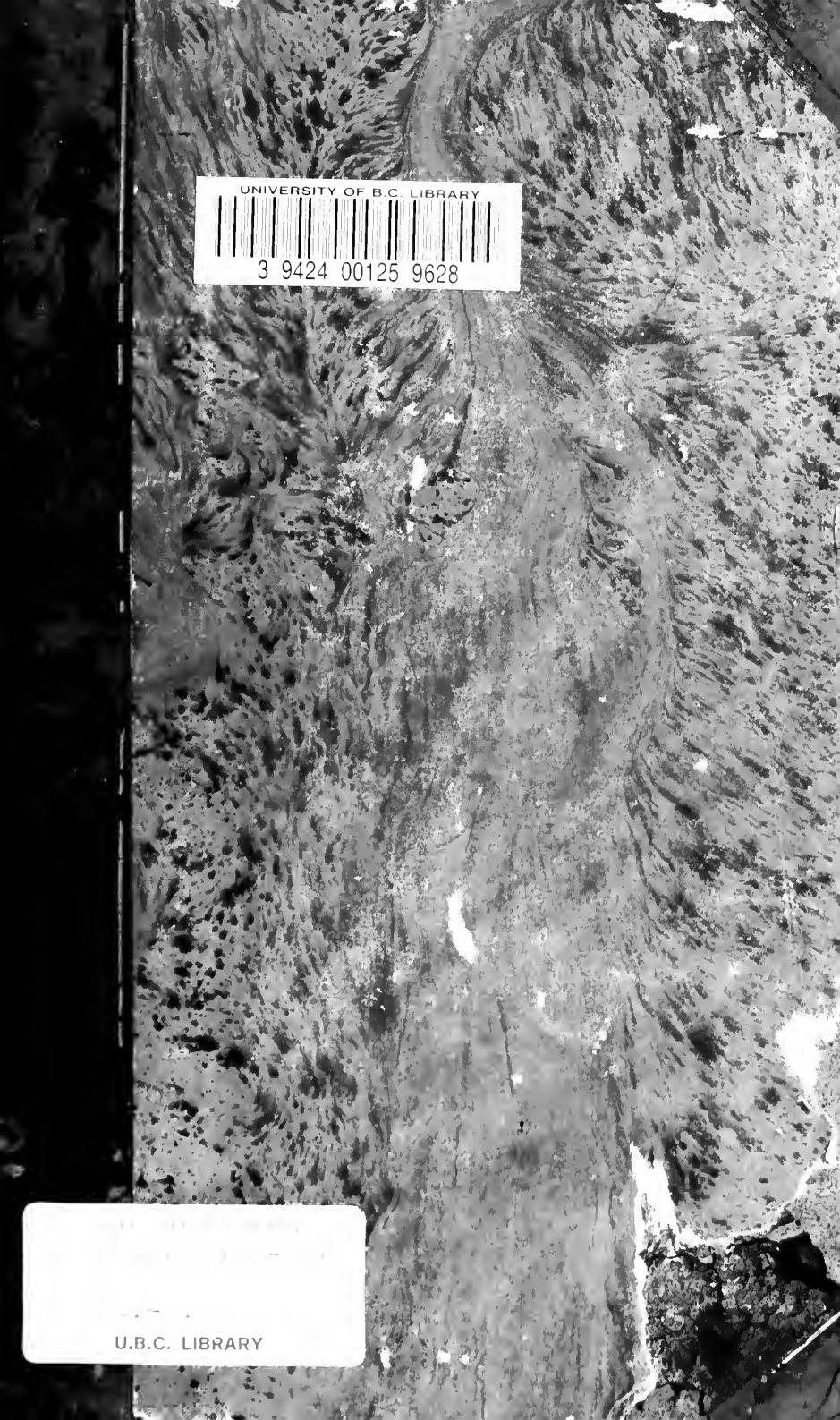

GENERAL VIEW

OF THE

AGRICULTURE

IN THE

COUNTY OF PERTH:

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY JAMES ROBERTSON, D. D.

MINISTER AT CALLANDER IN THE COUNTY OF PERTH.

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

Quare agite, o proprios, generatim discite cultus,
Agricolæ!—Nec Segnes jaceant terræ. VIRG. GEORG.

PERTH:

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PREFACE.

THERE is a propriety in acquainting the Reader with ſome circumſtances relative to this publication.

1. The ſubſequent account of the Agriculture of Perthſhire is drawn up partly from Mr Marſhall's report of the central Highlands, Mr Donaldſon's of the Carſe of Gowrie, and a report of the ſouthern diſtricts of the county, by the Author; and partly from a new Survey of the provinces, which had not formerly been explored, together with the Remarks tranſmitted to the Board of Agriculture, in conſequence of the circulation of theſe Reports.

Although I did not conſider myſelf as bound to adhere invariably to the obſervations, which had been made by theſe two gentlemen; yet I have made uſe of their papers, ſo far as they ſuited my purpoſe, and ſeldom departed from the detail of facts or opinions they had given; except where their information ſeemed to be defective, where the progreſſive improvement of the county, the irreſiſtible teſtimony of the moſt intelligent perſons in the ſeveral diſtricts, or my own inſpection, juſtified that departure. In general I have given their moſt important matter

in their own words. It is impoſſible for different men to ſee with the ſame eyes. There is frequently a ſhade of difference betwixt our opinions even upon the moſt common and obvious ſubjects: far more ſo, upon Agriculture, which muſt for a long time be a field of experiment, before it can be brought to reſt upon the baſis of fixt principles, eſtabliſhed on facts and aſcertained by univerſal conſent. Not only does the diverſity of materials and ſituations occaſion a difference of opinions, in rural economy, but one man may omit as frivolous, what another deems worthy of the public attention; and one may account a ſubject to be important, which another has paſſed over ſlightly or entirely overlooked.

2. It has been recommended to me to give directions upon the different points that occurred, becauſe a bare detail of facts could not be ſo intereſting or uſeful, when thrown together in a disjointed form, as when they are accompanied with ſuitable illuſtrations; and the practice of the different provinces in rural affairs would be better underſtood and perhaps more or leſs adopted, when that practice was recommended or diſapproved of, upon rational principles. This part of my taſk was undertaken with reluctance; and it is with much anxiety and deference I now lay my own opinion of different modes of culture, before the public; becauſe the ground, on which I ſtand, is hazardous, and the field before me has hitherto, in its full extent, been

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by me untrodden, which, although it may have amuſed my vacant hours, in the intervals of more important buſineſs, yet being out of the line of profeſſional ſtudy, has ſeldom occupied the whole force of the mind in the ſerious mood of intenſe application.

The facts I relate, affect me with leſs anxiety than the opinions, which I am urged to give; becauſe I have endeavoured to draw from the pureſt ſources of information; and where there was danger of miſtake, to collect materials from thoſe ranks of ſociety, whoſe intelligence and ſituation in life gave them the moſt ample claim to undoubted credit; and I have prefixed the name of each individual, in my notes, to the facts, which they did reſpectively communicate.

3. Wherever the animadverſions ſeemed to be of any moment, which had been made on the margins of the three original Reports, I have taken them down in notes; but where they appeared to be otherways, I confeſs that I have paſſed them over. Some of them related to provincial terms, which are now explained. Others were occaſioned by the difference of weights and meaſures, uſed in North and South Britain; of which I have annexed ſome tables. Not a few referred ſolely to typographical errors of the preſs in one of the former reports; and a few of them conſiſted of ſeveral pages, having the appearance of diſſertations. I regret exceedingly

that the remarks of one Engliſh gentleman, whoſe goodneſs of heart entitled his opinions to all my reſpect, were ſo long, that to have taken them down fully, would have ſwelled this Volume beyond all reaſonable bounds; and I did not think myſelf at liberty to abridge them.

4. Unawed by fear and unſolicitous of adulation, I have written without bias or prejudice, neither applauding nor cenſuring individuals, nor any claſs of the community, contrary to the dictates of integrity and truth, as far as I could diſcern them. The proſperity of my country was always the object neareſt my heart; and if this ſurvey ſhall in any degree promote the public good, I am ſatisfied. The pains, however, which I have beſtowed to accompliſh that end, it may perhaps be prudent to conceal, until the fate of this publication be known.

In this enlightened age, and on a ſubject of a complicated nature, in which new theories are ſtarting up every day, new experiments continually made, and the moſt experienced improvers holding different opinions on a variety of ſubjects, it is vain to expect that the judgment of any individual can coincide with the ſentiments of all men.

I have endeavoured to compreſs my ſubject; yet it gives me concern that this report may, perhaps to ſome, appear too long. The only apology I can offer is, that the County of Perth, in my opinion at leaſt, is the moſt important in Scotland, in

reſpect

reſpect of the extent of territory and the knowledge of agriculture, taken collectively; and that in theſe circumſtances, I was under the neceſſity of following the current of my ſubject, relying on the candor of the public, at whoſe bar I ſtand, whoſe indulgence I crave, and to whoſe judgment I ſubmit with a reſpectful ſilence.

A TABLE

A TABLE OF WEIGHTS AND MEASURES.

LIQUID MEASURE.

1 Scotch pint = 103.4 cubic inches.
1 Engliſh beer pint = 25.35 do.
1 Engliſh wine pint = 28.875 do.

DRY MEASURE.

1 Wincheſter buſhel = 2150 cubic inches.
1 Scotch firlot or buſhel for rye, peaſe, beans, rye graſs, and ſalt = 2199 do.
1 Linlithgow firlot for barley, oats, malt, fruit, and potatoes = 3208 do.
1 Perth common firlot for barley = 3313.5 do.
1 Stirling barley firlot is about $7\frac{1}{2}$ per cent. or $\frac{1}{13}$ larger than the Linlithgow firlot. It is uſed in Monteath, a diſtrict of Perthſhire.

4 lippies or forpits = 1 peck or $\frac{1}{4}$ of a buſhel or firlot reſpectively.
4 pecks = 1 buſhel or firlot of the ſeveral meaſures.
4 firlots or buſhels = 1 boll.
8 buſhels = 1 quarter Engliſh, or 2 bolls wheat meaſure.
16 bolls = 1 chaldron, or 1 chalder Scotch.
4 quarters = 1 chaldron Engliſh.

WEIGHTS.

16 ounces averdupois = 1 lb. do. commonly called Engliſh weight.
$17\frac{1}{2}$ ounces = 1 lb. Dutch or Amſterdam weight.
22 ounces do. in ſome places, 24 ounces do. in other places = 1 lb. Tron weight.
16 lb. reſpectively = 1 ſtone.
112 lb. = 1 hundred weight.
20 hundred weight = 1 ton.

LAND MEASURE.

An Engliſh acre = 4840 ſquare yards.
A Scotch acre commonly = 6084 do.

N. B. If the differences of inches were narrowly attended to in making the Scotch chain, a Scotch acre would be equal to 6150.7 ſquare yards.

INTRODUCTION.

OF all the branches of natural philoſophy, we know, that is the moſt important, which inveſtigates the cauſes of the fertility of the earth, in producing ſuſtenance for the human kind. Others may be more ſplendid; but this is the moſt uſeful. The knowledge of the cauſes and cure of diſeaſes, incident to man, may claim the ſecond place. Mechanics promote our convenience and ſafety in various reſpects; navigation, as founded on aſtronomy, facilitates our intercourſe with diſtant nations. Theſe and other branches of this wonderful ſyſtem of the providence of the Creator, miniſter to our comfort, merit our attention and claim our gratitude; but agriculture alone feeds the lamp of life, and enables us to be capable of that gratitude, which is due to the Author of our being and of our well-being. She alone traces the footſteps of nature, and ſeconds her efforts, in providing us with food to eat and raiment to put on. She is the parent of ſociety, and the nurſing mother, to whoſe breaſts we all cling, and in whoſe lap we are reared. She has made the deſert a fruitful field; ſhe has planted grain where foreſts grew; ſhe clothes our land with graſs for cattle and with the herb for the uſe of man. She fills our houſes with plenty, our hearts with gladneſs, and puts into our hands the ſtaff of life.

Agriculture has therefore been encouraged by the wiſeſt and beſt men, in all ages, and has been deſervedly held in the

the higheſt eſtimation by the greateſt and moſt poliſhed nations, that ever appeared in the world: and the moſt elegant writers have tranſmitted to poſterity the ſucceſſive improvements which this art has received.

The patriarchs were ſhepherds and huſbandmen. The Chaldeans, the Perſians, the Phœnicians, the Egyptians founded their proſperity on the cultivation of the ground; and Xenophon aſſures us from his own obſervation, that wherever agriculture occupies the attention of mankind, the arts thrive; wherever it is neglected, the arts are not to be found.

The fabulous ages, in which men are ſuppoſed to have lived on acorns and other ſpontaneous productions of the earth, had exiſtence only in the imaginations of poets. A few wandering ſavages may have ſince been diſcovered occaſionally in favoured climes, near the equator, who drag out a forlorn exiſtence without tillage; but the comfort of man ariſes from ſociety; ſociety neceſſarily implies the exerciſe of ingenious arts; and every artiſt ultimately depends for his ſubſiſtence on the productions of the earth. By the ſweat of his brow man was deſtined to earn his bread. Not only was the firſt man doomed to till the ground; but his poſterity muſt follow his example: and men in every rank of life from the higheſt to the loweſt, and in every age, from the beginning of time, are indebted to the bounty and ſupported by the fruits of agriculture.

Wherever mankind were civilized, we find by the moſt authentic records, that the cultivation of the ſoil kept pace with the civilization of the human race. The one was always in proportion to the other. They have in every country flouriſhed and fallen together; and they have maintained this uniform progreſs down to our own times.

and

Ancient Egypt was not only a nurſery of the human race, but a granary to other nations, in the article of food. Both the kings and people of Judea paid uncommon attention to the cultivation of their country, and thereby increaſed its population to a degree almoſt incredible. Greece, in her beſt times, produced both examples and writers on farming. Rome, in the zenith of her glory, held in the higheſt eſteem the firſt and beſt of all the arts. Cato the cenſor, and Varro and Columella treated of rural economy. They embelliſhed the poetical rules of Heſiod, the dry maxims of Ariſtotle and the other Greek farmers, with all the charms of erudition, adding many obſervations till then unknown. Virgil, with all the harmony of heroic verſe, the richeſt ornaments of language, and the higheſt pomp of poetic imagery, has detailed the knowledge in agriculture known or practiſed in his time. It were eaſy to quote many other inſtances both from ancient and modern times to ſupport the aſſertion, That the culture of the ſoil, and the culture of the human mind have gone on together, in every country on the face of the globe; but without entering upon a tireſome detail on this point, I leave it to the reader's own acquaintance with hiſtory, not afraid that he will find one inſtance, in which the people were barbarous and the ground cultivated, or the ground neglected and the people civilized.

Upon the teſtimony of Cæſar and Pliny we are led to believe that the ground was cultivated, and that the uſe of manure for raiſing crops was known in Britain 100 years before the Roman invaſion*. And although the unſettled ſtate of public affairs both in South and North Britain, for a ſeries of years after the Romans left the country, prevented the progreſs of huſbandry, yet we have reaſon to ſuppoſe that exer-

* Cæſ. Lib. v. c. 12.

tions were made, to increaſe the fertility of the ſoil, which few people in ſuch untoward circumſtances would have attempted.

Our fathers had the means of ſubſiſtence to provide for themſelves and their families, under all the diſcouragements of the precarious tenure, incident to a ſtate of continual warfare, during the feudal ſyſtem; and yet we find they beſtowed an attention upon the cultivation of their country, for which we are not diſpoſed at all times to give them due credit. Extenſive fields were cleared of wood; marſhes were drained; wild beaſts were extirpated or ſubdued, and looſe ſtones were collected off the land, in ſuch heaps, as aſtoniſh their poſterity.

It was not, however, until the government of this country was ſettled at the revolution, till poſſeſſion was more permanent, till property was better ſecured by the law, than by the ſword, till the liberty of the people was defined, underſtood and enjoyed, that the Genius of agriculture ſmiled upon Britain. But notwithſtanding theſe national advantages; notwithſtanding the enterprize of Tull and of others, who ſtruck out a new path and attempted to rouſe the drooping induſtry of their countrymen, near half a century elapſed, before the generality of landlords ever dreamed of allowing their tenants to enjoy the fruit of their labours, by granting leaſes, and before the tenants themſelves aſpired to that reſpectability in ſociety, which the laws of their country held up to their view.—Something was ſtill wanting, at leaſt in this part of the united kingdom, to raiſe the people in the political ſcale, to convince them that their property was their own, and that their perſons were free. The great and the good Pelham did them this ſervice. He aboliſhed heritable juriſdictions. The people felt their own importance. They

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ſat ſecurely under the ſhield of the law. They claimed and enjoyed the fruits of their own induſtry; and the more they reliſhed the comforts of life, the more they were diſpoſed to be induſtrious. The moſt generous of the proprietors granted leaſes to their tenants, enſuring the undiſturbed poſſeſſion of their farms for a term of years; a few ſet examples of ſuperior cultivation before them. By milder treatment their confidence was gained, their attachment was founded on eſteem, not on fear; and a ſpirit of induſtry was diffuſed, which was formerly unknown in Scotland.—Every perſon who is arrived at manhood, and was at pains to look around him 20 or 30 years ago, muſt bear teſtimony to the rapid progreſs, in every ſpecies of cultivation, ſuited to the ſoil and climate, which has been made by gentlemen and farmers within that period. How patriotic the deſign, and how noble the purpoſe, to promote it more and more!

PRELIMINARY OBSERVATIONS.

1. BESIDES the ſpirit of the times and the influx of wealth into the country of late years, the laudable example of many of the country gentlemen has contributed much to the improvement of this and every other county in the kingdom. In place of living in ſolitary caſtles, built in places either inacceſſible by nature, or ſurrounded with walls and ditches; their manſions are elegant, and their parks are laid out with taſte. They not only embelliſh their reſidence, but they incloſe, they plant, they drain, they dreſs their eſtates; and teach their tenants the trueſt leſſon of induſtry, in ſhewing them how to increaſe their wealth and their comfort, by a proper culture of the land and a better management of their ſtock.

That the face of the country is greatly changed and this remark fully verified, will not only appear, it is hoped, from the following Report, but muſt be evident to any perſon, who attends to the ſpirited operations daily carried on in moſt parts of the county. The communications of proprietors to me in the courſe of the ſurvey in 1793, and in 1795, have a juſt claim to my warmeſt acknowledgments. In general I have been well ſupported by many perſons, who are no leſs enlarged in their views and high in their rank, than opulent in their fortunes: and if the following Report has any merit, it is owing to them: but without having aſked their permiſſion, it might be deemed indelicate to mention their names.

2. Notwithſtanding the influence of the proprietors, it muſt

muſt be evident to any perſon acquainted with human nature, that there is a reluctance among the lower ranks of men, to change old cuſtoms or to relinquiſh habits, which have acquired the ſanction of time, and are eſtabliſhed by the authority of ages. Although this principle, which operates univerſally, has, in moſt caſes, the happieſt effects; yet with regard to the cultivation of the ground, its conſequences are moſt baneful. In this reſpect it cools the ardour and enervates the vigour of the human mind, enſlaved in the prejudices and errors of antiquity. The huſbandman's hands are fettered in the ſhackles of ancient cuſtoms: He treads in the footſteps of his fathers and ſpurns at every new improvement, as an innovation. Nothing can be more abſurd, nothing more hoſtile to every ſpecies of improvement in this art, than an obſtinate adherence to old modes of cultivation. This obſtinacy is however wearing off, in the diſtrict under review; and it is hoped, from the modes of huſbandry, which are already adopted in different places, and from the exertions of the Board of Agriculture, that a ſpirit of improvement will be diffuſed, which ſhall ſurmount obſtinacy where it remains, and in ſpite of old habits, make the people open their eyes to diſcern their true intereſt. Mankind muſt be led; they cannot be driven. Let the enlightened admire the principle, which directs the people to be ſteady, while they deplore its effects in the particular inſtance of huſbandry. Let them alſo combat the influence of habit by the principle of ſelf-love. Let them *convince* men of this claſs, that by a certain mode of farming they ſhall be better fed, and better clothed, and become richer; and few will refuſe to adopt it. In vain will you threaten; in vain will you proſecute and fine; in vain will you plead the auth[illegible] of

ſtatutes and the articles of leaſes. Inſtead of all the artillery of law and the parade of power, you need only to gain the people's confidence, to convince them that you have their good at heart, and to teach them by your own example, how to promote their intereſt. This conduct will gradually thaw down the obduracy of the moſt confirmed habits, and diffuſe the genial warmth of patriotiſm through hearts which ſeemed to be cold and callous.

3. Independent of climate, and the quality of ſoil, it is remarkable that the knowledge of agriculture, in this diſtrict, is, with very few exceptions, progreſſive from eaſt to weſt; and it ſeems to be generally in this ſituation, over all the kingdom. The land is more fertile indeed on the eaſt coaſt than on the weſt, in this part of the world, as well as in moſt others. But every ſoil is capable of that improvement, which is adapted to its nature. Why is the former, in moſt caſes, improved; the latter in very few inſtances? The appointment of Providence makes many things progreſſive; and the progreſs is frequently from eaſt to weſt. All the arts and ſciences and the inventions of mankind, the civilization of the human race and the progreſs of ſociety, the apparent courſe of the celeſtial bodies, the light of heaven, the introduction of many new plants miniſtering to the food and convenience of man, the culture of the ſoil, and the improvement of the world, have, from the beginning of time, been moving weſt-ward.

4. If the numbers of people, induſtriouſly employed, conſtitute the ſtrength of a nation, the more the population can be increaſed, the more powerful will that nation become; but an increaſe of inhabitants can only be ſupported by a proportionable increaſe of the means of ſubſiſtence. The cultivation of the ſoil, is, therefore, the firſt care of all wiſe ſtates.

How

How could Egypt ſupport ſuch a crowded population, and ſpare eighty thouſand buſhels* of corn *daily*, for the maintenance of the inhabitants of Conſtantinople, in the reign of Conſtantine the Great? How could Sicily be the granary of Rome, beſides maintaining ſuch a number of extenſive cities and ſuch vaſt fleets and armies, in Hiero the IId's time? How could the land of Paleſtine, a ſmall ſpot, furniſh ſubſiſtence to ſuch numbers of people, as have been thought incredible by perſons viewing the preſent wretched ſtate of that country? How could China become ſo populous as it is at this day and be able to ſupport men, in number, as the ſand on the ſea ſhore? One anſwer ſuffices for the whole. Theſe and many other nations raiſed themſelves to a pitch of population, of wealth and of power, which aſtoniſhes ſhallow thinkers, who conſider not the cauſe. The internal ſtrength of any nation is in no caſe to be eſtimated by the extent of territory, but by the number of its citizens and the utility of their labour: and an increaſe in the numbers of people can, on the other hand, be in no caſe ſupported ſteadily, for a length of time, by any reſources whatever but by their home productions, raiſed and augmented by a ſuperior improvement of the ſoil. Had I the powers of perſuaſion equal to the conviction I have of the importance of this maxim, I would proclaim it to my country from the point of Shetland to the Lands end of England, until it were heard and underſtood and felt, by every man that eateth bread†. He that makes two ears of corn to grow where only one grew before, does more good to mankind, than the whole race of politicians together.

Manufactures,

* The Roman buſhel was one foot ſquare and four deep.

† Every one that reads and underſtands this, will neceſſarily feel the higheſt ſentiments of reſpect for the very excellent remark. *Name unknown.*

Manufactures and other cauſes may increaſe the population, beyond what the produce of a country can ſupport. In that caſe, recourſe muſt be had, either to the importation of corn, or the people muſt emigrate: there is no other alternative. When grain and other articles of life muſt be imported into any country, the ſubſiſtence of the people becomes very critical; and the more ſo, in proportion to the quantity required, the diſtance of the market, and the conſtancy of the demand. Their ſupplies depend greatly on the ſurplus and good will of the countries, from which their ſubſiſtence comes; their ſupplies depend alſo, on their ability to purchaſe, and on the obſtructions they may meet with from other nations, in going in queſt of food: in ſhort, the country, which cannot ſupport its inhabitants, muſt keep on good terms with all its neighbours, whatever injuries and whatever inſults it may receive, and can never be ſaid to be *truly* independent. If the ſituation be inſular, like Britain, the moment it loſes its ſuperiority at ſea, every perſon within may be ſtarved, who cannot be ſupported by the natural produce of the iſland. Many examples might be given to illuſtrate this reaſoning; but it ſeems to be ſo evident, as to require no illuſtration.

The iſland of Great Britain is becoming more and more a manufacturing country every day. This circumſtance will throw the people into towns and villages, and neceſſarily increaſe the general population; and yet many, by miſtaking the ſtage of ſociety, to which we are arrived, reaſon upon the population of the preſent times, not from facts, but from principles, or at leaſt from facts unfairly and partially ſtated; and when the premiſes are falſe, the concluſion muſt be erroneous.

If the towns and villages of this country have doubled their

their population within half a century (and ſome of them have encreaſed tenfold), granting that the agricultural population may have decreaſed one third, what concluſion can be fairly drawn from thence, but that the general population is conſiderably more than it was. The more that manufactures advance, the more will this local change in the reſidence of the people appear.

It becomes therefore an important queſtion with every lover of his country, How is this encreaſed population to be maintained? It is not enough to anſwer, Purchaſe food from other nations, becauſe a wealthy country can never be in want. The true anſwer is, Raiſe more food in your own country; apply your wealth to cultivate your own ſoil, that it may produce the greateſt quantity of ſubſiſtence for man.

The eſtabliſhment of a Board of Agriculture at this juncture, under the ſanction of Parliament, prognoſticates much good to this country; and it is a happy preſage of its future ſucceſs, that no difficulties ſeem to deter, and no application ſeems to be too arduous: and although its ſucceſs may be ſlow at firſt, from a complication of various cauſes; yet conſidering the great wealth which, in leſs than half a century, has flowed into this country, the growing ſpirit, which the people have for improvement, and above all, the attention which many of the country gentlemen have beſtowed of late, upon embelliſhing their manſions and meliorating their eſtates, there is no doubt that the operations of this Board, will, in a ſhort time, excite an eagerneſs to adopt the beſt modes of culture, and that the rules given through the medium of their publications, will enlighten, teach and enrich their country.

5. The proprietors of ſoil may be conſidered as poſſeſſed of a dead ſtock. Every dead ſtock requires another to put

it in motion and make it productive. A ſtock, which in its rude ſtate can produce very little of its ultimate value, may, by the application of more labour (which always requires ſtock), be brought to ſuch perfection, as to produce the full amount of its intrinſic value; and can then only be ſaid to arrive at its real worth or price. How different in value is a pound of flax from a pound of lace, or a fleece of wool from its weight in cloth? Equally different is a field or an eſtate uncultivated, from the value, to which it may be brought by cultivation. But there is this difference, and it is an important one, that the lace and cloth may remain unſold, and in that caſe will produce no ſubſiſtence to the poſſeſſors; whereas an improved field produces ſubſiſtence, independent of all the markets upon earth, and is unaffected by the caprice or enmity of ſurrounding nations.

6. Agriculture, like other arts, is founded upon experiment, and is learned by example, joined to practice. Theories may be of uſe in the ſciences. In them you may proceed, by cautious ſteps, from the cauſe to the effect. Syſtems founded upon hypotheſis alone, unſupported by experiment, are no better than a houſe built upon the ſand. They are the effect of genius; and genius always haſtens to its object. The hiſtory of the ſciences demonſtrates how ſhort lived are all theories, which do not reſt on the baſis of a proper induction of experiments. In all the arts, and in agriculture particularly, the foundation muſt be laid on a faithful collection of ſucceſsful trials. The ſteps of nature muſt be traced with diligence, marked with care, and recorded with integrity, before any opinion can be formed of her plan in promoting the vegetation of plants. All reaſoning and all concluſions drawn from the operations of nature, eſpecially on this ſubject, ought to reſt ultimately on facts.

The

The farmer by following theſe, is led forward on ſafe ground, making ſimilar trials with confidence: and if his ſoil be of the ſame nature, his climate of the ſame temperature, and his means of improvement equally powerful, his endeavours are generally crowned with ſucceſs. While the ſpeculative farmer, who follows the plauſible ſyſtem of a theoriſt, builds on the baſeleſs fabric of a viſion, and is ruined by imaginary ſchemes; the practical farmer ſtudies with care the example of others, matures and eſtabliſhes their practice by his own experience, and enjoys the well-earned reward of his induſtry. The former builds on firſt principles alone, ſome imaginary ſcheme of vegetation: the latter admits no principles, unſupported by fact, and unconfirmed by experience.

6. The land, to which the following ſurvey refers, ſeems to divide that part of Scotland on the ſouth, which is generally adapted to the raiſing of grain, from that on the north, which, with few exceptions, is more fitted for paſture.

It is alſo ſingular, that the county under review divides thoſe parts of the kingdom on the north, where firs abounded in former times, which are ſtill found in the moſſes, from thoſe in the ſouth, which carried oaks and a variety of other wood, but no firs, ſo far as I have ever heard. Nature herſelf, which never errs, appears to have clad our bleak mountains with a mantle, which is for ever green; while ſhe had planted trees, which ſhed their leaves, where ornament and ſhelter were leſs neceſſary, leſt perhaps the verdure of the ground would be too much intercepted from the eye of man.

In this county is the boundary between thoſe parts of Britain, where coal has been diſcovered, and theſe, where coal has not hitherto been found; that uſeful foſſil, which is ſo neceſſary for the comfort of the ſouthern diſtricts, being leſs

requiſite in the north, where extenſive foreſts of the pine, the beſt of all fuel, formerly grew, and ſtill grow ſpontaneouſly.

Here is alſo the diviſion betwixt the granite and the free ſtone; there being no free ſtone north of us, and the granite leſs frequent than the free ſtone on the ſouth. Our hewing-ſtone quarries gradually harden, as you approach the Grampians.

Slates, that beautiful covering for houſes, are found in few parts of Britain, ſouth of this county.

Another diſtinguiſhing feature of this county is, that it contains more oak-woods, than are to be found in all the other counties of North Britain.

GENERAL

GENERAL VIEW

OF THE

AGRICULTURE

IN THE

COUNTY OF PERTH.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I. *Situation and Extent.*

PERTH-SHIRE, which is comprehended in this Survey, is one of the moſt extenſive counties in Scotland. It lies between 56° 4″ and 56° 57″ north latitude, extending a whole degree on the meridian, excepting only 7 minutes; and between 3° 4″ and 4° 50″ weſt from the meridian of Greenwich, being only about 6 minutes leſs than two degrees of longitude on the equator.

From eaſt to weſt, betwixt Invergowrie and the top of Benloi, it extends 77 miles in a ſtraight line, and 68 from ſouth to north, betwixt the Frith of Forth at Culroſs, and the boundary of the eaſt foreſt of Athol at the ſource of the Tilt. The ſquare miles are 5236. But the ſides not being ſtraight lines, it will be nearer the truth, to eſtimate the ſquare miles in round numbers, at 5,000, which amount to 3,200,000 acres of Scots meaſure, or 4,068,640 Engliſh acres.

On

On the eaſt, Perthſhire is bounded by the county of Angus; on the ſouth eaſt, by the Frith of Tay and by the counties of Fife and Kinroſs; on the ſouth, by the river Forth and the counties of Clackmannan and Stirling; on the ſouth weſt, by the county of Dunbarton; on the weſt, by the county of Argyle; on the north weſt, by the county of Inverneſs; on the north and north eaſt, by a continuation of Inverneſs ſhire, and the county of Aberdeen.

SECT. II. *Diviſions.*

THE ancient diviſions of this county differ widely from thoſe adopted in modern times. During the exiſtence of heritable juriſdictions in the hands of the great vaſſals of the crown, this county was divided into Stewartries; and ſome of the counties of Scotland are ſtill known under that name. The ſtewartry of Monteath comprehended all thoſe parts of the county, which are ſouth of the Ochills and ſouth of that ridge of the Grampians, which ſeparates the pariſhes of Callander and Comrie from each other; or in other words, the lands which lie on the various ſtreams that diſcharge themſelves into the Forth, except Balquhidder, which belonged to the following diviſion.

The ſtewartry of Strathearn extended over all the country known by that name, including the various diſtricts, whoſe waters are diſcharged into the Earn.

Methven had the regality of its own eſtate. The duke of Athol had the ſame authority in Athol as a ſeparate regality; and was high ſheriff of the diſtrict around Perth, including Stormont and Carſe of Gowrie. The earl of Breadalbane poſſeſſed the bailliary of his own country, with all its dependencies.

Since the Juriſdiction Act took place in 1748, the ſheriff depute

depute of Perth, who is always one of the faculty of advocates, exercises the civil jurisdiction of the county, with a salary from the crown. He appoints two substitutes; one at Perth and another at Dunblane. The substitutes are now paid by the crown; not many years ago they were paid by the depute. There was formerly a substitute also at Killin.

By an act of Parliament past in 1795, extending the jurisdiction of his Majesty's justices of the peace, in determining causes for the recovery of small debts, the county of Perth is divided into nine districts, viz. Perth, Dunkeld, Weem, Dunblane, Auchterarder, Crieff, Culross, Inchture, Coupar; and a certain number of parishes, contiguous to these towns, is subjected to the jurisdiction of the justices within each district.

These divisions of the county are merely arbitrary; the most natural division is into Highland and Lowland. Eighteen parishes, which are situated along the face or within the vallies of the Grampians, constitute the Highland division. Fifty nine are included in the Lowland division. Some of the Ochills and Seedlaws indeed, as observed in the topographical description * of the county, are considerably placed above the level of the sea and might be considered as Highland; yet as no church is situated in the bosom of these hills, except that of Glendevon alone, they ought to be considered as Lowland parishes, because the language of the inhabitants, their dress, their manners, their enterprize, and their habits of life, are different from those people, who inhabit the vallies of the Grampians.

There are few villages of any note, within the hilly part of this county. The people hitherto lived more upon the fruits of pasturage and of tillage, than by commerce or manufactures.

* See the Appendix, N° 1.

nufactures. The latter is however getting in amongſt them; and the people have ſuch enterprize, that they can turn their attention, with ſucceſs, to any purſuit. There are many inviting ſituations for villages in the Highlands; and it is the intereſt of the people and of the proprietors, and, I may add, of the community at large, to attend to this circumſtance.

At the opening of the different vallies, where the rivers deſcend from the hilly to the low country, villages are eſtabliſhed and daily increaſing, whoſe inhabitants trade with thoſe in the country beyond them. Gartmore, Kilmahog, Callander, Muthil, Comrie, Crieff, Foulis, Dunkeld, Blairgowrie, Rattray, and Alyth, within this county, are of this deſcription; and the ſame remark may be extended beyond the limits of Perthſhire both eaſt and weſt.

Sect. III. *Climate.*

THE acceptation, in which the word Climate is here uſed, is not ſtrictly philoſophical, denoting a limited ſpace, which is bounded by two circles on the Globe. It is taken in a popular ſenſe and implies meteorological obſervations on the ſtate of the atmoſphere with reſpect to rain, wind, heat and cold, which affect the fertility of the ſoil, the temperature of the ſeaſons and the health of the inhabitants, independent of the latitude of a country. The county of Perth, being ſituated in the middle of Scotland, is neither ſo warm as thoſe in the ſouth, nor ſo cold as theſe in the north: but as it is ſituated in the narroweſt part of the country and reaches acroſs the iſland, being farther beyond the tide way on the eaſt coaſt, than it is from it on the weſt, it may be ſuppoſed to have all the varieties of climate, experienced on theſe coaſts. Eaſterly winds bring rain and unſettled weather on the Stormont, carſe of Gowrie,

rie, Strathardle, and Glenſhee, while the weather is dry and ſerene on the weſt; and weſterly winds waft the clouds of the Atlantic over Monteath, Breadalbane, Glenlyon, and Rannoch, while a drop of rain does not fall to the eaſtward. The midland parts of the county are not ſo much affected with a change of weather, by either of theſe winds, as the extremities, which lie on the oppoſite coaſts; the clouds from either ſea being generally ſpent, before they arrive at the heart of the county.

Clouds from the ſea are fraught with vapour, in proportion to the breadth of the ſea, over which they paſs, becauſe they are continually catching and treaſuring up exhalations from its ſurface. Hence it follows, that the ſame tract of windy weather, and the ſame quantity of fog imported from the ocean, will not produce ſo much rain on the eaſt coaſt of this iſland, as upon the weſt. Beſides that, on the eaſt coaſt of Britain and Ireland, and many others, the face of the country is more level (from what cauſe, I ſhall not pretend to ſay), and deſcends like an inclined plane towards the ſea, having few mountains to intercept or attract the rainy clouds, in compariſon of the weſt coaſt, which has commonly a bold ſhore, often lined with high rocks and towering mountains, with which the clouds have a violent concuſſion, before they have well eſcaped from the ſurface of the deep.

Where different chains of mountains point towards one another, however obliquely, with an open tract of country between the points where they terminate, that tract of country, which lies in the line of their communication, is more liable to rain, than the adjacent country, which lies on either hand, out of that line. This is owing to the mutual attraction between the clouds and each of theſe hills alternately; which always acts with more force, when

the wind is ſo weak, as not to counteract its power. The weſterly clouds, therefore, which ſail along the Grampians, almoſt due eaſt, till they arrive at the bold headland between Drummond Caſtle and the houſe of Braco, inſtead of continuing their courſe, in the ſame direction, over the flat country of Strathearn, for the moſt part croſs ſouth eaſt to the Ochills at Gleneagles, or north eaſt to the hills behind Crieff and Foulis.

The clouds, which follow the ridge of the Dundaff hills, almoſt due eaſt towards Touch, generally croſs over the town and valley of Stirling in a northerly direction towards the Ochills, or more rarely with a ſouthern courſe to the hills above Falkirk; which circumſtance occaſions more rain to fall at Stirling, than in the level country above or below it. The ſame attraction takes place in Breadalbane, between the high hills on both ſides of Loch-Tay, and that range of mountains which terminates at Killin, where the clouds, in place of continuing their courſe right eaſt over the lake, for the moſt part aſſume either a northern courſe towards the hills above Finlarig, or a ſouthern one to theſe above Achmore.

The north wind is commonly cold and dry in all parts of the iſland; and the ſouth wind warm and moiſt: yet in this county, the ſouthern ſlope of the Grampians, many of the vallies within their boſom, that ſide of the Seedlaws, which deſcends into the Carſe of Gowrie, and that of the Ochills, which looks down upon the Forth, are ſcreened by theſe hills, from the inclemency of northern blaſts; beſides that, the rays of the ſun fall upon places in thoſe ſituations, more directly, at all ſeaſons of the year, than upon others.

It muſt however be acknowledged, that our inſular ſituation occaſions ſuch frequent changes in the ſtate of the atmoſphere,

moſphere, and ſuch ſudden varieties of weather, as baffles all calculations on this ſubject, deduced from fixt principles. When the cauſes are ſo unexpected and ſo irregular, that they cannot be traced by any known rule, the effects which they produce, muſt be equally capricious, irregular, and ſudden.

The mildneſs of this climate may be inferred from a variety of circumſtances, of which the following are a few. In ſome of the vallies of the Grampians, barley has been reaped, in good order, nine weeks after it was ſown. In the year 1743, Sir Patrick Murray of Ochtertyre had his ſown graſs in the rick, upon the 15th day of May, Old Style: and upon the 29th of the ſame month, there were ſix Scots pints of ſtrawberries on his table, raiſed in the open garden.

The late Mr Henry Stirling at the park of Kier had, for near fifty years, kept a regular journal of the weather, marked the ſtate of the barometer and hydrometer, and had made occaſional remarks on the crops and different branches of farming, during that period. Were theſe papers arranged, they might merit the notice of the Board of Agriculture and others, intereſted in rural affairs.

The ſtate of the weather for ſome years paſt is aſcertained with tolerable preciſion by the two following tables, which were communicated by gentlemen of known accuracy, who reſide almoſt in the oppoſite extremes of the county.

The Table of the hydrometer, the points from which the wind blew, from 1790 to 1795, both included, and the mean height of the barometer and thermometer for the three firſt years, were tranſmitted by Dr James Playfair, Minr. at Meigle, who is no leſs amiable for his diſcretion, than diſtinguiſhed by his literary abilities.

RAIN. Belmont Caſtle.

	1790.	1791.	1792.	1793.	1795.
Months.	Inch. Dec.	I. D.	I. D.	I. D.	I. D.
January,	2 . 8	5 . 0	2 . 9½	2 . 8	1 . 0
February,	1 . 0	2 . 7	2 . 0	3 . 2	2 . 2
March,	1 . 0	1 . 5	4 . 0	4 . 7	1 . 8
April,	1 . 8	1 . 3	1 . 5	1 . 4	4 . 6
May,	2 . 7½	1 . 7½	3 . 4	8 . 0½	1 . 0
June,	1 . 9½	2 . 3	3 . 2	2 . 5	2 . 8
July,	3 . 8½	1 . 0	3 . 4	2 . 6	1 . 8
Auguſt,	3 . 2½	3 . 0	5 . 8	3 . 7	4 . 4
Septemb.	2 . 9	7 . 0	2 . 8	3 . 2½	1 . 7
October,	2 . 7½	7 . 0	4 . 1	1 . 5	8 . 4½
Novemb.	4 . 4	2 . 8	2 . 2	6 . 2½	2 . 8
Decemb.	3 . 0	1 . 8	3 . 0½	3 . 6	4 . 1
	31 . 4½	37 . 1½	38 . 4	43 . 5½	36 . 6½

WIND. Number of days.

	1790.		1791.		1792.		1793.		1795.	
Months.	S. E.	S.W.	S. E.	S.W.	S. E.	S.W.	S. E.	S.W.	S. E.	S.W.
January,	5	14	2	17	13	3	6	12	11	1
February,	0	10	3	4	7	10	3	15	13	2
March,	4	14	1	12	4	18	12	7	10	5
April,	10	6	16	6	10	12	15	3	14	11
May,	15	7	3	13	7	10	6	11	3	16
June,	10	12	3	9	5	12	5	16	9	12
July,	7	15	4	14	6	18	7	18	7	12
Auguſt,	3	17	10	4	12	12	5	18	7	19
Septemb.	3	14	10	9	4	19	9	13	8	14
October,	10	16	12	9	15	6	5	10	14	10
Novemb.	14	5	6	13	2	20	15	3	4	11
Decemb.	0	11	1	11	3	10	7	14	4	21
	81	141	71	121	88	150	95	140	104	134

Mean

Mean height of the Barometer in 1790 29 · 59
1791 29 · 71
1792 29 · 59

Mean height of the Thermometer in 1790 41
1791 42½
1792 42½

Height of the ſtation of the Barometer above half-flood mark at Panbride — feet. dec. 203 · 79

The height of the Barometer and Thermometer being ſo nearly the ſame, each year, it was thought unneceſſary to continue the calculation.

A Table of the days which were fair, or rainy, or froſty, and in which the winds were weſterly, for ſix years, is tranſmitted by Mr Edward Burn at Coldoch in Monteath, (whoſe farm is an example of diligence and good huſbandry.) With regard to the fair weather column, Mr Burn remarks, that many days are inſerted therein, which in fact were ſhowery or drizzling, but not to ſuch a degree as to oblige the ploughs, for example, to quit their work; ſo that if a deduction of 3 or 4 of the fair days were to be made for each month, the remainder might be the real number of days without any rain.

State

STATE of the WEATHER at COLDOCH for the Years 1790—91—92—93—94—and 1795.

Months	1790.				1791.				1792.				1793.				1794.				1795.			
	days fair	froft	rain	wind weſterly	days fair	froft	rain	wind weſterly	days fair	froft	rain	wind weſterly	days fair	froft	rain	wind weſterly	days fair	froft	rain	wind weſterly	days fair	froft	rain	wind weſterly
January,	15	8	0	24	8		23	21	9	13	9	11	16	11	4	16	14	6	11	26	5	25	1	8
February,	11	2	15	27	7	6	15	21	15	8	6	16	8	3	17	20	13		15	19	8	20		6
March,	24		7	19	20		11	27	8		23	23	22		9	12	14		17	16	23	7	1	15
April,	26		4	8	20		10	9	25		5	14	26		4	4	20		10	26	17		13	12
May,	25		6	18	25		6	20	21		10	15	28		3	17	28		4	17	23		8	20
June,	17		13	16	26		4	16	25		5	11	24		6	17	25		5	9	21		9	7
July,	18		13	15	22		9	24	18		13	16	26		5	14	24		7	23	26		5	13
Auguſt,	14		17	12	27		4	17	22		9	6	20		11	16	21		10	17	20		11	19
Septemb.	19		11	21	28		2	15	14		16	19	27		3	18	20		10	15	25		5	16
October,	23		8	20	16		15	10	12		19	9	19		12	27	19		12	24	9		22	16
Novemb.	15	9	6	6	18		12	14	12	8	10	15	16	6	8	2	20		10	11	7	12	11	15
Decemb.	11	10	10	24	2	17	12	26	8	7	16	20	18		13	12	13	5	13	13	12	2	17	18
	218	29	118	210	219	23	123	220	189	36	141	175	250	20	95	175	230	11	124	216	196	66	103	165

SECT. IV. *Soil and Surface.*

THE ſoil of this county conſiſts of all the varieties known in Scotland: and the ſurface of the ground is very much diverſified.

The different ſoils run ſo much into one another that it is almoſt impoſſible, and indeed immaterial, to diſcriminate, in moſt caſes, where one kind begins and another ends, with any more preciſion than would diſtinguiſh the limits of the colours of a rain-bow.—In giving the deſignation of ſoil, it is not meant to be chymically accurate, or that it has no other quality, but that, under which it is claſſed. What is meant, is, that the quality predominates, under which it is arranged: neither can it be expected, in a general account, that every little ſpot of any peculiar kind can be taken notice of.

The northern hills, at firſt ſight, look barren and bold: but upon a cloſer inſpection, they are found to be cut in various directions, by lakes, rivers, brooks, and rivulets; and the vallies between them to be warm and fertile, productive of abundant crops of corn and graſs. The ſouthern ſlope of theſe hills is under more tillage as it approaches the plain; yet it is more expoſed. The great ſtrath between Gartmore and Meigle is in general well cultivated; the landlords and tenants underſtand and purſue their intereſt; but their efforts are attended with moſt ſucceſs on the ſides of the rivers, where the ſoil is more generous, and the proſpect of returns more certain. The ſouth hills, which alſo run acroſs the county, are fine paſture, and have been long noted, eſpecially that ſection of them called the Ochills, for producing great plenty of mutton and wool. On the ſouth ſide of this range of hills, as far as this county extends, the ſoil in ſeveral places is at preſent uncommonly fertile; the farmers

mers affluent, intelligent, and enterprifing; the country is crowded with villages, induſtry, riches, and population, keeping pace with each other.

1. *Clay.* Argillaceous earth or clay, which abounds in thoſe diſtricts of the county of Perth, that lie ſouth and eaſt, is of various colours and of different kinds; and theſe kinds have different properties. This ſoil may be conſidered as a primitive ſubſtance, becauſe it cannot be decompoſed into any other principle of earth, more ſimple than itſelf; nor formed by a combination of other ſubſtances.

The properties of clay, which affect agriculture moſt, are its *tenacity*, its *coheſion* and *ductility*. When dried by a long tract of weather, without rain or heavy dews, it becomes ſo hard and chopped, as to loſe the benefit of any tilth formerly given it by frequent ploughings. In which caſe, the tender fibres of corn and graſs and of other plants which do not penetrate far below the ſurface, are locked up ſo *hard*, that for want of nouriſhment they become ſhrivelled and dwarfiſh. Its particles are ſo ſmall, that they *adhere* very cloſely together, by which means its ſurface retains more humidity than any other ſoil; by too much moiſture the plants have a blanched appearance and become unfruitful; and not unfrequently, in a cold ſeaſon, they are chilled or die. On the other hand clay is ſo ductile, that in a favourable ſeaſon and by proper culture, its parts become very *fine* and the vegetation very powerful, becauſe it retains moiſture longer than any other land, to nouriſh the crop. If however that moiſture be exceſſive, the land runs all into a fluid maſs.

Along the Forth, from the bridge of Gartmore to the bridge of Allan, a tract of eighteen miles, all the flat land is a deep ſtiff clay, of various degrees of fertility, the blue being generally more fertile than the yellow. A great part of this ſoil ſtill

is

is, and ſeems once to have been wholly covered, by a tract of moſs, from ſix to fifteen feet deep. This valley is ſuppoſed to have formerly been overflowed by an arm of the ſea: and this opinion reſts on very probable circumſtances, there being marine foſſils dug up in various parts, and the ſurface of the clay being only a few feet above the preſent level of the tide, at high water. This horizontal ſtratum of clay being compoſed of ſea ſleech or ſediment, accounts for its uncommon fertility *.

In the Carſe of Gowrie †, all the flat land, which is a great proportion of the diſtrict, is a deep rich clay. On the ſkirts of the different ſwells, which are interſperſed in the Carſe, but hold in general a middle direction between the Seedlaws and the frith, the ſoil is of a red colour; more nearly allied however in its nature to the clay below, than to the loam on the ſummit of theſe ſwells, which is ſuppoſed to lie on iron ore. This ſoil is called *mortar*, both here and in the Stormont; probably becauſe the houſes of the farmers and of

 thoſe

* Upwards of 24 ploughs of carſe land, the beſt in Britain, lies on the ſouth ſide of the Forth, on the weſt of Stirling, called the Carſe of Leekie, of which more fully elſewhere. *Ignotus.*

The Carſe of Leekie does not conſiſt of 24 ploughs, and this report has no more concern with that Carſe, than it has with Nova Zembla. This perſon, in all his remarks, has had more keenneſs than courage. It is an irkſome taſk, to be obliged to anſwer the criticiſms of thoſe, who neither underſtand what they wiſh to cenſure, nor have fortitude enough to ſubſcribe their names.

† Clay ſoil in Scotland is generally called Carſe. Some perſons object to this deſignation, as not claſſical Engliſh; but whoever writes of local circumſtances muſt occaſionally employ local phraſes: The word *Carſe* is not however ſo barbarous as is ſuppoſed. In Bailey's Dictionary, *Car* is ſaid to be old Engliſh for *Pool*. *Carre* ſignifies woody, moiſt, or boggy ground: and the word *Cars* in Lincolnſhire and Yorkſhire is in general uſe, and applied to the ſame kind of ſoil.

thoſe in the lower ranks of life were formerly, in theſe and other parts of the country, compoſed of this mortar or tilly clay, owing to the ſcarcity of ſtones for building.

The next greateſt tract of clay, within the compaſs of this ſurvey, is from the bridge of Forteviot, on the Earn, to the confluence of that river with the Tay, at the Rhind, where they meet. The ſoil in this tract is chiefly of a pale brown; owing probably to the mixture of freſh-water ſediment carried down in great quantities by the river, which being at firſt ſuperinduced over the other ſoil, is now by the action of tillage incorporated with it. At a conſiderable depth below the ſurface of the land, in the vicinity of the Bridge of Earn, there is a ſtratum of moſs, ſaid to be from one to three feet thick. This moſs, like all others, muſt be compoſed of rotten vegetables, eſpecially timber; and that timber muſt have grown out of the ſoil below the moſs.

There is a ſmall tract of the ſame kind of ſoil at Gogar and Menſtrie on the Devon, and its nature and appearance may be owing to ſimilar inundations in that river.

In ſome places about Coupar Grange, there is a ſtrong ſtiff mould, approaching nearer to clay, than any other deſignation of ſoil. A deep till, after it is wrought, approaches very near to the qualities of clay. It is eaſily poached, holds water on the ſurface as in a diſh, and is itſelf with difficulty diſſolved in water. On the banks of the Iſla, particularly about Bendochy, there are ſome ſpots, where clay prevails; but wherever the river overflows, it has a mixture of haugh, owing to the fine ſediment depoſited occaſionally on the ſurface. This mixture conſtitutes a ſoil of great fertility. The ſediment helps to correct the tenacity of the clay, and is itſelf of the nature of virgin earth, added annually to the ſtaple of the ſoil.

About

About the town of Perth, there is a rich ſoil, which reſembles very much the qualities of that laſt mentioned. In that diſtrict, which lies betwixt Perth and Dunkeld, on the weſt ſide of the Tay, ſome clay is alſo to be met with: but in a general account, extreme minuteneſs is not to be expected. It might even be deemed improper to enumerate every little patch of ſtiff ſoil, in various parts of the county. Wherever ſleech has been depoſited by waters, which at firſt were flowing and then ſtagnant, eſpecially if their courſe has been long; there we find a ſtrong rich mould, whoſe particles are fine, glittering after the plough, and whoſe nature is coheſive, being impervious to water in a high degree. And yet if it be compoſed not only of ſleech, but of rotten vegetables, which is the caſe with all marſhy land, where weeds have grown, it muſt have a proportion of calcareous earth; and therefore ought not ſtrictly to be called clay.

2. *Haugh.* All the land, which has been occaſionally flooded, time immemorial, is commonly called Haugh. Wherever rivers and large brooks do not flow from lakes, of ſufficient capacity to ſerve as reſervoirs, for holding the torrents from the higher grounds, they are liable to ſwell ſuddenly, to overflow their banks, and to depoſit a great quantity of ſediment on all the flat land within the reach of theſe inundations. Where the current is rapid, beds of ſtones or gravel are left; where it moves ſlowly, ſand is depoſited; and where it becomes ſtagnant, the ſediment is compoſed of the fineſt particles of earth. The degree of its barrenneſs or fertility depends uniformly on the nature of the ſoil carried down by the ſtream, and on the rapidity or ſlowneſs of the current. There is a conſiderable extent of this haugh-land wherever the Earn flows beyond its ordinary

channel. It alſo abounds on the Pows, on the Allan, on the Goodie, on the Devon below Dollar, and in various parts of the pariſhes of Balquhidder and Callander. On the Iſla, where it holds a weſterly courſe, the haughs are uncommonly rich and extenſive; there are a few at the mouth of the Ericht, the weſt end of Loch-Tummel, and that tract, known by the name of Bunrannoch. In various parts of the long courſe of the Tay, there is ſoil of this nature, eſpecially for ſome miles before its junction with the Iſla, in the vale of Athol, and in a leſs degree in other places. At Killin, Glendochart, Strathfillan, Glenlochay, and almoſt in every part of the county, where the rivers are in the predicament above deſcribed, there is leſs or more of this kind of ſoil.

Rivers, which flow from lakes, form no haughs, until they have run ſo far as to become muddy by the addition of other ſtreams. Should they overflow their banks near the lakes, from which they iſſue; their effect, in reſpect of fertility, is leſs powerful; the meliorating ſediment having, in a great meaſure, been left behind.

Graſs lands are more enriched by this kind of manure, than land in tillage; becauſe the former gains much, and loſes nothing; whereas the latter may loſe more ſoil, than it gains, if the water has conſiderable velocity.

3. *Loam.* The loam, in moſt ſituations, is ſo much interſperſed with other ſoils, that it is impoſſible to deſcribe it accurately, without being too minute. Whatever may have been the original quality of a ſoil, if it has been long in tillage, and enriching manures, conſiſting of animal and vegetable ſubſtances in a putrid ſtate, added to it for ages, it becomes Loam; as may be ſeen round all the burghs of Scotland. This change takes place ſooner in light land, than in that which is ſtiff.

There

There is a fine bank of loamy ſoil, of conſiderable length, from Rednock-houſe to Blair-drummond. On the higher banks of the Earn, beyond the flat land, which has been either flooded or traverſed by the river, there is a long tract of loam, interſperſed in different places, with a mixture of till or clay. Adjoining to the haugh on the ſides of the Weſter Pow, from Methven to Inverpafry, there is a ſtripe of fine loam. That on the north ſide lies on a bed of rock marle, which crumbles down when expoſed to the air, and forms a good ſoil of the ſame colour with the rock; which ſome farmers call motherſtone ſoil. Around Kier, Muthil, Auchterarder, Dunning, and many other places, this ſoil is very frequent.

Much of the land on the ſkirts of the moors of Glenſhee, of Orchill, of Maderty, of the foreſt of Alyth, at Banff, and in ſimilar ſituations, is called Loam; but a great proportion of it is of an inferior quality, having a mixture of peat earth on a gravel bottom.

There is loam at Tullyallan, in the neighbourhood of Culroſs, and in ſeveral places of that diſtrict, which have been for ſome time under a proper ſyſtem of cultivation.

In that tract of country betwixt Dunkeld and Perth, eſpecially in the pariſh of Auchtergaven and ſouthward, the loamy ſoil prevails. The ſoil upon all the eminences in the Carſe of Gowrie is loam, except in ſome places where the ſummit may approach to till and the ſkirts to clay, as mentioned under a former article. The ſouth aſpect of the Seedlaw hills is covered with a rich mould, looſe and tender, which yields eaſily to the ſhare.

In deſcribing the ſoil of Strathmore eaſtward to the frontier of the county of Perth, it is neceſſary to premiſe, that the Iſla holds its courſe in the middle of the diſtrict, almoſt

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at an equal diſtance from the Seedlaws on the ſouth, and the Grampians on the north. Between the baſe of each of theſe hills and the river, there runs a long ridge of moor, parallel to the river and hills, which, with very little interruption, extends nine or ten miles, from the bend of the Iſla oppoſite to Meigle, to Kinclaven, where it diſcharges itſelf into the Tay. The whole diſtrict is thus divided into four ſtripes of better ſoil, beſides the two ridges of light or mooriſh ſoil, which lie midway between the river and the mountains. The two ſtripes at the baſe of the hills, by Newtyle on the one ſide, and Alyth on the other, are for the moſt part a red or black ſoil of good quality. The two on the ridges are lighter ſoil, except where croſſed by brooks; much of it, either peat earth on a bed of till (provincially mortar), or ſand, or gravel. Part of it is in a ſtate of nature, part of it reclaimed, and part of it now in a courſe of ſucceſsful improvement, particularly the property of John Smyth, Eſq. of Balharry *. The two ſtripes next the Iſla are excellent ſoil, already taken notice of; loam on the declivities, and on the level, haugh and ſome clay.

At Meigle, which is ſituated in the extremity of the ſouth ridge of moor, and at Coupar in the center of it, the ſoil is a rich loam of a deep red colour. The ſoil at Jordanſtown on the oppoſite ſide has much of the ſame appearance and quality.

Towards Dunkeld, on the north ſide of the Tay, the ſoil is moſtly loam on the ſkirts of the lower hills, and on the flats between them. On the bank, where the old houſe of Blairgowrie is ſituated, which runs alſo behind the houſe of Ardblair and weſtward, there is a fine red loam: beyond theſe places the country is very much diverſified, and the ſoil

* See Appendix, N° 3.

ſoil of different qualities. About the middle of Strathardle, a deep red loam prevails. Glenfernet has ſoil of the ſame colour and quality, but ſomewhat lighter in its texture. At Aſhintully, Bleton, Glenbriarachan, and the foreſt of Cluny, there is much of this red loam mixed with gravel and ſand; the declivities inclining to the former, the flats to the latter. In general the moſt of the arable ground behind the loweſt hills, from the water of Ericht as far eaſt as this county extends, is of that complexion, and is provincially called mortar.

From Scone northward along the banks of the Tay, there is a fine loamy ſoil, increaſing in fertility according to its vicinity to the river. Back from the river, the land is moſtly till.

4. *Till.* On the declivities of almoſt all the hills a ſtrong ſtiff till abounds. That red coheſive ſoil, in ſome parts of the Carſe of Gowrie, Strathmore, and Stormont, which is termed Mortar, is no other than what is known in books upon agriculture under the deſignation of Till. In the neighbourhood of Stobhall, the general texture of the ſoil is a deep, ſtiff, red mould. A poor kind of till covers all the north face of the Ochills, from Dunblane to Abernethy, a tract of at leaſt twenty miles. The ſkirts of the moor, which lies betwixt the Forth and the Teath, and terminates a few miles from their junction, is a wet, unkindly till, eſpecially the land above the public road on both ſides: and a great proportion of the land on either ſide of the loch of Monteath is a wet, tilly ſoil; but in both theſe tracts, many places have a fall, and ought to be drained. On the north brow of the Seedlaws, the ſoil in general is tilly. This remark applies to the north ſide of moſt hills, where the ſoil is cold, deep, and ſpouty; while that upon the ſouth conſiſts of a mould,

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more light, generous, and dry. The finer graſſes are conſequently found on the ſouthern declination of hills. The cauſe may be, the genial influence of the ſun, the balmy ſouth wind, and warm ſhowers from that quarter.

There is a red kind of till about Auchterarder and Dunning, of a quality ſuperior to the former, and capable of high cultivation. On the face of the bank, and above the public road, from Methven to Ferntown, on a ſimilar bank near Kier on the Teath, and in various places of the Nairn eſtate and of the Stormont, there is a ſimilar ſoil on a bed of rock marle, which is very productive, approaching perhaps as near to the qualities of loam, when well cultivated, as it does to that of till. This ſoil, which is formed from rocks that are eaſily pulverized by the alternate action of froſt and thaw, of rain and wind, is the beſt ſpecies of till; and, as was mentioned above, is called by ſome perſons mother-ſtone ſoil. It is commonly to be met with on ſloping land, lying upon rock which is eaſily crumbled into powder. Towards the bottom of theſe ſlopes, the ſoil is deep, rich, and mellow, while the top is as ſtiff, thin, and barren, as any till whatever.

In all the provinces of the county of Perth, the red loam and red till run inſenſibly into one another, the line of their ſeparation being altogether indiſcernible. Their principal difference is, that the loam has been longer cultivated, better wrought, and more manured.

Where the rocks are friable, which is the caſe with the red rocks of this county, the ſoil, as in all the tracts here alluded to, is of the ſame colour with the ſtone from which it has been formed, and is of a good quality. This ſoil of a deep red colour is found, with few interruptions, ſtretching all the way from Laurence-kirk to Dunbarton, and makes its appearance

pearance again in the Iſland of Bute. It is univerſally found that mines run in chains, in this direction; but it is not ſo common with regard to ſoils, except they be formed from the rock on which they lie.

In ſome parts of the Highlands of Perthſhire, there is a ſoil lying on limeſtone-rock, which is uncommonly rich, becauſe it is formed of that rock, and conſiſts moſtly of calcareous matter.

Wherever the ſtones or rocks are granite, if the ſoil be wet, which happens, in moſt caſes, on the face of hills that are not very abrupt, there is a pale coloured till, which is more barren, and more difficult to be drained, than the red. Of all ſoils, this is the moſt unfriendly, the moſt reluctant to reward the labours of the huſbandman, and its natural ſterility the worſt to be overcome, eſpecially where there is little or no fall, to encourage draining. Till of this nature is found on both ſides of the Allan, at Kinbuck, in the Glen of Condie, in the back grounds of Culroſs and Tullyallan all the way to Blairingone, in the hollows among the Seedlaw hills, in Glenſhee, Gleniſla, Glenqueich, Glenalmond, and leſs or more on the lower declivities of hills, in all the glens of the Highlands.

Stiff deep till has nearly the ſame affinity to clay, that good till, meliorated by a judicious ſyſtem of huſbandry, has to loam. The diſtinction is, however, more diſcernible in the former than in the latter inſtance. Till is generally ſpouty, and requires to be drained below the ſurface, whereas clay requires only ſurface drains, having few or no ſprings below. The one is almoſt univerſally level, and has often a mixture of haugh in the vicinity of rivers; the other is often ſloping, or in gentle ſwells, underneath higher ground, from which it is infeſted with ſubterraneous ſprings.

5. *Sandy or Gravelly Soil.* Light free ſoil, eaſily pulverized, of which a great proportion is ſand or gravel, is the moſt frequent in Perthſhire. All the vallies north of Alyth, Blairgowrie, and Dunkeld, and weſt of Crieff*, Callander, and Gartmore, conſiſt moſtly of this light ſoil, except, where at the mouth of a brook, which diſcharges itſelf into a larger ſtream; or under the inundations of a river, the land is occaſionally flooded and haughs are formed; or on the ſloping face of hills, where the ſoil is ſpouty; or on the confines of moors, where the ſoil is a mixture of peat earth. There is a conſiderable tract of this ſoil about the head of the Allan, along the Machany, at the foot of the Ruthven and May. Near Muthil, the ſoil is partly till, and partly light. Round the muir of Orchill, about Monzie, on both ſides of the river, at Crieff and Monivaird, there is generally a free and truſty ſoil; and from Doune to Callander it is nearly of the ſame quality. There are other tracts of light land in the pariſhes of Muckart and Glendevon. A gritty ſoil is to be met with on the north ſide of the pariſh of Gaſk, and in general on that ridge of high ground betwixt the Pow and Earn, where it is free of moſs, and not flooded by ſmall ſtreams.

Betwixt Coupar and Meigle, along the ſides of the public road, there is a conſiderable tract of light ſandy ſoil, much reduced, by being overcroped after marle. At Rattray, and for ſome miles eaſtward, the ſoil is gravelly, naturally poor,

* The ſoil of Garaw Cheru, a farm weſt from Comrie, is very heavy carſe. *Idem ignotus.*—I believe that it is rather haugh, formed by the confluence of two brooks, according to the exception mentioned in this very ſentence. But even ſuppoſing part of that farm were clay, ſuch extreme minuteneſs as referred to every little patch of land would ſwell this report to the ſize of the univerſal hiſtory.

poor and thin. At preſent it is very much neglected; but under proper cultivation, it might make better returns under green crops. Below the village of Blairgowrie, the ſoil is uncommonly thin, lying on a bed of gravel,—an ample field for the application of ſome money and much induſtry. The low fields weſtward have much of a ſimilar complexion, while the ſwells are rich land and arable to the top. Betwixt Scone and Cargill, on the higher grounds, there is light land; alſo north and weſt of Auchtergaven on one ſide of the Tay, and in the neighbourhood of Delvin on the other; the former having more gravel, the latter more ſand. Land of this texture would yield excellent green crops, and would make good returns in graſs; but it is altogether unable to bear conſtant croping with grain. It appears unneceſſary to be more particular.

6. *Moſs and Moor.* In every flat, and on ſome ſlopes of the higher hills, there are moſſes of various dimenſions, of various depths, and of various degrees of firmneſs, according to the time that has elapſed, ſince the moſs began to acquire ſolidity. In the Highlands, moſſes are ſo frequent, that it would be tedious to enumerate them. Their formation is uniformly owing to the ſame cauſe—fallen trees, the deciduous parts of heath and of ſtrong aquatic plants. The largeſt tract of moſs, in a valley, any where in this county, and perhaps in Britain, is in *Monteath*, which has given its name to a whole ſtewartry. It is alſo called Moſs Flanders, from its flat appearance, and is moſt commonly known by that name. This whole tract of moſs, from the bridge of Gartmore to the bridge of Drip, may be computed at 10,000 acres *.

* Some time ago, a man of money ploughed the ſurface of it, after covering

It has been remarked under a former article, that there is a ſtratum of moſs, buried ſeveral feet below the ſurface of a rich ſoil, near the mouth of the Earn. A variety of timber is found lying in that moſs.

If the ſoil below Moſs-Flanders and this other moſs in Strathearn, has been formed by the agitation of the ſea, which is very probable: whenever the waters retired, ſuch a luxuriant ſoil could not long remain unproductive. It muſt have been ſown without delay, by the hand of nature, with the ſeeds of the plants growing around it. Of theſe, the oaks and other foreſt trees, being the moſt vigorous, would in a few years overtop and choke the reſt. Time itſelf and the violence of winds, are ſufficient to overturn any trees: and when trees are felled on flat land, where their leaves have been accumulating for ages, the leaves and branches dam the water; aquatic graſſes grow; the place becomes a moraſs; and every moraſs compoſed of ſuch ſubſtances, by acquiring ſolidity, becomes a moſs. Theſe are the outlines of the moſt probable opinion of the manner in which Moſs-Flanders was generated *. The roots of oaks are found at this day,

covering it with clay; but though peaſe and barley were forced to grow for a few years; yet the undertaking failed, ſeeing no ſward continued to cover it.—The ſea-ware in the weſtern iſles produces a ſtrong ſward, which is never loſt after; a proof that aſhes mixed with earth are not ſo effectual, though more expenſive. *Idem ignotus.*

The ſtory here alluded to is mentioned in Maxwell's Agricultural Eſſays; and Mr Graham, the undertaker, ſo far from being a man of money, ran in debt and fled the country. The critic ought to have propoſed to bring ſea-ware from Inch-keith rather than from the weſtern iſles, to improve Moſs-Flanders, which is a much ſhorter carriage. He ſhoots indeed in the dark, but it is a mercy that he does not charge with ball.

* See this opinion illuſtrated and confirmed in the ingenious account of the pariſh of Kippen. *Stat. Account of Scotland*, vol. xviii. p. 317.

day, ſitting in the very manner they grew and adhering firmly to the clay, and trunks of immenſe ſize lying near the roots, at the depth of fifteen feet below the ſurface of this moſs.

The ſame reaſoning applies to the moſs at the mouth of the Earn, where there is little doubt that the ſame phænomena lead to the ſame cauſe. But it will probably be aſked, how came ſo many feet of ſoil to be laid over the latter, while there are few places, in which any good ſoil covers the former? The Earn is a more rapid river than the Forth, has a longer current, and therefore carries down a much greater quantity of ſoil from the higher grounds. It does not begin to be ſtill water, before it arrives at the place alluded to, where it becomes regularly ſtagnant, by the oppoſition of the tide; and conſequently muſt depoſite the ſediment in that very ſpot, where it ceaſes to flow with rapidity. This ſediment being accumulated for centuries, has formed the ſoil, which covers the moſs. On the banks of the Forth, the ſame effect has taken place, as far as the influence of the cauſe could extend. At Killorn, the Eaſter and Weſter Polders, and other places, where the river becomes ſtill, the mud ſubſiding from the troubled water, has formed ſtripes of culturable ſoil. About 12 feet below the ſurface of theſe ſtripes and in the face of the bank at the river edge, the ſtratum of moſs is ſeen, with trees of different ſizes lying between the clay, on which they grew before the moſs was formed, and the ſoil which the river has now brought down to cover the moſs. This fact reſts on undoubted information, and ſeems to be concluſive as to the ſimilarity of the cauſes which formed the flats at Abernethy and Monteath, both as to moſs and clay, and the relative ſituation of theſe ſtrata.

A thin ſtratum of moſs, where the ſubſoil is gravel or ſand, is called *Moor*. The culture of this ſoil is extremely diffe-

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rent from that of moſs; and the culture of one moor from that of another, according to its depth and the nature of the ſoil below: The moor of Orchill, which may be computed to be about 10,000 acres; the Sherriff moor, which may be reckoned two thirds of that extent; the moor of Dollary, which ſtretches eaſtward very near to Perth, and has only ſome ſtraggling farms ſcattered in the moſt fertile ſpots; the moor of Methven; the moor of Thorn, ſouth from Dunkeld; the moor of Elyth, which is very extenſive; the moor around Dunſinnan, which is both broad and long, with a few farms in the moſt favoured ſpots; ſome patches of moor in the Carſe of Gowrie, which lie on a bed of till richer than the ſubſoil of the moor of Dunſinnan, although of a ſimilar colour; ſome moor alſo in the back ground of Culroſs, at Dalganroſs, at Doune, and Callander: All theſe crave the attention and induſtry of this enterpriſing age. On ſome of them, ſpirited improvements are now going on; and the means of improving the remainder will be pointed out in the ſequel.

Mr Marſhall, in his Survey of the Central Highlands, makes a compariſon between the moor lands of Yorkſhire, and the hills in the Highlands; which ſhall be given in his own words.

"The ſoil of the hills of the Highlands of Scotland, compared with that of the moor lands of Yorkſhire, has a decided preference; unleſs upon the ſummits of the higher mountains, and where the rock breaks out at the ſurface; or where this is encumbered with looſe ſtones or fragments of rock; the hills of the Highlands enjoying ſome portion of ſoil or earthy ſtratum, beneath a thin coat of moor; while on the Yorkſhire hills, the moory earth, generally of greater thickneſs, lies on a dead ſand, or an infertile rubble, without any intervening ſoil.

"From

" From the ſort of general knowledge, which I muſt neceſſarily have of both diſtricts, I am of opinion, that the Highland hills (apart from the ſummits of the higher mountains) are of three or four fold the value of the eaſtern moor lands of Yorkſhire; more eſpecially of the central and ſouthern ſwells: the narrow tract which hangs to the north between Guiſborough and Whitby, is of a better quality; very ſimilar, in ſoil, to the lower hills of the Highlands."

Sect. V. *Water.*

SO much has been ſaid in the topographical * deſcription concerning the rivers and lakes of this county, that any remarks to be made on this article will not be tedious. In all the hilly parts of Perthſhire, the water is not only plenteous, but of the fineſt quality, deſcending from ſprings in the face of the mountains or rocks, in ſtreams, pure as cryſtal; but the caſe is different in the level parts of Monteath, Carſe of Gowrie, and a few other places in ſimilar ſituations. There, as may be expected, water is more ſcarce and of an inferior quality; the flatneſs of the country prevents ſprings, and running ſtreams are rare. In dry ſeaſons, the water is frequently dried up or ceaſes to flow, and the effluvia of putrid ditches are extremely nauſeous and injurious to the health of the inhabitants. In wet ſeaſons, their ſituation is little better. The whole land is one great mire; every tread of the foot of man or beaſt forms a receptacle for holding water. Hence agues, rheumatiſms, and a train of ſimilar intermittent diſeaſes, which infeſted the people in theſe countries, before the land was drained.

Mills

* The author intended that the Topographical Deſcription of the county ſhould appear towards the beginning of the volume, but the Board of Agriculture adviſed to make it N° 1. of the Appendix.

Mills of various kinds are driven by the different ſtreams. Bleachfields and printfields are occupied on the Tay, the Almond, the water of Lawtown *, and other places, where the ſoftneſs of the water and a variety of local advantages are inviting.

Although this county, ſtrictly ſpeaking, be inland, yet it has as much of ſea coaſt, in the friths of Forth and Tay, as enables the inhabitants of Perth, Kincardine, and ſome ſmaller towns, to carry on a conſiderable trade. The principal exports and imports at the ſhore of Perth and the villages connected with that cuſtom houſe, may be ſeen in a Table, Chap. xv. Sect. 5.

Pitcaithly is famous for its antiſcorbutic waters. There are five diſtinct ſprings, uſed for drinking and bathing; all of the ſame quality, but of different degrees of ſtrength. This water has been long celebrated for its efficacy in curing or alleviating the ſcrophula, the ſcurvy, &c. is of a cooling quality, ſtrengthens the conſtitution, cleanſes the blood, and relieves the ſtomach from crudities. The time when it was firſt diſcovered, cannot be aſcertained with certainty; even tradition is ſilent on that ſubject. A chymical analyſis of this mineral may be ſeen in the Statiſtical Account of Scotland, vol. viii. p. 406.

Having taken notice of waters, which are in high eſtimation for real properties, it may not be improper to give alſo an example of waters, which have obtained fame, for qualities, that are at leaſt in a high degree, if not altogether, imaginary.

The pool of St Fillan, on the confines of this county towards

* Mr Wright the proprietor told me that this was the place, where Macbeth held his courts of juſtice, while he inhabited his ſtrong hold on Dunſinnan-hill.

wards Argyleſhire, was much reſorted to in former times, and has ſtill ſome degree of ſuperſtitious credit, as being highly ſanative, under almoſt every diſeaſe. The time of bathing is the firſt day of a quarter old ſtyle or the 12th new ſtyle, generally the beginning of ſummer or autumn, when the day is long and the weather fit for travelling. Three different times muſt this pilgrimage be performed; and crowds of the halt and maimed, of the conſumptive and inſane, and of perſons afflicted with the various diſeaſes which uſed to be aſcribed to witchcraft, reſort thither from a great diſtance in this and other counties. The chief ceremonies at the pool, are bathing thrice, going thrice round each of three cairns of ſtones, in the direction of the ſun's apparent motion *, and being left bound in St Fillan's chapel, if the patient be inſane. The credit of this ſuperſtition is daily declining: yet as a watering place, the change of air, which in this high region is extremely pure and ſalubrious, the exerciſe, the ſeaſon of the year, the bath impregnated, in a certain degree, with a mineral, and above all the powerful influence of imagination, often produce the reſtoration of health, and have a ſurprizing effect upon the credulous multitude.

Wherever St Fillan travelled, in his peregrinations through theſe countries, he conſecrated different fountains, where the water is found to be light, and poſſeſſed of a ſuperior quality, which are therefore ſtill held in high eſteem.

SECT. VI. *Minerals and Foſſils.*

IT is ſingular, that although moſt of the counties in the ſouth of Scotland abound in mines of *Pit-coal*, yet none has hitherto been diſcovered north of this county. The Ochill hills,

* *Deas-iul.* The right or lucky way.

croſſing the county; and the ſame chain under other denominations, croſſing the counties of Stirling and Dunbarton on the weſt, and theſe of Fife and Forfar on the eaſt, form a great dyke from ſea to ſea, which ſeems to be the barrier, that Nature has placed between the coal countries and theſe which have none. Every effort has been uſed to make a diſcovery beyond this dyke, and men of the firſt experience have been employed; but hitherto without any probability of ſucceſs.

From Blairingone (*the field of hounds*), which is the property of the Duke of Athol and ſituated on the ſouth ſide of the Ochills, the adjacent country, the weſt end of Strathearn, and part of Breadalbane, are ſupplied with this uſeful fuel, in addition to their peats.

An account of the ingenious experiments of the Earl of Dundonald, who built ovens of a peculiar conſtruction, for burning the pit coal of his own and other eſtates into coke, and at the ſame time preſerving the oil and tar in ſeparate receptacles, might perhaps, although within the bounds of this county, be deemed foreign to the object of this Report. Coke has been long in uſe, and found well adapted to excite a moſt intenſe heat in ſmelting ores and in other chymical operations. It is alſo calculated for drying malt, to which the acid, the oily particles and phlegm of unchared coals would be detrimental. The merit of procuring coke and at the ſame time of preſerving the other uſeful ingredients, formerly loſt in charing pit coal, is juſtly due to that nobleman.

It appears to be highly probable that coals were diſcovered by the inhabitants of this iſland, before the Roman invaſion, from circumſtances taken notice of by ſome hiſtorians; but while the foreſts were extenſive on all hands and

of

of little value, the fuel in common uſe was wood. As the latter became ſcarcer, the people had recourſe to the former. The firſt public notice taken of this matter by government was in 1272, which is the date of a charter granted by Henry III. to the town of New Caſtle.

The diſtrict of Culroſs not only claims the invention of extracting pitch from coal, but the moſt ſingular coal work ever ſeen in this part of the world was carried on near that place. In the middle of the frith and under the ſea, oppoſite to Kincardine, a round wall was built, higher than the ſea at full tide, incloſing the mouth of a coal pit, where ſhips drawing 12 feet of water received the coals from the bucket. A diſaſtrous accident, occaſioned by an uncommon ſwell of the ſea put an end to this undertaking.

In the year 1792, a ſmall ſubſcription was raiſed in Strathearn, to defray the expence of ſearching for coal in the property of Lord Perth, near Auchterarder. Favourable ſymptoms were then diſcovered by perſons, acquainted with this buſineſs, who reported, if a thorough ſearch were made by boring, that they had no doubt of coal being found in that moor.

Limeſtone has been diſcovered early, and much uſed in many parts of this county, eſpecially towards the Highland diſtricts. As a cement in building walls it has been long uſed, and came in place of ſea ſhells; its application to the ſoil as a manure does not ſeem to be prior to this century; and its general uſe in this reſpect is within the remembrance of perſons now alive.

Nature, in this inſtance, as well as others, diſtributes her gifts with a judicious hand. Where the ſoil is of an inferior ſtaple, we have abundance of lime; where the quality is ſuperior,

perior, lime is generally more remote and procured at greater expence.

Rannoch, Glenlyon, Breadalbane, Strathyre, have inexhauſtible rocks of limeſtone, which is uniformly of a grey colour. At the weſt end of Lochearn the ſame chain of rock appears alſo above ground. At Callander * and Aberfoil the ſtone has a blue ground, variegated with beautiful ſtreaks of white; but the veins are ſmaller and have dipped ſo much, that it is probable theſe quarries will ſoon be given up. In the pariſh of Port of Monteath two quarries have been diſcovered, one at Drunkie and another at Letter; a third has been tried at Glenertnay in the pariſh of Comrie; but none of theſe have been proſecuted. In Strathardle and Glenſhee the diſcovery of limeſtone has not been attended with the advantages it might produce, by reaſon of the ſcarcity of fuel; except at the mill of Fyel, on the eſtate of Sir William Ramſay of Banff, where more is burnt, than in any other part of theſe diſtricts.

The moſt conſiderable limework in the Stormont is on the ſouth ſide of the Loch of Clunie, belonging to Mr Kinloch of Gourdie. This quarry ſeems to be inexhauſtible; and it has fallen into good hands; which circumſtances united promiſe much benefit to that country. A great draw-kiln of a very proper conſtruction was building at this place in Oct. 1795, during the time of this Survey. The greateſt inconvenience attending this operation is the diſtance of coals; but when the bridge is finiſhed at the mouth of the Iſla, and the turnpike road

* Beſides the lime on the eſtate of Leney near Callander, another fine quarry is broke upon in the braes of Leney, belonging to Captain Drummond of Perth. *Idem ignotus.*—It is ſo *fine* that it was wrought only for two or three years and was given up as not worth the expence, before the Board of Agriculture was eſtabliſhed.

road completed from Perth to the Stormont, the carriage of coals will be much facilitated and this ſpirited undertaking meet its due reward.

Lime has alſo been burnt and uſed in ſmall quantities from quarries at Cargill, at Craigmakinnan, and in the pariſh of Longforgan at Lawriſton; but in theſe and ſeveral other places within the extenſive range of country mentioned above, the full benefit ariſing from the diſcovery of limeſtone is not reaped, owing to the diſtance and ſcarcity of fuel.

On the eſtate of Struan, in the diſtrict of Rannoch, a mill or machine was erected, ſome years ago, by the late commiſſioners of annexed eſtates, for the purpoſe of pounding raw limeſtone for manure.

Mr Stewart of Croſſmount, who favoured me with the account of this lime, which is taken down in the chapter on manures, adds with regret, that the water was too ſcanty, otherways the machine would have pounded a greater quantity; and that before the conſequences of this experiment were diffuſed and felt in the country, a torrent in the ſtream that drave the machinery, was allowed to ſweep the whole away; which accident put an end at once to future trials and future benefit.

This is a matter of great importance, not only to the Highland diſtricts of this county, but to every other diſtrict and county, where limeſtone is plenteous and fuel ſcarce; and it is to be hoped, that the Board of Agriculture and the proprietors of the Highlands of Perthſhire will take it under their ſerious conſideration. What might not be done to improve that country, were machines of a proper conſtruction invented, intruſted to proper perſons, and ſet upon ſome of the brooks, which run down by the ſide of every farm!

Strathearn and all its branches have no quarries of limeſtone:

ſtone: around Perth to a conſiderable diſtance in all directions there is none: yet the ſpirit of improvement is ſo general in that neighbourhood, that the farmers purchaſe lime at the ſhore of Perth, and elſewhere, at very high prices, and carry it far into the interior parts of the country. The effects of lime, when judiciouſly applied, as a manure, are ſo beneficial, that the face of this country is greatly changed, ſince it came into general uſe; which will be taken notice of, when we come to treat of the ſubject of manures.

Slates are found in many parts of the Highlands of Perthſhire, but none in the low country. Some are of a purple colour, ſome of an azure blue, and ſome of a muddy brown complexion along the cutters. It were eaſy to mention the various places, where each of theſe kinds of ſlate is quarried. The vein of ſlate-rock ſeems to run from Drumlane in the pariſh of Aberfoil, in a north eaſt direction to Dunkeld; and may be traced beyond the limits of this county both ways. The azure are the beſt metal, and riſe of a greater ſize than any of the other kinds. Many of the villages are ornamented with this beautiful covering: The brown flags, laid on ſome of the houſes in Auchterarder, Crieff and Muthil, which were at one period uſed ſo much in covering houſes in many parts of Scotland, ſcarcely make an exception. Into the lower diſtricts of the county, ſlates are imported from Iſedale and the other quarries on the weſt coaſt of Argyleſhire.

The granite rocks, which form the mountains of the north and weſt, are much akin to the nature of ſlate; and the freeſtone of the ſouthern level country, to that of coal. It is likely, both the one and the other has been formed from the contiguous maſſes of ſtone, with which they are in contact; notwithſtanding the problematical opinion adopted by

ſome writers, that coal is a vegetable ſubſtance. But conjectures muſt not be indulged, when our buſineſs is to detail matters of fact.

Great abundance of freeſtone has been wrought, time immemorial, in the low parts of the county; and quarries of a greater or ſmaller grain, appear almoſt in every place, except the Carſes. In the low land, and near the eaſtern ſea, the pores and grain of the freeſtone are greater; and as you approach the mountains, the pores are leſs and the grain finer; whereby theſe ſtones admit a ſmoother poliſh.

The quarry of Long-annat in the pariſh of Tullyallan, near Culroſs, affords ſtone of a very excellent quality. It has a white colour, admits of a ſmooth poliſh, and reſiſts the influence of the weather. Beſides the principal houſes in that country, ſome of the moſt magnificent public buildings in the capital, ſuch as the Exchange, the Infirmary, the Regiſter-office, conſiſt partly of this ſtone, in addition to thoſe found at hand: and in ſome inſtances, it has been carried to the continent of Europe.

The quarry of Kingoodie, in the Carſe of Gowrie, the property of Mr Mylne of Mylnfield, is unqueſtionably the fineſt of this kind in the county. Many aſtoniſhing blocks are raiſed at Kingoodie, 50 feet in length, 16 feet broad and 3 feet thick. It affords alſo flags, which are thin enough for pavement. The colour is gray, and the poliſh remarkably fine. Between 50 and 60 labourers are employed in the quarry, whoſe families amount to the number of 116 ſouls. Such is the demand for the Kingoodie ſtone, both at home and abroad, that four veſſels are employed in the exports from this quarry. But it is much to be regretted, that the work is on the decline, occaſioned by the late act (in 1794), impoſing a duty on ſtones. The duty is trifling; but

but the grievance ariſes from the vexatious delay and trouble in procuring coaſt diſpatches.

A copper mine has been wrought at Aithra. A lead mine was carried on many years near Tyndrum in Breadalbane; but it has been lately given up. Some lead ore was diſcovered, not many years ago, in Benledi * near Callander. Of all theſe, the mine on the Earl of Breadalbane's property was the only one, which was ever wrought upon a large ſcale or with any profit.

In an account of the uſeful foſſils of this county, mention ought to be made of a very valuable clay diſcovered on the eſtate of Blair Caſtle and other places near Culroſs, which is equal, if not ſuperior in quality, for pottery and glaſs-houſe purpoſes, to that brought from Stourbridge in Worceſterſhire. It is found in extenſive and deep beds. The public are indebted to the preſent Earl of Dundonald for the diſcovery.

A ridge of rock, three feet thick, where it is ſeen above ground, runs acroſs the ſtrath of Monteath, from the houſe of Leckie northward by Craighead, and makes its appearance again on the bank of the Teath, near to the boundary of Mr Murdoch of Gartincaber with Torry. A gentleman, who was a connoiſſeur in mineralogy, ſays that it is ſteatites, commonly called rock-ſoap.

There is plenty of iron ſtone along the coaſt below Tullyallan;

* While this Benledi belonged to government, a vigorous attempt was made to diſcover a *ſilver* mine, but the expence likely to be incurred, made the managers of the forfeited eſtates give up the project, even after meeting with many promiſing appearances of ore. *Idem ignotus.*

There were appearances of a *lead* mine, but none of a ſilver mine. The commiſſioners of annexed eſtates would have grudged no expence if the appearances had been *promiſing*.

allan; but the expence of labour and of carriage, in working theſe quarries, is ſo great, when compared to thoſe near Carron on the ſouth ſide of the frith, that the former are given up.

Shell marle abounds in the Stormont and has been long and plentifully uſed; in Strathearn it has been diſcovered more lately and more ſparingly uſed; but its uſes in agriculture will be treated of with more propriety under the article of *Manures*.

CHAP. II.

State of Property.

Sect. I. *Eſtates and their Management.*

THE proprietors of this extenſive and opulent county are of all the different ranks in ſociety, known in this iſland, which diſtinguiſh from one another perſons having a property in ſoil.

The noblemen have large eſtates; which enable them to ſupport their dignity with ſplendor and to perpetuate the hoſpitality of their anceſtors. Many of the gentlemen have independent fortunes, gratifying a taſte for elegance ſuited to their improved ideas and their rank in life. There are few or no counties in Scotland, where the commoners are more diſtinguiſhed by their education, their manners, their enlarged views, the love of their country, and the extent of their property. Theſe among them, who are not engaged in the arduous departments of government, of law or military affairs, live for the moſt part upon their eſtates, have a

pleaſure in embelliſhing their reſidence, and ornamenting the country around them. Not a few of them ſuperintend the improvements of their own tenants; and by condeſcending to reaſon with the country people, remove their prejudices againſt new modes of culture, teach them to diſcern their true intereſt, acquire their confidence and eſteem, and are regarded as the fathers and friends of every perſon within their domains. While the ſupercilious landlord, who, with an air of diſdain, keeps his tenants at a diſtance or does not know them at all, ſcarcely receives the cold ſalute and ceremonious bow, which is due to rank; he who bends a little and exchanges a few kind expreſſions, receives the reſpectful ſalutation of eſteem, accompanied with the affectionate language of gratitude. The moſt beloved and the moſt ſucceſsful generals, were thoſe, who knew their ſoldiers perſonally. No man is leſs dignified for being beloved; and it leſſens no man's conſequence in the world, to have the confidence of thoſe around him. Hence the generality of proprietors, who are reſident on their eſtates, lead their tenants by the hand, in the road of improvement and of wealth; and have found the true ſecret, of promoting their own intereſt, while they promote the intereſt of their people.

Under the feudal ſyſtem, the management of eſtates would be but little attended to: a property acquired by force of arms, muſt be kept poſſeſſion of by the ſword. It was therefore more neceſſary to train the tenantry to war, than to rural improvements.

On the large eſtates, there was an officer, next in authority to the proprietor himſelf, who under the name of chamberlain, was at once miniſter, general, and manager of the eſtate. The farms were divided and ſubdivided to make room for a greater number of ſoldiers, and were frittered down

down into theſe ſmall holdings, in which they are now found; in which circumſtances no ſolid improvement could ever be expected to take place.

The great eſtates are divided into officiaries, each conſiſting of an ancient barony, or a tract of land ſufficient to entitle the poſſeſſor to the privileges of a baron of the realm, provided he held his land of the crown. In each of theſe diſtricts reſides a ground-officer, from which circumſtance they have derived their modern appellation. This officer is generally a principal tenant, whoſe duty is ſomewhat ſimilar to that of the bailiff of an Engliſh manor, but more extenſive and more uſeful: he not only conveys orders from the lord or factor to the tenants; but ſees the ſervices performed (from which he is himſelf exempted), the roads kept in repair, the removal of tenants, the ſettling of diſputes, the forwarding of diſpatches, &c. In ſhort, the ground officer is both eyes and ears to the principal manager of an eſtate; and if he be a perſon of diſcernment and integrity, it will be more ſafe both for landlord and tenants to truſt to his information than to vague and unfounded reports.

Even where one barony is ſplit down into ſeveral properties in the poſſeſſion of different landlords, one ground-officer is generally choſen to ſerve for the whole: and in other caſes, where one proprietor has two or more baronies contiguous to each other, he employs only one officer. The diſtrict under his inſpection is merely arbitrary, depending, in all caſes, on the pleaſure of his employer.

The officers being always reſident within the bounds of their reſpective officiaries, have a more intimate knowledge of the various tranſactions of merit or demerit in their own neighbourhood, of the diſputes between tenants, of the character of parties and of all other matters, than it is poſſible

either for the proprietor or the agent upon a great eſtate to have: and if a manager diſtinguiſh properly between the uſeful information they are capable of giving him, and the partialities, which they muſt neceſſarily have among the tenantry of their reſpective diſtricts, he may, on many occaſions, render them highly uſeful in the due performance of his charge; which is a matter of no ſmall importance, where the happineſs of thouſands depends more or leſs on his conduct.

Beſides theſe officers, there are ſworn appraiſers or valuers (called Byrelawmen) in certain diſtricts, commonly in each officiary, who are called mutually by each party, to ſettle diſputes between landlord and tenants, or between one tenant and another. Theſe petty inqueſts are extremely convenient upon an extenſive eſtate, and might well be introduced in their preſent or in an improved form, upon the larger eſtates of the iſland in general. Their deciſions are of the nature of a decreet arbitral, and are for the moſt part, in caſe of an appeal, affirmed by the juſtices of the peace or by the judge ordinary of the bounds.

In the management of eſtates in this county, and in every county that I am acquainted with, recourſe is often had to the court of the baron baillie. It might therefore be deemed an omiſſion, were no notice to be taken of his powers, as exerciſed under the Juriſdiction Act.

A proprietor holding immediately of the crown, and having his lands either erected or confirmed by the king into a free barony (in liberam baroniam), is the only perſon, in ſtrict law, denominated a baron. Before the 25th of March 1748, the powers of his juriſdiction were extenſive, comprehending all the cauſes betwixt himſelf and his tenants or vaſ-

ſals,

ſals, together with queſtions of debt and other civil actions, within the barony. In criminal matters, his juriſdiction extended to all crimes, thoſe of the firſt magnitude alone being excepted.

The juriſdiction of the baron court, as limited by act of parliament paſſed in 20th Geo. II. comprehends very little; extending to the recovery of the baron's rents from his tenants and of feu duties from his vaſſals, and to performance of mill and other ſervices. In theſe and other caſes, where the baron is perſonally concerned, he muſt proceed through the medium of a baillie or deputy. He judges in diſputes betwixt tenants, about boundaries (marches) and other little matters of police, within the barony, when the baron is no party; the baron baillie court is alſo competent, in cauſes not exceeding forty ſhillings ſterling. His criminal juriſdiction ſtill extends to the ſmaller claſs of offences within the barony, puniſhable with a fine not exceeding twenty ſhillings, which may be recovered by poinding, and in default, a month's impriſonment. Yet in this laſt inſtance, his procedure is ſo clogged with ſuch ſtrict regulations, dictated by the jealouſy of the legiſlature for the liberty of the ſubject, that they are now held to amount to an abſolute prohibition.

In thoſe caſes, however, where the baron has a right of fairs and markets, he can, by himſelf or his baillie, exerciſe the ſummary juriſdiction neceſſary for repreſſing diſturbances, determining diſputes between dealers, and otherways maintaining peace and good order on theſe public occaſions.

The name of juſtice of the peace is deſcriptive of the office, with which this magiſtrate was inveſted, at the original inſtitution; and his powers were enlarged by various Scotch ſtatutes, by the articles of the union and latterly by an act in 1795, which ſhall be taken particular notice of.

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In judicial matters, juſtices of the peace are competent to take cognizance of many points of police, all breaches of the peace and offences againſt the public order of ſociety, to execute the laws with regard to the highways, and thoſe againſt vagrants and other diſorderly perſons. The game laws and thoſe enacted relative to cloſe time in the rivers are alſo under their juriſdiction. Until the year 1795, their civil powers in a ſtrict ſenſe extended only to ſervants wages; and this ſeems to have originated from the ſpirit of their office as guardians of the public peace.

By the late act formerly alluded to, entitled the ſmall debt act, juſtices are authorized to determine in a ſummary manner, with regard to actions for debts or obligations, not exceeding L.40 Scots (or L.3. 6. 8. Sterling). This ſtatute, inveſting the juſtices with enlarged civil juriſdiction, is no doubt intended to correct the bad effects, which a ſpirit of litigation before the inferior courts has produced in the country; becauſe in the moſt trifling diſputes, by the forms of theſe courts, a reaſonable diſpatch cannot be adminiſtered. When the full benefit of this inſtitution is properly underſtood, it is to be hoped that the authority of this tribunal will be extended to actions for L.5 or farther; which will ſave an immenſe ſum to the country. This law approaches in its ſummary nature to the deciſion by jury; and may be a mean of reviving in the minds of many, the wiſh that ſuch trial would in all caſes be extended to this part of the united kingdom. That this ſalutary law may be executed with every advantage and accommodation to the inhabitants, this and other counties are divided into a variety of diſtricts, at each of which, monthly courts are regularly eſtabliſhed; where two or more of the juſtices in the diſtrict ſit in judgement by rotation.

Although

Although one juſtice can order ſuſpected perſons to be ſearched, or brought before himſelf or any other, for examination, and can impriſon delinquents, in order to ſtand trial; yet in matters properly civil, two juſtices are neceſſary to give effect to a decree. This form alſo holds, with reſpect to the exciſe laws and their cognizance of offences againſt the revenue, to which, by the treaty of union and ſubſequent Britiſh ſtatutes, they are declared competent.

There are quarterly ſeſſions or meetings of the whole juſtices of the county at the head town, which have power to review by appeal, the deciſions of the ſpecial meetings occurring in the different diſtricts.

The commiſſion of juſtices flowing immediately from the ſovereign is not annexed to any particular valuation; and it is renewed, according as a decreaſe in the number requires.

The proper management of eſtates depending in a great meaſure on the regular adminiſtration of juſtice: The proprietor is, for the moſt part, a juſtice of the peace, if he be a commoner; and although his authority extends to all parts of the county for which he holds his commiſſion, his immediate attention is generally limited by the diſtrict where he reſides.

The baron baillie is annexed to the eſtate over which he is appointed, and his juriſdiction circumſcribed by its limits: But the ſheriff is a provincial judge. In every county there is one, deputed by the crown with a ſalary correſponding to the extent of the county and the multiplicity of buſineſs. Beſides the depute ſheriff, who muſt be an advocate of three years ſtanding, there are two ſubſtitutes in the county of Perth, appointed by the depute, one at the county town, another at Dunblane, each with a ſalary of L. 50 paid now by the Exchequer, but paid formerly by the depute

depute out of the ſalary allowed to him. If we conſider the education neceſſary to qualify a perſon to act as ſubſtitute, the rank he ought to hold in the county, the variety of buſineſs that comes before him and the reſpect that he ought to ſuſtain as an officer of the crown, his ſalary is by far too ſmall—ſmaller indeed than the income of the officers of his own court, of the officers of exciſe and even of meſſengers at arms.

Before the celebrated act, diſſolving the heritable juriſdictions, the office of ſheriff was veſted in the perſons of the earls or greater barons. Theſe, diſdaining every purſuit as inglorious, except the profeſſion of arms, deputed perſons of an inferior rank, to act for them in the adminiſtration of juſtice, within the diſtrict, which was heritably annexed to their families. And ſo uniform did this deputation take place, that a doubt aroſe, unjuſtly, whether theſe heritable ſheriffs or lords of regality, could hold courts in their own perſons.

By the act abovementioned, a reaſonable indemnification was granted to the heritable ſheriffs, and their power of appointing deputies was aboliſhed. The king, coming in their place, grants this deputation to a perſon regularly bred to the law, which he holds *ad vitam aut culpam*, being ordained to reſide within his peculiar county four months every year.

The powers of the ſheriff were formerly, and ſtill are, of a very complicated nature, extending to civil, criminal, and miniſterial juriſdiction.

The firſt extends to all actions for debt, to thoſe upon perſonal contract or obligation, to poindings off the ground, mails and duties, removings, ejections, ſpulzies, ſtreighting of boundaries (marches), and ſuch others; to brieves iſſuing from the chancery, for ſervice of heirs, tutory, terce, diviſion,

diviſion, &c.; as alſo to adjudications upon renunciation of the apparent heir. By a recent act he is very properly interponed as a check upon ordinary poindings for debt or otherways, no ſale thereon proceeding without his warrant; ſo that oppreſſion or irregularity comes almoſt immediately under his cognizance.

His criminal juriſdiction is underſtood to extend to all crimes, treaſon excepted; even to the four pleas of the crown, murder, rape, robbery, wilful fire-raiſing; but as to theſe, his juriſdiction has fallen into diſuetude, it being more common and a more ſolemn procedure, ſince the regular eſtabliſhment of circuits, that the ſheriff return crimes of the firſt magnitude to the juſticiary court, for trial, at the ſame time communicating to the crown officers the precognition or evidence taken by him in the firſt inſtance. In offences againſt the police of the county or breaches of the peace, the ſheriff likeways interpoſes; and in theſe caſes his juriſdiction is cumulative with the juſtices. He is the moſt oſtenſible alſo for apprehending fugitives, rebels, and other notorious criminals, and has the power to call, if neceſſary, the *poſſe comitatus* to his aſſiſtance.

In his miniſterial capacity, the ſheriff did formerly, when printing was unknown, publiſh the laws or acts of parliament for the general information of the lieges. Sheriffs return juries to the courts of juſticiary and exchequer, execute exchequer writs, levy the eſcheats of rebels, the blanch, feu, and other caſualties of ſuperiority payable to the crown. They ſtrike the fiars for the county, which aſcertain the price of the preceeding crop for a rule to ſettle the value of the different kinds of grain in doubtful caſes. They execute the laws which regulate exportation and importation; and ſince the union, the writs for electing members of parliament are

directed to and executed by them, whoſe duty alſo it is to return to the crown office the names of thoſe elected.

While the powers of the heritable ſheriffs remained, the meetings and terms of theſe courts were arbitrary; at preſent the ſheriff courts are regulated as to their ſeſſion-time, by the practice of the ſupreme civil court; although the ſheriff ſtill may hold courts at any period of the year, as he finds it expedient, and generally ſits once or twice a week, as the preſſure of buſineſs renders it neceſſary, during the vacations of the court of ſeſſion.

The court of the ſtewart or ſteward referred chiefly to the territorial revenues of the crown; and my only reaſon for taking any notice of it here, is on account of the ſtewartries of Monteath and Strathearn, two large diſtricts of this county. The two great ſtewartries of Kirckudbright, of Orkney and Zetland, each of which ſends a member to the Britiſh parliament, ſtill retain their ancient deſignation, and are in every reſpect the ſame as a ſhire. The leſs extenſive ſtewartries, ſuch as theſe within this county, were lands belonging in property to the king, whether by forfeiture or otherways, over which he appointed a magiſtrate, called a ſteward, who was inveſted with juriſdiction ſimilar to a lord of regality. It is probable that the name given to this magiſtrate aroſe from the reſemblance of his office to that of the great ſteward of Scotland, who had not only the adminiſtration of the crown revenues and the ſuperintendence of the houſehold, but according to ſome hiſtorians, the guardianſhip of the kingdom, in the abſence of the ſovereign. From this circumſtance the royal houſe of Stewart were ſurnamed, before they came to the throne; and the office has never been revived ſince they were advanced to the ſovereignty.—Lands devolving to the crown were not always erected into ſtewartries.

ries. Unleſs they had regality powers formerly, the ſovereign made them bailliaries, with a civil and criminal juriſdiction, equal to that of the ſheriff.

Lords of regality had a power of appointing bailiies or deputies, whoſe civil juriſdiction was in all reſpects equal to the ſheriffs, and their criminal ſuperior, extending to all pleas, treaſon excepted. Regalities were ſtrictly territorial, being a juriſdiction annexed to lands held immediately of the crown; and the proprietors, although not ennobled, were dignified with the title of Lords of regality, to denote the high or regal juriſdiction with which they were inveſted.

In the county of Perth there are two commiſſary courts, for the reſpective dioceſes of Dunblane and Dunkeld. This court originated in the early ages of Chriſtianity, from the confidence repoſed in the integrity and abilities of the clergy. After the converſion of the Roman emperors, this voluntary juriſdiction, eſpecially in religious matters, obtained at length the imperial ſanction; and the biſhops were accordingly entruſted with the adminiſtration of legacies for pious uſes, with the privilege of proving and confirming teſtaments, and appointing adminiſtrators for the moveable eſtates of thoſe who died inteſtate. They aſſumed the ſole juriſdiction in queſtions of divorce, adultery and baſtardy, the reſtitution of tochers, and ſome others. This extenſive juriſdiction diverted their attention ſo much from the exerciſe of their clerical function, that the biſhops appointed vicars or commiſſaries with a delegated authority. From hence aroſe the biſhop's or commiſſary courts. Beſides the dioceſan commiſſaries, a few others were eſtabliſhed by ſtatute in places diſtant from the court of the dioceſe; and a new ſupreme commiſſary court, on the decline of epiſcopacy in Scotland, was eſtabliſhed by Queen Mary at Edinburgh, which conſiſted of

four advocates. Their decrees in confiſtorial matters are ſubject to the review of the court of ſeſſion.

The powers of the commiſſary courts, whether ſupreme or ſubordinate, in civil matters do not exceed forty pounds Scots, (or L. 3. 6. 8. Sterling,) unleſs parties conſent to their juriſdiction. Any deeds bearing a clauſe of regiſtration, and proteſts upon bills may be regiſtered in their books; and they are competent to authenticate tutorial and curatorial inventories.

The management of eſtates, eſpecially of the great ones, was uniformly committed in former times to the factor or chamberlain; but agriculture has become ſo much the amuſement of the country gentlemen, ſince the middle of this century, that many of the proprietors, beſides the general ſuperintendence of their eſtates, have a farm in their own poſſeſſion, which they manage by an overſeer and ſervants on livery meal. Since this happy iſle became completely civilized and all diſputes are determined by courts of juſtice, the profeſſion of predatory war and an idle roving life, has given place to reading, to obſervation, to the improvement of the mind, and the embelliſhment of the country. The military art is choſen as a diſtinct profeſſion and is much honoured, as it ought to be. Many of our improvements in agriculture are ſuggeſted by the gentlemen of the army, in conſequence of their remarks on the practice of other countries. The gentlemen of the law, during the receſs of their courts of judicature, turn much of their attention to the cultivation of their eſtates; and their habits of application to the former ſtudy quicken their ardour in purſuit of the latter.

If the property be extenſive, beſides an overſeer on the landlord's farm, there is generally a factor or ſtewart, and ſometimes two, appointed to manage the more diſtant parts of

of the eſtate. In theſe caſes, unleſs the landlord have a turn for buſineſs, he is apt to loſe ſight of the detail of his own affairs; and if he be indolent, he has a good apology for neglecting his intereſt, becauſe he pays another perſon for taking that charge off his hand. The proſperity of the eſtate and the comfort of the tenants, depend very much on the diſpoſition of the factor, whoſe buſineſs it is to collect the rents, to pay public burdens, to redreſs grievances and ſettle diſputes between neighbouring farmers, to aſcertain the rent of new leaſes, to exact the various ſtipulations binding on the tenants, to ſuperintend the improvements which are going on, and to ſee that the contracts between landlord and tenant are properly fulfilled. The baron baillie attends the factor once a year to take cognizance of the matters which are amenable to his juriſdiction.

The boundaries of eſtates are marked according to the nature of the country. In the vallies of the Highlands, different properties are ſeparated either by ſubſtantial ſtone-walls without mortar (provincially *dry ſtone dykes*), or by a river, or a brook, or a range of rocks, or ſome other natural limit. The lower hills too are ſometimes diſſected by theſe walls; but more generally by bounding ſtones, fixed in the ground and ſet up ſingly; in other inſtances, if the ſtones be ſmall, they are piled in heaps. The higher mountains are frequently divided in a ſimilar manner, eſpecially when different proprietors occupy the ſame ſide; but when they occupy different ſides of the ſame ridge or general line of mountain, as commonly happens between parallel glens, their properties are determined as *wind and water divides*, which means the line of partition on the top of the mountain between the windward and lee-ſide, or as it is ſtill more nicely marked by the tendency of rain-water, after it falls upon the ground.

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In the ſouthern diſtricts of the county, the bounds are fixed in the ſame judicious manner, where hills or other barren ground intervenes; but where the land is arable on the boundaries of different eſtates, if quarries are contiguous, proprietors for the moſt part build a good ſtone-wall; if no quarry be near, they make a fence of hedge and ditch, with a belt of planting, generally on both ſides; and if the ground be wet, the bounding fence is an open ditch, of a proper width to prevent the depredations of cattle. All theſe artificial fences are conſtructed and maintained at the mutual expence of coterminous heritors; and the law is ſo favourable to the improvement of the country, that any proprietor can compel his neighbour, not being a life-renter, to join in making a ſufficient fence on the boundary which divides their property.

Sect. II. *Tenures.*

MODERN eſtates, in this country, and indeed in the moſt of Scotland, conſiſt of ſuperiorities or baronial rights, reſerved under the name of feu duties; or of the groſs poſſeſſion of landed property, which is either held in fee ſimple, called a freehold, or in feu from a ſuperior.

A great proportion of this county is freehold. Many of the ſmall proprietors hold of a ſubject ſuperior. When a great baron in the feudal times had occaſion to borrow money, he had recourſe to wadſetts, or feued off a part of his property at a quit-rent, which was greater or leſs, according to the amount of the premium that was paid in hand. The wadſetts are paid up; but the feus, being irredeemable, remain.

CHAP.

CHAP. III.

BUILDINGS.

SECT. I. *Houſes of Proprietors.*

AS a topographical deſcription of the county will be given at ſome length in the Appendix, in which mention will be made of the principal houſes belonging to the proprietors in this ſhire, the reader is referred to that part of the work for information upon this branch of enquiry. And although the plan laid down for conducting theſe Reports, has directed that the geographical deſcription of the county, and the houſes of the proprietors, ſhould be inſerted in different chapters, yet as they conſpire to produce the ſame pleaſing ſenſations in a traveller, are under his review at the ſame time, and are mutually ornamental to each other, I have treated of them under the ſame article.

SECT. II. *Farm Houſes and Offices; and Repairs.*

THE ſtyle of the farm houſes and offices is greatly improved within theſe few years; and it is daily improving. In place of the mean hovels, in which their fathers lived, without light and without air, in the midſt of foot and ſmoke, many of the farmers now live in houſes, ſubſtantially built with ſtone and lime, having two floors and a covering of blue ſlate. Such of the houſes as are at a diſtance from ſlate are covered with tiles or ſtraw, and very few want glaſs windows. The houſes for the moſt part correſpond to the taſte and wealth of the landlord and tenant. Where the country

country is rich, the houſes indicate the growing wealth of the people. Where the country is poor, the houſes are ill conſtructed and inconvenient. Some extenſive grazings may however be an exception, which have good ſteadings in wild and bleak ſituations.

In every part almoſt of this county, new ſteadings on an improved plan are built when the leaſes are renewed, which in a few years will render the whole tenantry more comfortable, and be very ornamental to the face of the country. The moſt induſtrious of the farmers have their ſtacks built upon ſtathels laid on pillars of ſtone or wood, to keep the under-ſheaves dry, and ſave them from vermin. The offices are alſo improved, both in reſpect of execution and ſituation, forming generally a ſquare behind the dwelling-houſe, with the dunghill or ſtraw-yard in the center, and a foot-path around it. Yet I muſt add, with regret, that in ſeveral places, the houſes of the ordinary tenantry are ſtill mean; the farmer and his cattle lodge under the ſame roof, with ſeparate entries and only a partition between them. The dung is laid before the door. If the ſtraw be ſcarce, all his houſes are thatched with fern or broom, which increaſes the meanneſs of their appearance. In ſome places, eſpecially towards the Highlands, heath is uſed for thatch, which, however gloomy its aſpect, is a far more durable covering than broom or fern, and in this reſpect not inferior to any ſtraw.

A gentleman farmer in the Carſe of Gowrie remarked, that where the ſituation of the ground would admit, it would be a great improvement in the conſtruction of byres (cow-houſes) and ſtables, to have them built upon arched floors; with holes in convenient places to put down the dung, and let the urine drop through the arch. This houſe muſt conſiſt

ſiſt of two floors, that above the arch, for the cattle, and that below it, for the dunghill. It ought alſo to be built upon a declivity, that the cattle may enter conveniently on the ſide oppoſite to that by which the dung will be carried away: and for this purpoſe, one ſide of the building muſt be ſupported on pillars, placed at ſuch a diſtance from each other and of ſuch a height, as to allow carts to come in below the cow-houſe to carry away the dung.

By theſe means there is no waſte of dung with waſhing rains and bleaching winds. All its natural virtues are preſerved entire. Being kept ſnug and warm, under cover, it ferments powerfully, which conſtitutes a great part of its excellence; is thereby ſuppoſed to be at leaſt one third more valuable, than when expoſed to all the injuries of the weather; and is laid on the land in that very ſtate, which an intelligent farmer could wiſh: ſo that the original expence of making an arched floor is ſaved in a few years by the ſuperior quality of the manure.

When a farmer enters to a new leaſe, the whole houſes are in ſome caſes valued by tradeſmen, and the poſſeſſor is bound to leave them of equal value at the expiration of his contract, or to pay the balance in money. In other caſes, the poſſeſſor receives them in a habitable condition from the landlord, and is ſimply bound to leave them habitable at his removal. With regard to caſual repairs, or additional buildings, it is often ſtipulated, that the proprietor ſhall furniſh the timber, and that the farmer ſhall be obliged, with this aid, to keep them in repair, and deliver them in proper condition at his removal.

Sect. III. *Villages, Cottages.*

BESIDES Perth the county-town and public works, there are in this ſhire upwards of ſeventy towns and villages, of which many have lately increaſed to an amazing degree, not only in the number of inhabitants, but in the neatneſs and taſte of the buildings. Some are almoſt entirely new, particularly Callander, Comrie, Crieff, Muthil, Methven, Longforgan, and others.

After the peace in 1763, five villages were built at one time in this county by the truſtees appointed under government for managing the eſtates forfeited in 1745, which had been annexed to the crown. In theſe villages they planted ſuch ſoldiers as belonged to the country and had merited attention by their ſervices in the war. Fourteen families were ſet down near Callander, each poſſeſſing a houſe, barn and cow-houſe, covered with blue ſlate, and three acres of ground at a price no higher than a quit-rent.

New villages are building, where there never were any before. Allowing therefore that there is a decreaſe of population on the farms, the increaſed population of the towns by far overbalances that decreaſe. The produce of the ſoil is more abundant, and land is improved which yielded little or nothing before: and wherever you produce more food, you will find more people. No man will venture to aſſert, that a farm of fifty acres, in the poſſeſſion of four tenants, who have each a horſe in the plough, and their ground mixed in alternate ridges, provincially *run-rig*, will produce the quantity of ſubſiſtence, which the ſame farm can do in the hand of one man, who has both money and induſtry to cultivate the ground. With reſpect to population, where is the difference, whether the other three farmers live on the farm,

farm, or in an adjoining village? But with reſpect to induſtry, the difference is great; on the farm they were three fourths of the year idle; in the village, they are ſkilful artiſts or uſeful labourers, and able to rear their families without begging their bread.

The population is not only increaſed, and the land rendered more productive, by the eſtabliſhment of well regulated and induſtrious villages; but labourers are at hand, in time of need, and artificers of various denominations, all ready to be employed in miniſtering to the different wants as well as the improvement of the neighbourhood. Villages afford alſo a ready market for whatever a farmer has to ſell, and ſupply him with manure to improve his poſſeſſion.

At the firſt eſtabliſhment of a village, it is impoſſible even for the moſt diſcerning to foreſee what magnitude it may arrive at, in proceſs of time. From this want of foreſight ariſe many of the deformities and inconveniencies of ſome of our greater as well as ſmaller towns; even the capital of Scotland not excepted: narrow or crooked ſtreets, crowded houſes, ſteep pulls, marſhy foundations, buildings placed where there ought to be none, the want of common ſewers or of a convenient place to receive the filth of the town. To avoid theſe deformities and inconveniences, they ought to be provided againſt by the original plan. A ſquare ſhould be ſet off in the middle of the village for markets: A retired place, and alſo not very diſtant, allotted for holding dunghils or peat ſtacks; a proper foot-path left along the front of the houſes, ſo that the ſtreet be not incumbered with any trumpery at the doors, nor children annoyed with carts paſſing through the ſtreets; an open paſſage or lane leading to the gardens, between every two or three houſes, which will prevent carrying dung through back-doors,

and contribute to the cleanlineſs of the houſes and the ſafety of the adjacent buildings, in caſe of accidents by fire.

If any thing like neatneſs or elegance is ſtudied, no barn or cowhouſe or ſtable ought to front the ſtreet; and all the front-houſes ought to be as uniform as poſſible with reſpect to ſize and covering.

When the proprietor underſtands his own intereſt and that of his people, he introduces manufactures ſuited to the place, begins on a ſmall ſcale, encourages ſome of the moſt enterprizing tradeſmen, and directs them, not to ſpeculate in airy projects or to indulge their taſte and humour, but to avail themſelves of their local advantages, and to turn their attention to what it is moſt their intereſt to purſue. Man is ſo ductile, and has ſuch a verſatility of genius, that he is enabled thereby to ſuit himſelf to his ſituation, to apply the force of his mind to whatever object he has in view, and bend himſelf into any form he inclines. By a ſucceſsful example or two, the Genius of manufacture ſmiles on the place, and a ſpirit of induſtrious emulation pervades the whole people; the village is extended as far, and the manufacture carried that length, which the produce of the place can afford and prudence dictate: But the moment it is extended farther, if their commodities are bulky, other places can underſell them in the market, unleſs they have water-carriage.

In eſtabliſhing a village, every proprietor of penetration will ſtudy the convenience of fuel and water; ground for gardens to raiſe pot-herbs, graſs for cows in ſummer and a proviſion for winter-food. If ſtone, lime, and timber be convenient and cheap, ſo much the better; and above all, the food of man ought to be plentiful and near at hand. A few of the lots of rented land ought to be larger than the reſt,

to

to enable the poſſeſſors to keep a horſe to plough their own and their neighbours' acres, and to perform occaſional carriages.

The landlord will find it neceſſary to be careful in diſcerning the characters of the ſettlers; and his premiums ought to be moderate, that the feu-duty may be higher; otherways the people will not only have no ſtock to enable them to begin buſineſs, but they run the riſk of getting into debt and of ruining their circumſtances, even before their houſes are finiſhed.

The increaſe of villages, in modern times, is owing to different cauſes; but chiefly to theſe two—the deſire, which every man has, of being *independent*, or at leaſt of having a property he can call his own; and to the *preſent* ſtate of ſociety in this country. This increaſe is, therefore, the complexion of the times; not the effect of any premeditated plan, unleſs it be the plan of providence.

In rude and tumultuous ages, mankind aſſembled in villages for mutual protection. They commonly crept for ſafety under the walls of a fortification, near the caſtle of a baron, or cloſe by a religious eſtabliſhment. This is the origin of almoſt all our ancient towns, great and ſmall; which accounts for the awkwardneſs in many caſes, of their ſituation. In the agricultural ſtate, and when the law is effective, they ſpread themſelves through the country on their different farms: and whenever the ſociety is advanced to that ſtage, in which the commercial and manufacturing ſyſtems begin to be united to that of agriculture, the diviſion of labour takes place; every man follows a diſtinct profeſſion; his profeſſion is uſeful to others, and theirs are uſeful to him; men aſſemble more than at any former period; and towns and villages neceſſarily increaſe in number and in ſize.

The

The towns take the lead in whatever branch is the greateſt object of the times, owing to the largeneſs of their capital, to their eſtabliſhment into corporations, to privileges granted by the favour of the ſovereign, and to their being frequently ſituated near water-carriage. The villages in their vicinity follow their example, and become towns. The ſpirit of induſtry and of enterprize diffuſeth itſelf. Remoter villages begin to be rouſed, begin to be induſtrious, and to encreaſe in like manner. All is in motion. No man is willing to be behind his neighbour in the deſire of comfort, in the road of induſtry, or in the enjoyment of wealth and independence: like an apiary, the buſtle of buſineſs engages the whole community, the buzz of induſtry is heard on every hand, where every bee is employed in collecting his ſhare of honey to enrich the hive; and the laborious huſbandman rears the plants from which they derive their food.

It is acknowledged, that a watchful eye ought to be kept over villages, no leſs than over other collections of men; and that the reins of government ought to be held by a ſteady hand. Vice is the child of example, no leſs than induſtry. The ſuperior, who deſires to promote the proſperity of his village and of the country around it, ought therefore to reſerve ſome checks to himſelf, until at leaſt the community arrive at that degree of intelligence, of integrity and power, which may enable it to ſecure its own proſperity and regulate its own internal police. Weeds will neceſſarily ariſe in a neglected field to injure and annoy the valuable part of the crop. But if the good of the whole be ſtudied, merit only rewarded, and impartiality pervade the ſyſtem of government, then mutual confidence betwixt the landlord and the villagers will take deep root; and induſtry, cheriſhed by benevolence,

nevolence, will produce the happy fruits of proſperity, affluence and contentment.

Well regulated and thriving villages are become, to this nation, nurſeries for ſeamen and ſoldiers. Theſe may be leſs robuſt than the peaſantry; but they are certainly more *hardy* than the deformed ſpawn and jail ſweepings of great towns. It muſt be evident that from the inſalubrity of crowded cities and the unhealthy habitations which fall to the lot of the lower claſſes, they never did, nor never can ſupport even their own population, without freſh recruits from the country: whereas villages of moderate extent, have as good air and as good lodging, as the country around them.

The cottages of the poor are very mean in all places: but in this county the dwellings of the labourers and married ſervants are keeping pace with the houſes of the farmers, being in a progreſſive ſtate of improvement. When the farmer obtains a houſe of two floors for the accommodation of his own family, he commonly reſerves the low houſe, in which he formerly lived, for his ſervants. When any of the ſervants happens to be married, they have not only a houſe, but generally a cow's graſs to afford milk to their families, a patch of land for potatoes and a ſmall garden for pot-herbs.

CHAP. IV.

MODE OF OCCUPATION.

WITHOUT taking a retroſpective view of the ancient ſtate of farming in this part of the united kingdom, a ſtranger

ger to the hiſtorical ſituation of the country will ſcarcely give the credit that is due to the preſent race of proprietors and farmers, for the inviting appearance which many parts of it at this day exhibit. Yet while we are prone to cenſure ruder ages, for the groteſque figure of their dreſs, the licentiouſneſs of their manners, their roving lives, their homely habitations and the wild uncultivated ſtate of their lands, we ought to reflect, that according to their ſituation in life, they acted with ſagacity equal to ourſelves. No axiom is more clear, than that mankind are in all ages equally ſagacious to diſcern and equally ardent to purſue their own intereſt; and that men placed in the ſame circumſtances will act uniformly in the ſame manner.

With all our boaſted improvements, if we were under the neceſſity of ploughing our land and of reaping our harveſts, with our ſword buckled on our thigh; if we had never ſeen clover or turnip cultivated; if the ſtate were ſo unſettled and the government ſo feeble, that the law could not protect our cattle from depredation, our houſes from plunder, our families from inſult, or our perſons from bloodſhed, dire neceſſity would have compelled us to act juſt as our fathers did, and to be exactly ſuch farmers as they were.

The parent of induſtry is indeed the deſire of comfort; yet induſtry can never flouriſh, nor bear fruit, unleſs the hedge of the law be planted around it. Before man can bring this delicate plant to maturity, he muſt ſit under his own fig-tree, with none to make him afraid. Without induſtry there can be no cultivation; but without protection there can be no induſtry.

The late Dr Robertſon, who has thrown light on every ſubject, of which he treated, ſays, in his hiſtory of America, "that hardly any region of the earth furniſhes man ſpontaneouſly

neouſly with what his wants require; in the mildeſt climates and moſt fertile ſoils, his own induſtry and foreſight muſt be exerted in ſome degree to ſecure a regular ſupply of food." If labour and care be neceſſary in thoſe fertile regions, to which he refers, how indiſpenſible muſt they be in the ſterile ſoil and inhoſpitable climate of North Britain!

In northern latitudes, population has been always ſo rapid and the bounty of nature ſo ſcanty, that the cultivation of the ground muſt have been very early attended to. We have no records of any era in which tillage was not requiſite in this country; and the preſumption is, that more land was under the plough in remote ages, than in the preſent times. One thing at leaſt, on this point, is certain, that ground has been formerly cultivated, which is ſo high, the climate in that latitude now ſo forbidding and the region of the air ſo piercingly cold, that no grain we have, could at this day, arrive at any degree of maturity. It is indeed probable that the hills were more eaſily cleared of wood than the vallies, that they afforded leſs cover to wild beaſts, and that the whole face of the ground, except the ſummits of the higheſt mountains, being one continued foreſt, the climate was more mild and the country warmer, than it ſhall ever be again, becauſe it cannot be ſo much wooded.

The huſbandry of the particular ſhire under review was in a moſt wretched condition, even ſo late as fifty years ago. The whole land was occupied by run-rig*, not only in the farms, but frequently in the eſtates.

* Not like the common fields in England or Scotland, (as ſome ſuppoſe) where no boundaries are marked between the different poſſeſſors but in alternate ridges, having a bank of waſte land for the boundary between every two ridges; and to add to the evil, one farmer poſſeſſed this year, what his neighbour did poſſeſs the former. Not only farms, but

The firſt deviation from run-rig was by dividing the farms into kavels* or kenches, by which every field of the ſame quality was ſplit down into as many lots, as there were tenants in the farm. This was a real improvement, ſo far as it went; every farmer had his own lot in each field, to be managed according to the beſt of his judgment, during the continuance of his leaſe, reaping the full benefit of his induſtry, which by the run-rig-huſbandry he could not enjoy, owing to the exchange of ridges every year. Kavels ſtill exiſt in the Stormont, and in ſome other parts of the county, in a certain degree, and almoſt univerſally in village-lands. In the latter they are unavoidable; in the former they are regularly exploded, as the old leaſes fall.

The houſes were formerly in cluſters for the mutual protection of the inhabitants, even to the number in ſome caſes of ſix or eight ploughs of land in one hamlet. The farms were all divided into outfield and infield, except in the neighbourhood of the larger towns, where the farmer found dung to purchaſe, which could foil all his land. I have ſeen outfield carſe, within theſe twenty years in ſome of the beſt parts of Monteath; and I ſee by my notes, that the ſame practice was followed in the other diſtricts of the county. Under this management, the land near the farm houſes was cropped alternately with oats and barley: and ſometimes two crops of oats or more, were taken ſucceſſively from the ſame field. The whole dung was laid

but in ſome inſtances, eſtates were divided in this manner, eſpecially when a property fell into the hands of co-heirs.

* This name is ſignificant of the manner in which theſe diviſions were made. Either the tenants of the farm or a neutral perſon, marked off the ſeveral portions of land; and the poſſeſſors caſt lots (or kavels in the Scotiſh dialect) for their particular ſhare. Kench ſignifies a larger portion of land than a ridge.

laid on with the barley crop; and in ſome caſes the farmers unroofed their houſes and dug ſoil or turf from the beſt ſpots of their graſs fields, to increaſe the quantity of their manure. The infield being dunged every ſecond year, and in conſtant tillage, became exceedingly foul. In ſome places a crop of peaſe was introduced betwixt the oats and barley; and in the beſt ſoils, eſpecially in the clay land, a crop of beans with ſome peaſe intermixed; which was deemed an improved rotation in the old ſchool.

Previous to the year 1735, even the fertile ſoil in the Carſe of Gowrie was aſtoniſhingly unproductive, in compariſon of its preſent ſtate The land was overrun in many places with ruſhes or disfigured with pools of water, at that time the uſual haunt of lapwings; and the whole people ſubject to the ague. The outfield was cultivated as long as it produced three or four bolls from the acre. The infield was generally cropt in four diviſions, wheat, barley, oats, peaſe and beans. About this period ſome gentlemen and farmers in that diſtrict diffuſed a ſpirit of improvement among all ranks in their neighbourhood; and the ruſhes, the lapwings and ague have now totally diſappeared.

Towards the moorland parts of the county and in many places of the Lowlands, the outfields lying fartheſt from the townſhips, were taithed or dunged by confining the cattle in folds, over night, during ſummer and autumn, upon that particular portion of the farm, generally a ninth part of the whole, which was to be ploughed next ſpring. In ſome parts of Strathearn, Strathallan, and other places, the outfields were watered. Three crops of oats, and ſometimes more were taken from theſe outfields ſucceſſively, in the ſame manner as from the infields, until the land was exhauſted to ſuch a degree, that during the two firſt years of

its being in paſture, it carried very ſcanty crops of graſs: and if the field had any declination, the fineſt particles of the ſoil were waſhed away in the rainy ſeaſon, for want of a ſward. Lint was generally ſown in the beſt part of the outfields, eſpecially after water.

By the regulations of old leaſes, the tenants were reſtricted not to *eff-crop* the infield (i. e. not to take two ſucceſſive crops of oats), nor to fourth crop the outfield till *baugh-ley* (i. e. ley taithed or watered at ſix years old). And in very old leaſes or contracts, the tenants were ſimply bound to *tirds* and *twirds*, which implies the regulation abovementioned. A deviation from this mode of croping uniformly ſubjected the out-going tenant to damages, at the inſtance of the incoming-one, before the ſheriff-court.

The old ſyſtem of outfield and infield ſtill prevails in many parts of the county, eſpecially towards the north and weſt which are adjacent to the Grampians, and along the Ochill and Seedlaw hills. Although moſt proprietors may have within theſe 20 years, and ſome even before that period, inſerted in their leaſes better regulations of huſbandry; yet, owing to various cauſes, theſe have been very little enforced. In many caſes, the leaſes have been written by perſons better acquainted with law and accounts than with rural economy; by which means blunders are often inſerted, and articles of importance are inaccurately expreſſed; ſo that in moſt actions betwixt proprietor and tenant relative to deviations from the articles of a leaſe, either the latter is found to be bound by no regulations, or the damages awarded to the former are very inadequate to the loſs ſuſtained. A remedy for this grievance ſhall be pointed out, when the means of improving the country are taken notice of; at preſent I muſt aſſert, that no axiom in mathematics ſeems to be

more

more evident, than, That no eſtate can poſſibly be improved, let the regulations in leaſes be ever ſo good and the reſtrictions ever ſo well detailed, unleſs the landlord ſhall either ſuperintend his own property, or his factor be acquainted with huſbandry and ſubmit to the arduous taſk of directing agricultural improvements.

SECT. I. *Size of Farms. Character of Farmers.*

WITHOUT taking notice of diminutive poſſeſſions, which are called *Pendicles*, becauſe they are ſmall portions of the land alloted by a farmer to cottagers, labourers and ſervants, and therefore appendages of the farm, the extent of what may be properly called farms, is from 30 to 500 acres*.

Theſe

* That the land ſhould be better cultivated in large than in ſmall farms can only ariſe from the oppreſſing of the latter claſs of citizens and placing them in a dependent ſituation on the former; but I will riſk the aſſertion in ſaying, that if the landlords in every part of the kingdom, where ſmall farms exiſted half a century ago, had ſtill continued them in the ſame ſtate or at moſt confined them to fifty acres of land, the increaſe of his wealth would have been much greater than it now is. *Samuel Fieldhouſe, Old Cavendiſh Street.*

If a farm is enlarged, it ſhould be as well or better managed than when in ſmall farms, or the end is not anſwered. In all the enlarged farms I know, there are more people employed than when they were ſmaller, and more produce raiſed, except when turned to grazing, which is no loſs to the public, becauſe fat meat is to be had, and if too much, ſome of the grazing farms will be turned to cultivation. Things will always find their own level. *Mr Bailey of Chillingham.*

Many arguments may be uſed on both ſides of this queſtion; and when men of underſtanding and experience, who were known by the Board of Agriculture to have ſuch profeſſional knowledge, as to be ſolicited to reviſe the firſt copy of this Report, have taken oppoſite ſides, it is vain to expect a determination of the queſtion in diſpute, by reaſoning alone. Nothing will ſettle the matter but experience. No arguments

Theſe may be conſidered as the extremes, where the land is arable. The general average of farms under a regular ſyſtem of huſbandry is from 100 to 300 acres.

In the Highlands and ſome parts of the low country, the farms were in former times ſo crowded with inhabitants, that the holdings were extremely ſmall. It was very common to ſee four farmers, ſuch as they were, with their four families and ſome cottagers, occupying one plough-gate of land. Half a plough was conſidered as a diſtinguiſhed holding, and a whole plough as a very rare thing. The country was thus crowded with inhabitants; which ſtate of population ſtill remains unchanged in ſome diſtricts. This to a ſtranger, who conſiders not the cauſe, may appear to have been both abſurd in itſelf, and to derogate from the good ſenſe of the proprietors: but under the feudal ſyſtem, every baron valued himſelf, and was valued by the ſtate, not ſo much by the largeneſs of his rental, as by the number of followers he could bring into the field. The farms were divided and ſubdivided to make room for a greater number of ſoldiers, and the whole country frittered down to the atoms, in which the farms in many places ſtill appear at this day. A *horſe's-foot* (i. e.

guments will bring men to one mind, except matter of fact. The effect of ſmall farms, (I mean horſe-gangs of land, or the fourth of a plough) have been long ſeen in this county and much reprobated by every man, who wiſhed his country to proſper. The effects of farms of 400 or 500 acres have not become ſo viſible, becauſe they have been adopted only of late, and ſtill are rare. Theſe are the extremes, and perhaps both are injurious to the general proſperity of the country. Without being dogmatical or pretending to be wiſer than either of theſe gentlemen, my own opinion is, that farms of a middle ſize, neither very large nor very ſmall, are moſt beneficial to the public good: and I have many reaſons to ſupport that opinion. But this queſtion can only be determined with certainty, by conſequences. *The Author.*

(i. e. the ſixteenth part of a plough) is the deſignation of a ſpecies of holding known in remote parts of the country. Upon the decline of that ſyſtem, the wealthier or more induſtrious tenant in many caſes got the whole farm, with the burden of ſome ſmall portions of arable land and graſs, deducted under the name of pendicles, to which the poorer tenants were obliged to reſort. And ſuch in many inſtances was their attachment to the place of their nativity or to their chief, that thoſe among them, who had not ſtock ſufficient even for a croft, rather than emigrate, choſe to become cottagers with only a houſe and garden; and thus became the ſervants and labourers upon the farm. This attachment is wearing off; and the people are pouring down in numbers every ſeaſon to the adjacent villages and towns in queſt of labour and of bread. Several proprietors of humanity wiſh them to remain and allow them conveniencies in their own country. But why do they not ſet off villages in proper ſituations, ſettle them in theſe, and ſhow them the road to induſtry, by eſtabliſhing among them the woolen or other manufactories?

Where the country is beſt improved, every veſtige of the feudal holdings is there aboliſhed; and the tenants are wealthy and intelligent. In the Carſe of Gowrie, in the lower parts of Strathearn, along the Tay from Perth to Dunkeld, and on the banks of the Iſla, eſpecially about Meigle, ſome of the farms contain more than 400 acres of Scotch meaſure *, and a few amount to 500 all arable land.

On the ſkirts of moors and hills, it is not uncommon to have

* In every part of this Report Scotch meaſure is meant, when applied to land; which is about one fifth more than the Engliſh acre; or more accurately, a Scotch acre is 6084·44 ſquare yards, and an Engliſh acre is 4840 ſquare yards. See Preface.

have a large tract of graſs or paſture ground annexed to an arable farm. Poſſeſſions of this deſcription are very frequent on the confines of the Ochills and Seedlaws, and in all the vallies of the Highlands which interſect the Grampians. The proportion of paſture and arable land varies always according to local circumſtances: but in the moſt forbidding ſituations, at the very head of the glens, there is ſome arable ground, where the poſſeſſor has his houſe and garden and a little grain. The farms however, in theſe mountainous parts of the country, are more frequently reckoned by miles than by acres; and the ſtocks are in proportion to their extent. Formerly they were depaſtured by mixed ſtocks, partly black cattle, partly a ſmall breed of hill-horſes and partly ſheep. At preſent the ſheep ſtock prevails. From Dalnacardoch, the moſt northerly farm in the braes of Athol to Dalwhinnie, the neareſt to it in Inverneſs ſhire, the diſtance is 13 ſtatute miles. Of late a habitation has reared its head half way. At the head of Strathardle, Glenſhee, Rannoch, Glenlyon and other places, the diſtances from the neareſt farms or grazings of the adjacent countries are much the ſame, and in ſome inſtances ſtill greater. Theſe remote grazings uſed to be occupied in different lots during the ſummer-months, by the tenants of the particular eſtates to which they belonged. In which caſe they removed all their cattle to the ſeveral lots that fell to their ſhare, where they lived in temporary huts with their whole families, until the graſs was eaten up, which was the practice of the Scythians and of other ancient nations in the paſtoral ſtate. When the hills were extenſive, ſome farms had two or more lots in different places, to which the poſſeſſors moved in ſucceſſion before their return to the homeſtead or winter-town. But by the preſent ſheep ſyſtem, the more diſtant grazings are disjoined

disjoined from the farms, to which they formerly belonged, and are let as diſtinct poſſeſſions.

It muſt occur to every perſon, who is at pains to make obſervations on the country, as he paſſes through it, that where the farms are large, the tenantry live better, clothe better and are more comfortable, in every reſpect, than where they are ſmall. While at the ſame time even the ſmall farmers themſelves have greater abundance of the comforts of life, than they had ſome years ago. Yet it muſt be confeſſed, that there are inſtances, where they are crowded together in hamlets, their land in run-rig, no leaſes granted by the proprietor, or where the rents are augmented without increaſing the means of paying an increaſe of rent, by improving and incloſing the land. It might be thought indelicate to mention the eſtates, where this wretchedneſs exiſts, and to hold them up as ſpectacles to the public view; yet ſurely it appears leſs cruel to have done ſo, than to be the cauſe of miſery, at the very thought of which humanity recoils and ſympathy doth ſhudder. It is not on thrones alone that tyrants are to be found. A benevolent man appears in his own likeneſs, in any ſphere of life; and a hard unfeeling heart, whether found in the higher, middling, or lower ranks of ſociety, is the curſe of thoſe within the reach of its baneful influence.

In a county ſo extenſive as this, where there is a great diverſity of ſoil and even of climate; where there is a difference in the manners, in the wealth, and even in the language of the people, in different diſtricts; where the turn of thinking both of proprietors and poſſeſſors of land are almoſt oppoſite, it is by no means ſurpriſing that the farmers ſhould be in very different circumſtances and have very different habits of life. While ſome are in the deplorable ſituation

lately alluded to, other farmers in many parts of the county, have great merit and are entitled to great reſpect. They are diſtinguiſhed for their ſpirit, their induſtry, their enterprize, the liberality of their ſentiments, the enlargement of their views and their genius for improvement. To ſay that they are well educated and know what is paſſing in the world, is ſaying leſs than the truth. They have got looſe from the trammels of prejudice, and boldly launch forth into the field of experiment in the line of their profeſſion.

Many favourable circumſtances however muſt conſpire to enſure the improvement of a country. The ardour and intelligence of the farmers alone will not accompliſh that end. Proprietors of the ſoil muſt lend their aid. The ideas of both muſt be enlarged; they muſt go on hand in hand, before their country can be enriched or beautified. The ardour of a tenant is deadened by the ignorance or oppreſſion of a landlord; and all the patriotiſm and intelligence of a landlord are rendered uſeleſs by the ſtupidity and obſtinacy of a tenant. They muſt unite their efforts; they muſt have an ambition—a pride to diſtinguiſh themſelves in their different ſpheres; to follow and if poſſible to ſhow examples. The proprietor ought to grant a leaſe, deſcriptive of the liberality of his ſentiments; the execution of the plan depends on the farmer's activity. The farmer ought alſo to have funds ſuitable to the extent of his farm: His induſtry muſt be unremitting and his attention equal to the various operations he ſuperintends. The genius of the government muſt be mild; the ſpirit of the laws favourable; and the interpretation of theſe laws muſt be a ſhield to his perſon, to his property, and to every thing he holds dear. Such, and many more are the advantages, which the farmers of this country enjoy. Of theſe advantages many of the farmers in the

the ſhire of Perth avail themſelves: and whatever their fathers were, they are worthy of all the favourable circumſtances they poſſeſs. What an aſtoniſhing change has taken place even in the memory of man! About half a century ago, the country was uninclofed, the fields uncultivated and the farmers ſpiritleſs and poor. The want of induſtry produced a want of convenience. Then the farmer went on foot to market; now he rides well dreſſed and mounted: formerly he ate his food off his knee, and it conſiſted of meal, vegetables and milk; now his table is covered, his knife and fork are laid down before him to dine on meat: his father lay on a ſtraw or chaff-bed, without curtains; he ſleeps comfortably on feathers with his curtains drawn ſnugly around him. Servants and labourers have advanced in the ſame proportion, in their deſire and enjoyment of the comforts of life. Since they are more induſtrious than their fathers, why ſhould they not be more comfortable? And while they are inferior to no other claſs of men in their regard for things ſacred, in the decency of their deportment, in their practice of the ſocial virtues, in loyalty to their ſovereign, ſubmiſſion to the laws and their love of order, long may they enjoy the well earned fruits of their induſtry! Long may they be the pride of their country and the terror of its foes! * †

SECT. II. *Rent.*

THE rent of all kinds of ſoil has increaſed, and is for the moſt part doubled, within theſe thirty years. This increaſe is occaſioned in the grain countries by the improved ſyſtem

* The pure pleaſure that theſe noble ſentiments give to the reader is the moſt acceptable tribute, that can be offered to the author of them. *William Fox.*

† To this I beg leave to ſay Amen. *William Dunn of Gillingham*

of huſbandry, and by the uſe of lime and marle judiciouſly applied, together with the increaſed extent of the farms, the riſe of markets and the additional population of the towns. In the graſs countries, the rents have riſen by the introduction of ſheep and ſuperior knowledge in the management of ſtock. In all places, where the land has been incloſed, the riſe of rent has been owing, in a great meaſure, to the progreſſive benefit of that ſpecies of improvement and the increaſing wealth of the country.

I met only with one inſtance (in Strathearn during my Survey in 1793), where land would let no higher incloſed than open. In ſome caſes, where the rotation is cloſe * and the land rich, where the bottom is wet and herding † unneceſſary, all that the farmer deſires is an open drain to carry off the water and aſcertain his boundary. Hedges and hedge-rows would prevent the free circulation of air in harveſt and gather vermin at all ſeaſons: even ſtone-walls would occupy part of the ground, without carrying away the water ‡.

The average of rent, on the beſt ſoils, is from twenty to thirty ſhillings an acre; and on ſome land, in high cultivation and near the market, forty ſhillings. The average of light land is from ten to twenty ſhillings, according to its local advantages; and ſome is even ſo low as five ſhillings, eſpecially on old leaſes, when a proper allowance is made for the paſture annexed to the farm. Moors and ſheep-walks are more frequently rented by the *ſoum* ‖, than by the acre.

A horſe

* Admitting few changes. † Tending cattle.

‡ Unleſs when ſtones are procured in clearing the land, the expence of incloſing will not be repaid but where one third of the farm is paſtured in rotation; the expence of rearing hedges by protecting with palings is ſo great. *Sir William Murray.*

‖ A term denoting the paſture of a full grown cow.

A horſe is accounted two ſoums; in ſome places four ſheep, and in other places, five are eſtimated at one ſoum; and young cattle according to their age. The graſs of a ſoum, in hilly ground, is valued at an average from 5s. to 7s. according to its quality. Much cenſure hath been beſtowed on this mode * of aſcertaining the value of paſture or graſs-land in the Highlands: but in mountainous diſtricts, where the ground has never been meaſured, and probably never ſhall, where one mountain is extremely different from another in the quality and quantity of its paſture, and even great diverſity, in different regions of the ſame mountain, it is not eaſy to conceive a better method of aſcertaining the value of paſture than by the number of cattle it could maintain. Whoever propoſes to explode any old cuſtom, ought to ſubſtitute a better in its place.

All rents have been augmented; but where the land is not incloſed and improvement has made little progreſs, the rents have been fluctuating, except on ſheep-walks. They have been more ſteady, where theſe cauſes do not affect them; and the probability is, that the rents will continue to riſe, in proportion as the proprietors go on to incloſe, the tenants to improve, and the prices of grain and of meat to increaſe, which at preſent (1797) are beyond any thing ever known in this part of the world. If, however, manufactures do not continue to flouriſh, the price of meat and other neceſſaries of life muſt fall; in which caſe both graſs-lands and others will become leſs valuable.

Mr Marſhall, in his report of the Highland diſtricts of this county, p. 26, ſays, "That the rate of rent varies much on different eſtates. The ſmaller eſtates may have been raiſed to ſomething near their rental value: but the larger, I believe,

* In ſome Surveys of Highland diſtricts made by ſtrangers.

lieve, remain at rents much below the value of their reſpective foils; even when the diſadvantages of ſituation and climature are taken into the eſtimate. Nevertheleſs it appears equally evident, that while the preſent ſtate of things remains; while the holdings remain ſo ſmall, ſo inconvenient, ſo expoſed and ſo uncertain as to poſſeſſion, as they are at preſent, eſtates in general may be ſaid to be at rack rent. No man could wiſh to ſee the occupiers of lands in a lower ſtate than are at preſent the ſmaller tenants of the Highlands: indeed, were their holdings free, they could not, through their means, enjoy the common comforts of life equally with the labourers of other diſtricts *.

" Formerly the rents of lands were paid in kind; as grain, poultry, &c.; and ſtill what are called victual or rents in grain are paid; but money rents are becoming yearly more prevalent."

Mr Donaldſon, in his report of the Carſe of Gowrie, p. 9, 10, ſays on this ſubject, " That a conſiderable proportion of the lands there, having been let previous to the year 1776, before the ideas of improvement roſe ſo high, are yet rented only at from twenty to thirty ſhillings the Scotch acre, and generally on leaſes of nineteen years, and the lifetime of the tenant after the expiry of that period.

" The leaſes now commonly granted are of endurance nineteen years. The commencement takes place in ſome caſes at the term of Whitſunday as to the houſes and garden, and to the arable land after ingathering the crop; and in others, at the term of Martinmas to the whole premiſſes.

" The

* It appears that Mr Marſhall is of Mr Baily's opinion, in oppoſition to that of Mr Fieldhouſe. See p. 65 of this Report with reſpect to the enlargement of farms affecting the proſperity of the tenantry and the increaſe of rent. Non noſtrum inter vos tantas componere lites. *Virg.*

"The rent ſtipulated is one half boll of wheat, one half boll of barley, and about twenty five ſhillings of money, for each acre. The grain is paid about the beginning of February, and the money rent at Whitſunday thereafter. When the whole rent is paid in money, the one half is paid at Whitſunday after reaping the crop, and the other half at Martinmas thereafter.

"In the higher parts of the country the rent is generally paid in money, and runs from fourteen to fifteen ſhillings the acre for unincloſed land. When the lands are incloſed and ſubdivided with ſtone-fences, the rent may be about twenty five ſhillings the acre.

"The average rent of the arable land, over the whole diſtrict, which has been let within theſe ten years, may be about thirty ſhillings the acre, including the lands adjoining to the villages. The only ſervice performed by the tenant is the carriage of a certain quantity of coals to the landlord's houſe yearly *."

On moſt of the grain farms over all the county the rents uſed to be paid partly in money and partly in grain; but rents payable wholly in money are becoming more general.

In

* I find by the notes taken on the ſpot in Oct. 1795, that one of the moſt intelligent farming gentlemen in all the Carſe of Gowrie gave the following account of the ſtate of rents. "That an eſtate was letting at that very time, for which thirty one ſhillings in money and three furlots of wheat and three furlots of barley were offered, by the acre; the rent of ſmall farms is all in money and runs between forty and fifty ſhillings, where the land is good; but in the higher parts of the diſtrict, where the ground is of leſs value, the rent by the acre is from twenty five to thirty five ſhillings."

The rapid riſe of rents, owing to the exorbitant price of grain, is the only reaſon that can be aſſigned for the difference in theſe ſtatements. The difference is indeed conſiderable between 1793, when Mr Donaldſon wrote, and 1795, when this Survey was taken.

In the Highlands, where the rents were moſtly made by the ſale of cattle and the produce of the dairy, they were payable for the moſt part in money.

There is no doubt that money rents are more eaſily conveyed and more expeditiouſly told over to the proprietor, and that he is thereby compleatly relieved from the drudgery of being a broker or dealer in grain; yet I have a reluctance in agreeing to the unqualified eulogiums which have been beſtowed upon rents in money, or in pronouncing that, in grain countries, they are moſt proper. The value of money is ſo fluctuating, that what was a good rent at the commencement of a leaſe, may be a very inadequate rent before its expiration; eſpecially if the leaſe be long. But the greateſt public evil, which may eventually attend rents payable wholly in money, is, that this puts it out of the power of the landholders to prevent a monopoly of all the grain, and raiſing the prices to any pitch that the avarice of foreſtallers may incline; whereas, were proprietors of arable eſtates to have granaries of their own, they could in a great meaſure, regulate the pulſe of the market and be a check upon monopoly.

In moſt contracts between landlord and tenant, the latter is bound to pay public burdens; by which is underſtood ſtatute labour or a compoſition in money, carriages neceſſary at the repairs or building of churches and manſes, the land-tax, miniſter's and ſchoolmaſter's ſtipend, grinding the victual at a certain mill and the payment of a certain multure. Some of theſe ſervices are accounted by the tenants to be grievous burdens: and the injury which they do to the cultivation of the country ſhall be pointed out under *Obſtacles to improvement.*

The method of augmenting rents, with leaſt inconvenience

ence to the tenant, and with equal advantage to the landlord, is by making the riſe *progreſſive*. If the rotation be in *ſixes*, the tenant may be ordained to pay a certain increaſe of rent on the ſeventh crop; after he has gone over all his ground, and has had time to dreſs it to his own mind; ſome more on the thirteenth crop, and ſo on progreſſively, at the cloſe of every rotation, to the end of the leaſe. If the rotation be in *ſevens* or *eights*, the ſame rule may be adopted, correſponding to every ſeventh or eighth year of the leaſe.

There is not only a want of judgment, but a degree of cruelty diſcovered in laying on a heavy rent at the very commencement of a leaſe, unleſs the farm be in high cultivation. This conduct defeats its own end, by depriving the tenant at once of the only means of either improving his farm or of paying his rent, without diſtreſs.

The yearly rent of the whole county, it is impoſſible to aſcertain with any degree of accuracy, without having had acceſs to the rental of every proprietor, which was not to be expected; and to have gueſſed at the amount, by random, would only have a tendency to miſlead. The valued rent of the county is L. 332,412 : 3 : 4 Scots.

Sect. III. *Tithes.*

THERE have been no tithes in kind collected in Scotland ſince the reformation; except in ſome trifling inſtances, ſuch as fiſh in a few towns upon the coaſt, or near rivers, and other things of the ſame nature; which may be conſidered as gratuities, ſanctioned by long uſage, rather than tithes *.

* In this Report, the payment of tithes is not noticed as an obſtacle to improvement. *Quere.* Is the county of Perth tithe-free, or does the author

Many of the miniſters of the church of Scotland have a certain proportion of their ſtipend paid in grain, from the produce of their reſpective pariſhes, and the remainder in money. The ſtipend of ſome pariſhes in the corn-countries is all paid in grain; in the graſs-countries, it is generally money.

Every Scotchman knows that the livings of the miniſters in North Britain are fixed by the ſupreme court of this country, acting as a court of teinds or tithes; and that their livings are augmented from time to time, according to the circumſtances of the country and the diminiſhed value of money.

The inconveniencies attending this mode of providing for the miniſters of religion are chiefly two, one affecting the landed intereſt and another affecting the miniſters themſelves.

1. Some of the proprietors had aſcertained the teinds payable out of certain eſtates, at a very early period, by a valuation of the rents, when very low; beyond which valuation theſe teinds cannot riſe, according to the preſent rule of procedure. Other proprietors having neglected to fix or value their teinds, muſt pay ſtipend according to the preſent rent: whereby it frequently happens, that the latter pay triple and perhaps thrice triple the ſtipend that the former pay, in proportion to their preſent rent. In many caſes, ſtipends do thus affect the lands of different proprietors in the ſame pariſh very unequally and capriciouſly.

2. If all the teinds in a pariſh happen to have been valued at a very early period, when the rents, eſpecially of graſs lands were very low; the teinds as fixed by that valuation,

author think tithes no impediment to the improvement of poor waſte lands. *Name unknown.—Anſ.* Payment of tithe *in kind* is certainly an obſtacle to improvement; but this county, and all Scotland beſides, is tithe-free.

on, are in ſome caſes, now, entirely exhauſted; and notwithſtanding, that the rents of ſuch pariſhes may riſe in the ſame proportion with other lands in the ſame country, no addition can be made to the living, becauſe there are no vacant teinds. The miniſter perhaps of the next pariſh may obtain an augmentation, although the real rent of his pariſh be no better than that of the neighbouring one, becauſe his teinds have not been valued at all, or even valued at a later period. Inſtances of this are frequent in Scotland; and many more will occur in a few years. Sometime hence many of the livings will be ſtationary.

In a variety of caſes it is a loſs either to the heritors or miniſter of a pariſh, that the court of tiends have no ſpecific rules to regulate their procedure in determining the amount of ſtipends. They act merely as a court of diſcretion in this reſpect: and that diſcretion may happen to be different at different times.

The vexatious method of collecting tithes in South Britain is unknown in this country*, and theſe unſeemly diſputes never felt, betwixt a miniſter and his pariſhioners, which are ſo injurious in ſome inſtances to the intereſt of religion, ſo great a bar to the operations of harveſt and the general improvement of the country.

It is not my intention to enter largely upon this ſubject: Tithes however do not ſeem to deſerve the reproach caſt upon

* Although the miniſters of the eſtabliſhed church of Scotland never drew any tithes in kind, as expreſſed in the text; yet ſome of the great proprietors, who had moſt intereſt at court, got grants of the tithes in certain diſtricts, which they collected with all the unfeeling rigour, formerly practiſed by the Popiſh clergy. In the tumultuous reign of Charles I. diſputes ran ſo high in this reſpect, between theſe titulars of the teinds and the country, that they were finally commuted at that period.

pon them in ſome of the reports, which have come to my hands. They may require to be put under ſuch regulations as are ſuited to the preſent ſtate of the country, where they exiſt, and thereby ceaſe to obſtruct its improvement in any ſenſible degree. Yet they certainly exiſted before any government now known in the world, and before any local property in ſoil was eſtabliſhed under the ſanction of laws. They are as old as the days of Abraham, and ſeem at that time to be perfectly underſtood, as founded on the law of nature and of gratitude: but the moſt ancient and the moſt ſacred rights are liable to abuſe. The inconvenience attending the collection of tithes in kind might be removed, or at leaſt alleviated, if they were converted; and this converſion fixed at certain periods, perhaps every fiftieth year. By ſome regulation of this nature, the tenantry would feel an eaſe, and the church would partake, at proper intervals, of the progreſſive proſperity of the country*.

SECT IV. *Poor-rates.*

THERE is no ſuch thing as poor-rates in this country, in the ſame ſenſe, in which it is underſtood on the ſouth ſide of the Tweed. The poor are generally ſupported by a voluntary charity collected from the pariſhioners every ſabbath, together with the intereſt of ſums bequeathed by pious perſons for their uſe, ſome petty fines for breaches of decorum, certain dues for the proclamation of banns, the uſe of the mort-cloth (the pall) and other caſualties. This fund is managed by the miniſter and elders, under the controul of the heritors of each pariſh†.

When

* In a commercial country like Britain 25 years are enough. *Sir William Murray.*

† Wherever poor's rates have been introduced, the amount of them has rapidly increaſed and debauchery flouriſhed. *Idem.*

When the provision arising from these articles is inadequate to the support of the poor, the heritors are convened by the minister. The number of poor is laid before them, together with the amount of the funds applicable to their maintenance. The heritors ordain an assessment on the parish, in aid of the ordinary fund, equal to what is necessary, one half to be paid by themselves, and the other by the tenants, in terms of law. This assessment is apportioned, on the different estates within the parish, according to their respective valuations. If the heritors refuse or neglect to meet for this purpose, it is competent for the minister and elders to obtain a sentence before the judge ordinary of the bounds against heritors and tenants, for a sum adequate to the maintenance of the poor, including the aid that may arise from the ordinary funds. But in justice to the heritors in this part of the kingdom, I never heard of one instance, in which it was necessary for the guardians of the poor to sue them before the sheriff in an action of this nature. So much to the contrary, that the heritors of most parishes in this neighbourhood, and I believe in many other parts of the county and of the kingdom in general, gave an unlimited commission in summer and autumn (1796) to their respective ministers to purchase meal for the poor and sell it out at a reduced price, until the produce of the next crop should come into the market; engaging to refund the balance, which in some cases must have been a considerable sum: Such is the confidence that subsists betwixt the parties; and such is the humanity of the affluent towards the poor. It is well known what a sacrifice of revenue in the article of Excise was made by the government on that occasion, in order to prevent the distillation of barley and to increase the quantity of meal.

SECT.

Sect. V. *Leaſes.*

NOTHING can contribute more to the exertions of induſtry than a certainty of enjoying all its fruits, under the protection of law: and therefore it is vain to expect that a country can be improved and the value of property intrinſically meliorated, unleſs the proprietors of ſoil give leaſes, which are reaſonably long and ſufficiently binding, to their tenants. It is a ſource of reproach to thoſe who are the cauſe of it, and of regret to every beholder who wiſhes well to his country, that in many places, eſpecially towards the Highlands, the farmers either have no leaſes at all, holding their land only from year to year, or the leaſes they have are clogged with ſo many arbitrary covenants, capricious articles and irritant clauſes, that they may be broke, whenever the landlord pleaſes. A gentleman of diſcernment and compaſſion ſaid once on this ſubject, that theſe leaſes were like the ten commandments, which no mere man could keep unbroken. Before the country was civilized, it was perhaps requiſite, in order to prevent illegal practices, to hold the people in that dependent ſtate, which a precarious poſſeſſion of their farm implies: but in the preſent ſituation of affairs, this practice is highly detrimental to the proprietors of land, to the farmers, and to the public: to the proprietors, becauſe their eſtates can never ariſe to their true value, unleſs they are improved, and farmers will not improve them without leaſes; to the farmers, becauſe it enervates their exertions, and ſinks their ſpirits, by withholding the true ſtimulus of induſtry, a certainty of enjoying the fruit of their labour: and to the public, becauſe the general produce is leſs than it might be, and thereby an injury is done to the commonwealth.

Where

Where leaſes have been granted in the Highlands of Perthſhire, their duration is for the moſt part either nine, nineteen or twenty one years. There are inſtances in the Highlands of leaſes granted for one life and nineteen years thereafter. In the Carſe of Gowrie, it appears from the paſſage already quoted from Mr Donaldſon's Report in the year 1793, that almoſt all the leaſes granted before 1776 are of this tenor. On the eſtates of the Right Hon. Lord Perth, of Colonel Robertſon of Struan and a few more, there are leaſes of forty one years endurance; ſome of twenty one. In the neighbourhood of Tullyallan a few are 36 years: but nineteen years are the moſt frequent in all this county.

On all arable farms, where a conſiderable outlay muſt be made, 19 years is requiſite, becauſe even on the beſt lands there is only one year beyond three rotations. Where there is nothing to do but plough and ſow, the farm being already in full cultivation, the ſpace of two rotations is ſufficient, eſpecially if a third or half of the rent be paid in grain.

When the farm is to be turned to account by ſheep or cattle-ſtock and no outlays on the land to take place on the part of the tenant, eight or nine years is a fair leaſe, the proprietor or in-coming tenant being particularly bound to take the ſheep-ſtock off the outgoing tenant's hands by appreciation of arbiters.

In granting leaſes to tenants, proprietors generally bind them to a particular method of croping the land, ſpecifying a rotation, ſuited to the nature of the ſoil. A few of them reſtrict ſimply to have one third of the arable land in graſs, during the three laſt years of the leaſe: others allow only one third in tillage during the whole continuance of the leaſe; which, in light land and in a bad climate, is a ſenſible rule, eaſy to be obſerved and conducive both to the

the intereſt of the landlord and tenant; becauſe in this caſe it is impoſſible to exhauſt the land.

All fences given ſufficient at the farmer's entry, muſt be left, at his removal, in a fencible condition, and the buildings in a habitable condition; otherways the removing tenant pays damages to the incoming one, according to the amount adjudged by the (bye-law or) byre-lawmen of the barony, who are ſworn valuators already deſcribed and to be met with in moſt of the eſtates of this county. The ſervices ſtipulated in leaſes have been mentioned under a former article.

Leave is reſerved to the proprietor for working quarries, mines and minerals, and all foſſils of that kind under the ground, the tenant being allowed a compenſation for the ſurface-damage he ſuſtains. Sometimes liberty is reſerved for planting trees, on the ſame condition; and the tenant is bound not to cut trees, or injure woods with his cattle.

When the land is to be incloſed during the currency of a leaſe, the ſtipulation of a certain intereſt on the money to be laid out by the proprietor in incloſing and ſubdividing the farm, makes an article of the leaſe: the tenant is accordingly charged with $7\frac{1}{2}$ or 6 or 5 per cent. on the ſum expended, in terms of the contract. In ſome caſes, each of the coterminous farmers pays 5 per cent. for the bounding fence. In a few leaſes the tenant incloſes the farm, in the manner to be directed by the proprietor, and is paid for his fences, according to their value, at his removal.

In the low country, where drains or ditches are the proper fences, the farmers are farther bound to have all their open drains cleaned out, once every year, before the end of Auguſt; or in default of doing ſo, the landlords reſerve a right of having it done, at the tenant's expence. This is a regulation

regulation in the Carſe of Gowrie; and it ought to be univerſal in ſimilar circumſtances. Where the fences are made of ſtone, along the face of the Seedlaws and other high ground in the county, the proprietor becomes bound in the leaſe to lay out one half of the expence of repairing the fences; and at the ſame time reſerves a power to himſelf to order theſe repairs as often as he judges neceſſary The ſame regulation takes place in Sir William Murray's property with reſpect to houſes and fences.

Whatever be the nature of the fences on a farm, no other method of keeping them in repair ſeems to be ſo effectual as that of having the expence laid equally on the landlord and tenant. If the landlord is bound to keep the fences in repair wholly at his own expence, they may, in ſome caſes, be wantonly deſtroyed; and if the tenant is to execute the whole repairs at his expence, it is highly probable, that inſtances will occur of their being performed in a ſlovenly and inſufficient manner. To remedy theſe evils, the expence ought to be mutual; but the work ſhould be performed by the proprietor, who has a permanent intereſt in the ſoil.

In the Carſe of Gowrie and other diſtricts, the farmers are generally debarred from ſelling any fodder off the farm, hay and wheat-ſtraw excepted; and are bound to reſide on the farm. In ſome leaſes proviſion is made, that, in the event of the tenant becoming bankrupt, the poſſeſſion ſhall not fall to the creditors; the leaſe is forfeited and reverts to the natural poſſeſſion of the landlord. This clauſe, though reaſonable, cannot but rarely be ſupported in law.

The entrance to farms in the Highlands is univerſally at the term of Whitſunday with reſpect to every thing, except the land under crop; and to that land, when the grain is reaped. The rent is payable per advance at the enſuing

Martinmas, which is rather too ſpeedy a payment for the incoming tenant, were it not that he is expected to make his rent moſtly by the graſs. Although the term of payment ſtipulated in their agreement be Martinmas, yet landlords of diſcretion, and indeed almoſt all landlords, indulge their tenants with a delay until the beginning of February, in order to give them the benefit of ſome aid from the women's ſpinning of flax during the winter months, and of any barley they may have annually to diſpoſe of. Payment in this manner is called *fore-hand rent*, becauſe it is made before the crop is either reaped or ſown, to which it refers; and their receipts being conceived in theſe words ſecure to tenants a crop of the arable ground as uſual, in ſimilar circumſtances, after the payment of the laſt rent and after their removal from the farm. In ſome caſes, the ſame regulations take place in the low country; but upon arable farms, a different procedure is coming into uſe, and will ſoon be univerſal. The term of Martinmas is the entry to the whole premiſes; and the rent is due againſt the time the tenant has poſſeſſed the farm twelve months, and payable by equal halves at the Whitſunday and Martinmas thereafter.

SECT. VI. *Expence and Profit.*

THERE is ſuch contrariety in ſtating the expence and profit of different farms, that one, who has no check, is at a loſs which to chooſe as a model, and even heſitates in reſolving to communicate them to the public. This heſitation doth not ariſe from any ſuſpicion of an intention to deceive; but there is ſuch a difference of detail given by different farmers both on the Debtor and Creditor's ſide; there is ſuch a difference between the cultivation they give their land, between their management in bringing it to produce its high-

eſt

eſt profit, and even in the ſale of that produce, that ſcarcely any two farmers, upon ſoils every way ſimilar and on farms of the very ſame extent, would return a ſtatement of expence and profit, which correſponded. Actual farmers have great advantages over ſurveyors of another profeſſion, not only in their account of this, but of many other articles in theſe reports, becauſe they can, with more certainty, have recourſe to the detail of their own farms, whereas we muſt have recourſe to the information of others: and yet even their own precedure does not imply abſolute certainty, becauſe another may improve better or worſe, may manage better or worſe, and may make more or leſs profit, in circumſtances perfectly ſimilar.

There is before me a minute account, for a year, of one farm of 330 acres, of another of 169¼ acres, and of a third of 74¼ acres. Some articles are omitted in the firſt and others ſeem to be ſtrained; in the ſecond the ſoil is not uniform; the third ſeems to be liable to none of theſe objections.

One farmer ſtates the accumulated expence of labouring every acre at L. 2 : 7. Sterling; another ſtates that expence at L. 2 : 4. Sterling; a third ſtates it at forty ſhillings per acre. I have copied the latter in the following detail, which he gives of his farm for the year 1794.

The profeſſional abilities and ſucceſs of the man, who drew up this ſtatement, give me confidence in recommending it as a model to all farmers, who wiſh to keep their accounts with accuracy.

EXPENCE and PROFIT of a FARM of 74 Acres and a half in Carfe of Gowrie*.

FARM Dr.

A.	R.	F.		£.	s.	d.
16	3	27	Wheat feed, 12 bolls at 22s. -	13	4	0
13	0	12	Barley feed, 8½ bolls at 17s. -	7	4	6
15	3	27	Oats do. 15½ bolls at 16s. -	12	8	0
14	2	16	Hay feeds - - - -	11	7	0
11	0	0	Turnips }			
3	0	0	Yams } - - - -	4	2	0
			Expence of labouring 74½ acres at 40s. per acre - -	149	0	0
			Rent of do. at L. 3 per acre -	223	10	0
74	2	2	Total expence,	420	15	6
			Amount of profit, after comparing outlays and returns -	310	6	2
				£ 731	1	8

FARM Cr.

16	3	27	Wheat, produce and fales			
			152¼ bolls fold to M'Kenzie and Co. at 27s 6d - - -	210	0	6
			3 do. fown at 24s. - -	3	12	0
			2 do. fold to W Drummond at do.	2	8	0
			1¼ fold to A. Chalmers at do.	1	10	0
13	0	12	Barley, produce and fales			
			116½ bolls to M'Kenzie & Co. at 21s.	122	6	6
			8 do. to A. Soutar at 25s.	10	0	0
			10 do. fown, for which offered 25s.	12	10	0
15	3	27	Oats, produce 248 bolls, milled, fown and on hand, at 16s. per boll	198	8	0
14	2	6	Hay eſtimated at 200 ſtone per acre, fay 2800 ſtones at 5d. -	58	6	8
11	0	0	Turnips }			
3	0	0	Yams } at L. 8 per acre -	112	0	0
74	2	2	Total produce,	£ 731	1	8

In

* Few farmers are ſo candid as to ſtate their account of ſales, without which it is impoſſible to underſtand the profit or loſs, or on what ſide the balance lies. I have therefore confined myſelf to that given above, which originally was not intended for being publiſhed.

In order to give a connected view of this ſubject, the ſtatement of various ſheep farms, which in my former Report was included under the article of ſheep, is now introduced under this head. It ought to be carefully remarked that there is a riſe of about 50 per cent. on mutton and wool, ſince the year 1793, when the following prices were taken. How long they may remain at their preſent value is uncertain.

BREEDING STOCK.

FARM Dr.

			£.	s.	d.
To rent			140	0	0
Intereſt of the following ſtock			46	3	4¼
1,280 Milch ewes, at 12s.	£ 768				
120 Dry ewes at 8s.	48				
200 Year-olds at 7s. 6d.	75				
54 Rams, at 12s.	32	8s.			
Smearing { 252 Ewe lambs, 40 Lamb tups, 54 Rams } at 4d. each			5	15	4
A ſhepherd, his aſſiſtant, and ſheep-ſhearing			22	8	0
Fox hunter			0	12	0
Expence			214	18	8¾
Profit			68	0	3¼
		£	282	19	0

FARM Cr.

By 128 ſhots of lambs at 2s. each (21 to the ſcore)	12	3	9½	
800 tops of ditto at 4s. (21 to ditto)	163	16	2¼	
40 dry ewes at 8s. each	16	0	0	
18 rams at 10s. each	9	0	0	
100 ſlack ewes at 5s. 6d. (21 to the ſcore)	26	3	9½	
156 ſtone of white wool at 5s. per ſtone (21 ſtone to the ſcore)	37	2	10¼	
40 ſtone of ſmeared ditto at 4s.	7	12	4½	
50 ſound of 64 lambs which died in winter	5	0	0	
48 ditto of 60 gimmers ditto	6	0	0	
Produce	£	282	19	0

WEDDER

WEDDER STOCK.

FARM Dr.

	£	s.	d.
To rent	140	0	0
Intereſt upon the following ſtock	42	3	10¾
550 one year old at 7s. £ 192 10s.			
530 two years ditto 9s. 238 10			
518 three years ditto 11s. 284 18			
672 lambs, bought in at Lammas, to keep up the ſtock, at 4s. (21 to the ſcore) 128 0			
Smearing 672 one year old at 4d.	11	4	0
A ſhepherd, his aſſiſtant, and ſheep-ſhearing	22	8	0
Fox hunter	0	12	0
Expence	216	7	10¼
Profit	158	13	0¾
£	375	0	11¼

FARM Cr.

	£	s.	d.
By 510 three years old at 12s. (21 to the ſcore)	291	8	6¾
82 ſtone ſmeared wool at 4s. (21 ſtone to ditto)	15	12	4¼
156 ſtone white ditto at 7s.	52	0	0
100 found of 122 lambs which died in winter	10	0	0
39 found of 40 one year old, two year old, and three year old, ditto	6	0	0
Produce £	375	0	11¼

This being the hardieſt of all ſheep-ſtocks, and the next the moſt delicate; the one is calculated for ſtormy ſituations, the other for ground which is low and warm.

FLYING

FLYING STOCK, SOLD OFF ANNUALLY.

FARM Dr.

	£.	s.	d.
To rent	200	0	0
Intereſt of the following ſtock for 9 months	7	17	6
600 ewes at 7s.	210	0	0
A ſhepherd	11	4	0
Expences	429	1	6
Profit	104	14	11
	£ 533	16	5

FARM Cr.

	£.	s.	d.
By 550 ewes and lambs, fold at Lammas, at 18s.	485	0	0
30 dry ewes at 12s.	18	0	0
15 found of 20 ewes which died in winter	2	5	0
75 ſtone of wool, at 8s. per ſtone (21 to the ſcore)	28	11	5
Produce	£ 533	16	5

CHAP. V.

IMPLEMENTS.

ALL the implements of huſbandry are conſtructed according to better models and made of better materials, than formerly. So late as 20 years ago, no plough was to be ſeen, but on a gentleman's farm in the low lands of this county, except that which is now called the old Scotch plough, drawn by four oxen and two horſes, or by four horſes and two oxen. In the Highlands the ſame kind of plough was univerſally uſed, drawn by four horſes all yoked abreaſt.

Inſtead

Inſtead of carts with wheels moveable upon the axle; that clumſy machine, in which the wheels were fixed to the axle, deſcribed by the Preſident of the Board and ſtill to be met with in the northern counties, was very common in all the low lands of Perthſhire. The wheels had no ſpoaks or naves. They were compoſed of three ſections of ſolid plank, fixed together and rounded like the bottom of a large caſk; and the axle-was fixed in the center, going through the middle ſection. The ſhafts had two pins that embraced the axle and made theſe awkward wheels tumble along; from which circumſtance they were named tumblers. A timber mallet wrought by the hand was all they had for a roller to break the clods in the ſtiff land of the carſes. Fanners were very rare, and threſhing machines not known. In the Highlands, the people performed diſtant carriages of bulky commodities with hurdles, fixed on each ſide of the horſe, by means of a hooked car-ſaddle, ſtill remembered by the name of *currans*. Leſs bulky commodities were carried in hampers or baſkets, made of young hazle, with a ſquare mouth, and fixed on the horſe's back with the ſame car-ſaddle. Near carriages, particularly the ingathering of their hay and corns, were executed with a ſledge, which conſiſted of two ſhafts reaching from the collar on the horſe's neck to the ground, with croſs bars near the horſe's hind-feet, for a bottom, and at leaſt ſeven erect bars behind, for keeping on the load. This ſledge ſucceeded the hurdle and evidently required ſome road, whereas the hurdle could be uſed wherever it was poſſible for a horſe to walk. The name which this ſledge has in the language of the Highlands ſhews that it was the *carrus* of the Gauls in Cæſar's time; and the Engliſh name *car* is borrowed evidently from the Latin. Upon this ſledge or car the farmers in the Highlands

lands carried out the dung in large baſkets, diverging towards the mouth in the ſhape of an equilateral triangle, one ſide of the baſket lying on the bottom or floor of the ſledge; but where the road would not admit of the ſledge, the dung was carried to the field in baſkets with moveable bottoms, like a valve, fixed to the hooked car-ſadle, which opened in the bottom by a pin and dropped the dung where it was neceſſary. On theſe ſledges they carried home their peats in other baſkets of a ſquare form and of ſuch capacity as to hold a horſe's load; but where the road was ſo ſteep that the car could not be uſed, they adopted ſmall baſkets of the ſame form, fixed on the horſe's ſides to the hooked car-ſadle. In many parts of the Highlands, theſe ſledges are ſtill employed for carrying grain and hay, as well as peats; eſpecially where the roads are ſo rugged and uneven as to render the uſe of carts impracticable. However cenſurable this practice may appear to a ſtranger, yet in ſome ſituations it is unavoidable; and at firſt ſight it would ſeem incredible, with what diſpatch and ſafety the people perform their work, and alſo with fewer hands than carts or waggons would require. Sledges are indeed going out, and ought to be ſo, where the croſs-roads in a country or the by-roads in a farm are paſſable by carts. But notwithſtanding every improvement which the roads have undergone; the principal lines of communication having deſervedly claimed the firſt attention of the public; this has hitherto left the roads in other ſituations, in ſuch a ſtate, eſpecially where the country is rocky or hilly, that carts would be overturned every moment. Diſtant carriages in every part of this county, where the journey is on the king's highway, are univerſally performed by carts.

It is to be hoped, if the waggons uſed in the moor-lands

of Yorkſhire could be introduced with advantage into the Highlands of Scotland, as Mr Marſhall ſays they can, that the Board will favour the country with a drawing of one, accompanied with directions how to uſe it.

It was deemed unneceſſary to give a long deſcription or any drawing of theſe uncouth implements, as they are moſtly exploded, and gradually giving way to modern improvements. They were only uſed through neceſſity, ariſing from the peculiar circumſtances of the country, and muſt diſappear, when that neceſſity is removed.

One improvement leads to another. No ſooner were the roads attended to, than carts were introduced; and no ſooner were leſſons of huſbandry learned by common farmers from the proprietors, of whom they held their poſſeſſions, or from reading and obſerving the practice of countries more highly cultivated than their own, than they were emulous to follow the examples ſet before them, both in the execution of their work and in the conſtruction of the various implements they employed: And we begin to be aſtoniſhed at this day, how the farmers, even about the middle of this century, could work with ſuch homely utenſils, in the way of their profeſſion, or keep themſelves alive by the modes of farming practiſed in the old ſchool.

Every implement of farming, uſed almoſt over the whole county, is now formed after the moſt approved models known in Britain; in the conſtruction of which, ſuch a quantity of iron is annually conſumed, as would have been thought incredible by the grandfathers of the preſent farmers. In ſome ſequeſtered corners, eſpecially where the tenants are poor, the landlords oppreſſive or the ſoil difficult to be reclaimed, the dawn of improvement is only beginning to appear; but theſe forlorn ſpots bear no proportion to the happier diſtricts

diſtricts of the county, where cultivation is cheriſhed by the benignity of the landlord and the induſtry of the tenantry, and is aſcending to its meridian altitude.

The plough, uſed by many of the moſt knowing farmers, is that with a chain and curved mold-board generally of caſt iron. Some very intelligent farmers, about the eaſt bridge of Earn, reject the chain, but ſtrengthen the beam with two lateral bars of iron, from the muzzle back to the great ſtilt or handle of the plough.

In Monteath ſome of the beſt farmers make uſe of an improved ſmall Scotch plough, in preference to that with the caſt iron mold-board invented by Mr Small at Ford, both on account of its lightneſs, and becauſe it does not throw the furrow of clay-land ſo much on its back. In ſtony land, the round ſhare is moſt in uſe; in land, which is free of ſtones, the feathered ſhare is preferred, on account of the neatneſs of its furrow; and indeed in tough or new land, no other ſhare will cut the roots of graſs and weeds, or turn over the ſurface, with the ſame eaſe or equal beauty.

Subjoined is a model of the Scotch plough, recommended by the Board of Agriculture, which upon the whole ſeems to be the moſt generally uſeful, that has hitherto been invented.

Theſe four kinds of ploughs are drawn each by two horſes; but in a great part of the country to which this account refers, the old Scotch plough, drawn by three or four horſes, is ſtill in uſe: and in ſome places the barbarous cuſtom is not exploded, of yoking four horſes a breaſt, and of driving them by a man going backward. This practice appears very awkward and very much poaches the ground; yet they contend in their own defence, that the horſes yoked in this manner act with greater power than otherways; that

the ground is in many places ſo full of large ſtones, as not to admit the long plough; that the driver, by having his eye at once on the horſes and plough, can ſtop the draught more inſtantaneouſly and ſave the harneſs (graith) better than in any other poſition; that they are under the neceſſity of keeping ſmall horſes, adapted to their paſture in the moors, and require more of them to execute the labour of a plough-gate of land. It is to be hoped, however, that by the increaſing cultivation of ſown graſſes, their food for horſes and all other cattle will be more abundant; that a breed of larger horſes will be employed; that two-horſe ploughs will be made uſe of, and all arguments in defence of horſes yoked abreaſt become unneceſſary. The ſaving in point of harneſs and horſes, beſides having only one man in place of two, is ſo great and ſo evident, in favour of two horſe ploughs, that they are faſt gaining ground, in every diſtrict of the county, and it is hoped will ſoon be univerſal.

The harrows conſiſt for the moſt part of four bars (bulls) with iron teeth. Some are made large enough to be a draught for two horſes, which are diſtinguiſhed by the name of Breakers. The teeth of theſe are formed like ſmall coulters, having ſquare tops, which are put upward into the bars, contrary to the common method of puſhing the teeth downward. Into that part of the teeth which riſes above the bar, there is, in each tooth, an oblong hole, into which a ſlit-nail is put, that keeps the teeth immoveable and prevents their being loſt. This kind of harrow is extremely well calculated for breaking the large clods of a fallow or any coarſe new land. The ſmaller harrows, with common teeth, are joined together by a coupling iron; and in ſome inſtances by a double coupling iron, introduced into Monteath and recommended by Lord Kames.

General

General Robertſon of Lawers uſes five bulls, having five teeth in each bull. The teeth do not follow one another in the ſame tract, which it has puzzled many farmers to prevent, and upon which various improvements have been ſuggeſted. His improvement, in this reſpect, is recommended by its ſimplicity. The harrows are four inches narrower before than behind; and are drawn by a muzzle fixed to a perpendicular pin. If any perſon wiſhes to make the diſtance between the harrow-teeth greater, he may encreaſe the difference between the breadth of the harrow before and its breadth behind. It may be made ſix or eight inches. If he wiſhes the ruts of the harrow teeth to be nearer one another, he may diminiſh the difference of the breadth between the fore and the hind part of his harrow. Harrows made even after the ordinary conſtruction are prevented from having ſeveral teeth in the ſame rut, by their being yoked ſo as to move on the land ſomewhat diagonally.

In ſome places of the Carſe of Gowrie and Stormont the harrows have what are called riders. The far-bar of the near harrow, (when more than one are yoked together) has three timber-pins fixed in the upper ſide, which are about ſix inches long and ſtand perpendicular. On theſe three pins is fixed a piece of wood which prevents the far-harrow from riding on the other. Wherever the double coupling iron is uſed, there is no need of theſe riders, becauſe it makes all the harrows to riſe and fall together, and keeps them from ever ſtarting upon one another.

Rollers have become very common. Moſt of them are made of ſtone; others of ſolid wood; others built with frames and loaded with ſtones; and a few of caſt iron. Theſe made of caſt iron are more eaſily turned, becauſe they generally conſiſt of two cylinders, ſo conſtructed, that one

moves

moves backward, while the other moves forward, at the end of the ridge; which is convenient in rolling red land. With other rollers, which are compoſed of one piece of timber or ſtone, the beſt way is to go round the whole field in the form of a ſpiral line, where it can be done; and then to continue always going forward without making any ſhort turns. In rolling down graſs ſeeds with barley or oats, this method is preferable, but graſs lands may be rolled any way; although rolling ridge and ridge is more tedious even in theſe; and therefore rolling acroſs the ridges is preferable.

The eaſe, with which a roller is drawn, depends on the length of its diameter, not of its axis; and therefore, although the ſtone-rollers are more durable than theſe made of wood, the latter may be made with fillies * and of a larger ſize than the former, which increaſes the diameter and renders them eaſier in the draught.

Thraſhing of corn by machinery has been practiſed in this county for near half a century; and theſe machines are now coming faſt into uſe. Their conſtruction is various, according to the ingenuity of the maker. They are driven ſometimes by water, but in moſt caſes by horſes. They thraſh more or leſs in proportion to the weight of water or the number of horſes employed in driving them. Mr Paterſon of Caſtlehuntly, who introduced them into the Carſe of Gowrie, has one, which is very uncommon, both for the quantity and excellence of its work. A farmer in Weſter Lundie near Doune, of the name of Ferguſon, is ſaid to have invented a machine of this kind, very ſimple in its conſtruction and very cheap; which are two conſiderations of importance to the common claſs of farmers. There are three erected already in the pariſh of Callander; and another about to be made

* Like ſmall cart wheels.

made ſoon. The three which have been made, coſt each about L. 20. At the moderate calculation of one ſhilling per boll, either of theſe machines will repay their own expence by thraſhing the firſt 400 bolls.

Fanners for cleaning grain have been long uſed by the moſt induſtrious of the farmers, and are to be met with, not only in every corn-mill, but almoſt in every barn, where the farm is more adapted for tillage than paſture.

Kilns for drying grain are ſometimes made with timber-ribs; which was the univerſal practice about half a century ago; many are made with brick-floors, but the caſt-iron floors are daily gaining ground. The diſpatch, the ſafety, and the ſaving of fuel, by theſe are a great object, and give them a decided ſuperiority over the other two. The expence in the firſt conſtruction depends on their ſize; but all this expence is ſoon recovered where much grain is to be dried. In drying on the iron floor, the victual muſt be conſtantly turned, otherways the meal acquires a red colour and a parched taſte. The proprietors of mills ought to make one of this kind beſide each mill for the convenience of their tenants. Two or three would ſuffice for a whole pariſh. This is the ſtyle in which theſe kilns are making their appearance in this diſtrict of the county.

Churns, cheeſe-preſſes and every other utenſil of that nature are now made, in moſt places, after the moſt approved models.

Two horſe carts have gone much into diſuſe; and are daily loſing ground. Mr Mylne of Mylnfield, who had great experience in this and every other article of rural economy, ſaid that a cart of 22 cubic feet, in capacity, is as eaſily drawn by one horſe, as one of 28 or 30 feet by two horſes; this being the common ſize of carts in the Carſe of Gowrie.

That

That gentleman had a cart of a particular conſtruction in his quarry of Kingoodie, which merits the attention of thoſe, who have works of a ſimilar nature, *fig.* 1.* This cart has a bend in the axle, which brings it within 14 inches of the ground, although moving on wheels more than 5 feet high. The caſe, with which it is drawn, loaded and unloaded, is ſuperior to the common cart, in the proportion of 7 to 3. There is alſo in this quarry a cart for carrying very large ſtones, ſuch as milſtones, &c. which is drawn as eaſily upon wheels of 2 feet 2 inches in height, as upon wheels of a greater diameter. In this cart, the axle is only about 5 feet long; ſo that the wheels run under the body of the frame, which is flat and may be made of any breadth or length required.

At St Martins, Mr MacDonald has a very ingenious contrivance, to facilitate the unloading of his carts, when his men are to lay the load in different heaps. By means of this ſimple improvement, the box of the cart is held at different heights in unloading, the lime or dung is diſtributed into regular quantities, and the carter is greatly aided in the difficult operation of lifting up the loaded cart. It can only be uſed in what are called coup-carts, i. e. when the box is moveable on a frame; and the contents can be diſcharged, without lifting the ſhafts or rig-widdy: But no other kind of carts ought to be uſed.

On the forepart of the box and exactly in the middle, there is a thin piece of iron (*a*) *fig.* 2. fixed firmly with nails, which is about an inch and a half broad, between one and two eighths of an inch thick, and of the ſame length with the height of the box. In this thin piece of iron there are three or more oblong holes, of dimenſions correſponding to the head of the rod after mentioned.

On

* See the plate.

On the firſt bar (*b*) or fore ſheath, that keeps the ſhafts together, and exactly in the middle, there is an iron rod fixed with a ſtaple (*c*). This rod is about 18 inches long and nearly an inch in circumference; but it may be made longer or ſhorter as found neceſſary; which neceſſity depends on the height and length of that part of the box which reſts on the frame. The head or upper end of this rod is formed into the ſhape of a creſcent, an inch wide, with its points upward, and of that thickneſs, which may eaſily find acceſs into the correſponding nitches of the iron plate, fixed to the fore part of the box. To prevent this rod from dangling about the cart, while it is not uſed, a ſmall hook is fixed to one ſide of the front of the box, where it reſts.

When the driver wiſhes to unload his cart, he heaves up the box a little, and puts the end of the rod into the uppermoſt nitch, where the box reſts till he make his firſt heap. He moves on to the place where he propoſes to make his ſecond heap, raiſes his box to a ſecond nitch, and ſo on, till he has divided the load into as many heaps as he has nitches.

Although it is evident that two horſes in ſeparate carts will carry at leaſt one third more, than when yoked together; yet ſuch is the influence of cuſtom, that double carts are very frequent, in ſome parts of the country. When the load cannot be ſeparated, there is a neceſſity for yoking two or more horſes in one carriage, but in carrying coals or lime or grain or any ſuch articles, the loſs of labour is conſiderable.

Perhaps ſome time hence, in the low country, where the toll roads are properly directed and almoſt horizontal, it may be thought more eligible to conſtruct carriages with four wheels, like the frame of a waggon or of a gentleman's chaiſe, in which two horſes, yoked abreaſt and having no

part of the load upon their backs, would certainly draw more than four horſes in any carts of the ordinary conſtruction. This improvement cannot however be adopted with equal ſucceſs, where there are any pulls in the way; but to avoid theſe as much as poſſible is the ſtudy of every engineer who underſtands his buſineſs.

To bring ſingle and double carts as much as poſſible under the public eye, and to evince the ſuperior excellence of the former by the teſt of mathematical demonſtration, we may obſerve, that whatever part of the load is before the center of gravity which is always in the axle, reſts conſtantly on the horſe yoked in the ſhafts *. Going down a hill, this burden muſt be conſiderably increaſed, eſpecially if the load be high above the axle or the deſcent ſteep; and the additional burden is always in the proportion of theſe two cauſes united. But this is not all the evil. Unleſs the line of the draught of the foremoſt horſe be exactly in the line *(edf)* from the hook of his collar to the middle line of the axle (which is ſcarcely poſſible), he will be pulling down the hind-horſe's back, or in other words, will be giving him more weight to carry. But the traces are generally fixed about the pin of the ſhafts *(d) fig.* 2, which throws the line of the fore-horſe's draught *(edg)* a conſiderable angle above the axle (equal to *fdg)*; from which it is evident, to any perſon who attends to theſe circumſtances, that, let the road be ever ſo level, in every double cart, the horſe in the traces muſt either not draw at all, or muſt bring additional weight on the other horſe; which weight is always in proportion to the force with which he draws, and the largeneſs of the angle *(fdg)* which the line of his draught *(eg)* makes with the line betwixt the hook of his collar and the axle of the

* See the plate, fig. 2.

the cart *(ef)*. Beſides, unleſs the driver be more careful than ordinary to keep the trace-horſe to his duty, the other poor animal in the ſhafts has not only this great weight to carry, but all the load to draw. The angle *(fdg)* is increaſed conſiderably, when the trace-horſe is of a lower ſize than the one in the ſhafts, which frequently happens.

It may be ſuggeſted to thoſe who are fond of employing two-horſe carts, that in order to adjuſt the traces of the fore-horſe with as little injury as poſſible to the one behind; while the two horſes are ſtanding in their places, a ſmall line or cord may be held, with one end at the center of the axle and the other at the hook of the collar of the trace-horſe *(e)*; mark exactly, how much this line is below the ſhafts at the place where you intend to fix the traces *(b)*. Let an iron pin with an eye or rather a rod with a knee be fixed to the under ſide of the ſhafts, correſponding to this meaſure. By fixing the hook of the traces to this eye or knee *(b)*, the draught of the two horſes will *coincide*, being both from the center of the axle to the hooks of their reſpective collars. Unleſs this coincidence take place, the two horſes will in a certain degree be working againſt one another.

In the long plough with four horſes, the ſame reaſoning holds and the ſame conſequence follows (only ſubſtituting the muzzle of the plough for the axle of the cart), ſo far as the draught is concerned, if the traces of the fore-horſes are fixed to any part of the harneſs of the pair behind. In general that inconvenience is prevented in the plough by uſing a long chain (provincially a ſoam), which connects the draught of the foremoſt pair, not with any part of the harneſs of thoſe behind, but immediately with the muzzle of the plough; by which means the draught of the four horſes *coincides*. It is ſingular that no perſon has hitherto thought

of avoiding this inconvenience in the mode of yoking a double horſe cart, while it is frequently avoided in yoking the plough, although it be equally injudicious in both inſtances.

Even in a plough with two horſes, unleſs the back-ropes are ſo adjuſted, that the traces (provincially theats) are in a ſtraight line from the hook of the collars (provincially hems) to the firſt timber behind (ſwingle tree), the better a horſe draws, the more weight he brings on his own back, in addition to his draught. Skilful farmers indeed have ſaid, in a few inſtances, that the weight of the furrow muſt, in ſome degree, reſt on the horſes necks, by means of the back-ropes. This may be a reaſon for the traces being ſtraight, but not for their being bent upwards.

By the notes I took near Coupar of Angus, I ſee that ſome of the farmers in that country prefer mold boards *rounded* outward, not hollowed, which they ſay are more eaſily drawn. This ſeems to be the common mold board inverted. Future experience alone muſt determine how far this is an improvement. Convex mold boards would ſeem to increaſe the friction, and to be therefore drawn with more difficulty, than theſe which are concave.

The expence of all implements of huſbandry is ſo various in different diſtricts of this extenſive county, according to their quality and the neatneſs of their conſtruction, that it would be difficult and even ſuperfluous to give a detail of the different prices. Perſons well ſkilled in making them have found it their intereſt to open ſhops almoſt in every village; which is an evidence of the good ſenſe of the farmers, and that the obſtinacy of prejudice is giving way to the growing taſte for improvement.

The average price of a cart properly conſtructed is from L. 8 to L. 9, and of ploughs with a chain and caſt-iron mold

mold board, from L. 2 : 2 to L. 3. The common cart may be from L. 1 : 11 : 6 to L. 2. The price of a threſhing mill has been already mentioned, others are much dearer.

Very few oxen are now uſed for draught, except in the carſes or clay land, and even in theſe diſtricts, much fewer than formerly. The farmers alledge, that in critical ſeaſons the oxen are ſo ſlow, that they are under the neceſſity of preferring horſes, for the ſake of diſpatch.

CHAP. IV.

Inclosing, Fences, Gates.

IT may be proper to begin this chapter by taking ſome notice of the attention which was ſhewn at an early period by the legiſlature of North Britain to the agricultural improvement of their country, ſo far as it appears from the ſtatutes which were, for a ſeries of years, enacted for that purpoſe. It is with pleaſure, I take this opportunity of doing juſtice to the enlightened ideas of our anceſtors, by referring to ſome of their laws relative to incloſing and planting, that the reader may ſee agriculture was not overlooked in Scotland, even amidſt the claſhing of ſwords and the din of armour. Nor is there any doubt that the ſurveyors in South Britain will alſo in their reports point out the dawn of rural cultivation, in their country.

By an act of the Scottiſh parliament in 1457, cap. 80, it is ordained that the king's freeholders, both ſpiritual and temporal, ſhall order their tenants to plant woods and trees and make hedges. in places convenient, under ſuch a penalty as the lord or baron ſhall modify. The former acts for encouraging

encouraging planting were enforced in all points by an act of parliament in 1534, cap. 10, with this addition, that every man ſpiritual and temporal, within the realm, having L. 100 (L. 8 : 6 : 8 Sterling) land of new extent, ſhall, where there are no woods or foreſts, plant wood and foreſt, and make hedges, in places moſt convenient, extending to three acres of land, and above or under, as his heritage is more or leſs, cauſing his tenants to plant one tree, for every merk-land; and inquiſition is to be made yearly thereupon by every ſheriff in his ſhire; the penalty of neglecting theſe enactments being fixed at ten pounds (16s. 8d. Sterling).

It appears that the legiſlature never loſt ſight of this buſineſs of improvement; for all theſe ſtatutes were revived and ratified by parliament in 1661, cap. 41, in which it is ordained that every heritor, life-renter and wadſetter, worth L. 1000 (L. 86 : 6 : 8 Sterling) of yearly valued rent, ſhall incloſe, for the ſpace of ten years next enſuing, at leaſt four acres of land yearly, and plant the ſame about with trees; and that all others ſhall plant more or leſs, in proportion to their reſpective rents. For their encouragement, theſe incloſed lands are declared free of all burdens and quartering of horſe, for nineteen years after the date of the act.

By theſe ſtatutes it was enacted that whoever cut down or brake a planted tree was to be fined in L. 20 (L. 1 : 13 : 4 Sterling) or compelled to work during ſix months to the perſon injured, having only meat and drink for his labour: and whoever brake down hedges or incloſures was fined L. 5 for every treſpaſs, or compelled to work ten days without wages. The labours of the delinquent, in caſe of his inſolvency, were made to repair the injury he had done; and the puniſhment, while it ſerved the purpoſe of deterring offenders,

fenders, did not outrage the feelings of humanity; which is always a ſymptom of an enlightened juriſprudence.

Theſe enactments of the Scottiſh legiſlature could not fail, from the precautions taken to enforce them, to have produced the deſired effect of adorning and meliorating the country: and indeed it is evident from a variety of ancient ſtatutes and other unequivocal proofs, that agriculture as well as commerce had made very conſiderable progreſs in Scotland at a very early period, more early perhaps than is generally ſuppoſed; and that her fields waved with rich harveſts, while her cities reſounded with the buſy hum of men.

In a county ſo widely extended as that under review, where there is ſuch a variety of ſoil in reſpect of value, where many of the proprietors and farmers have ſo little intercourſe, that thoſe, in one extremity of the county, ſcarcely know what theſe in the other are doing, not only the incloſing but every other article of rural economy may eaſily be ſuppoſed to be very different, in ſeveral provinces.

In the moor lands a great part of the land is open, eſpecially from the higher verge of the green paſture to the ſummit of the mountains. Nature has marked this boundary, and where ſhe has drawn the line betwixt the heath and green ground, there a fence is carried, parallel to the direction of the valley. This fence is more ſubſtantial and better formed in ſome caſes; in others more rude and ſimple, according to the times, in which it was conſtructed and the encouragement, which the occupiers received. Becauſe it ran acroſs the head of every farm, it was called very properly the head-dyke. Above the head-dyke the young cattle, the hill-horſes (and frequently all their horſes), the ſheep and the goats were kept in ſummer; the milch cows were fed below. Little attention was paid to boundaries

beyond

beyond the head-dyke. The mountains were almoſt common among the tenants of the ſame proprietor. Different properties were generally aſcertained, as ſaid already, by brooks, which ran down the face of the hills and by the courſe of the water to oppoſite ſides, at their ſummit. The head-dyke was the firſt fence thought of in the Highlands, becauſe the inhabitants had no other ſecurity at night, for preſerving their corns and meadows, from the depredations of the hill-ſtock, during ſix months in the year. There was no part of the country deſtitute of this ſafe guard, beyond the memory of man. The head-dykes wear the moſt extreme features of old age, and even tradition itſelf is ſilent with reſpect to their origin. They ſeem to be coeval with the knowledge of agriculture in this country; and the probability is, that the mountainous diſtricts of Scotland had their head-dykes, before a ſingle incloſure was to be ſeen, defending a corn field, in the more fertile provinces of the low country.

From the bottom of the vallies, another fence was carried, on each ſide of the ſeveral farms, at right angles to the head-dyke, until they met. Theſe lateral fences were more rare, and generally followed the courſe of ſome rivulet; nor were the latter equally neceſſary, becauſe the milch cows were all day under the eye of the keeper and all night confined in folds, until the corns were reaped and gathered in.

Beſides theſe, there was a kind of ring-fence round the outfields. Land of this deſcription in the Highlands was patches of between 10 and 12 acres, leſs or more, in detached parts of the farm, interſperſed among the paſture ground, generally the higheſt and moſt remote parts of the poſſeſſion within the head-dyke, and ſuch as were moſt eaſily ſubdued

by

by the plough. Each outfield conſiſted for the moſt part of as much land as the cattle of a plough-gate could manure (tathe) in a ſummer, by being confined upon it, over night, in folds. Theſe ring-fences conſiſted partly of ſtones rudely piled upon one another, and partly of ſods, as moſt convenient; and in many caſes of alternate ſtrata of both. They were made very ſimple, and often irregular, to humour the ſituation of the ground incloſed, being only intended to prevent the tended cattle from ſteping into the corn-fields adjoining to their paſture, when they eluded the vigilance of the cow-herd: Yet they were ſo very common as to be ſeen almoſt in every place, and ſo very ancient that it is impoſſible to trace the æra in which they were built.

We meet with evident veſtiges of ridges in the higher regions of the mountains, beyond all theſe fences, where the land has never been incloſed. Theſe inhoſpitable ſpots never could have been turned up in the ordinary circumſtances of the country. What dire neceſſity could have compelled men to plough ſuch land? And how could grain come to maturity in ſuch a climate? Either the firſt inhabitants of the country found the vallies ſo much infeſted with wild beaſts, that they thought it ſafeſt to fix their reſidence on the mountains; and the country was ſo much wooded, that it was warmer than at preſent: Or during the ſucceſsful campaigns of Agricola in this country, it is very likely, that the Caledonians were compelled to retreat from the more fertile to the more barren parts of Scotland. The inhabitants flocked to their faſtneſſes, where their enemies durſt not follow them. The population was in this event, crowded beyond what the uſual produce of the country in theſe places could ſupport. The preſſure of their ſituation urged them to have recourſe to the ſoil of the mountains by a tem-

porary tillage, to prevent famine. What noble heroiſm, to run the riſk of wanting ſubſiſtence, rather than to live in plenty, under the Romans, with the loſs of liberty!

Theſe remarks are applicable to the general ſtate of the Highlands at a very early period: the features of all the mountainous parts of North Britain are in that reſpect much the ſame: and excepting in the vicinity of the manſions of great proprietors, things remained for ſeveral centuries, in this ſituation. Before the union, the trade of every man was war; and there was little leiſure and no inclination to incloſe or cultivate the ground. Within the period of half a century incloſing has made rapid progreſs in this country, eſpecially during the laſt thirty years; and the ardor, with which this and every other ſpecies of cultivation is carried on, in our time, promiſes to be laſting and highly beneficial to all ranks of men.

In a country interſected with ſo many mountains, a great proportion of the ſurface muſt remain for ever uninclоſed, becauſe the produce of the ſoil will not repay the expence; and few men are diſpoſed to throw away money, without ſome proſpect of a return. If incloſing however ſhall be carried on, for another century, with the ſame ſpirit which has gone forth of late years, all the green ground, even in the high lands, will be incloſed; and in half a century in the low. It may be computed that taking the whole county at an average, three fifths of the arable land is open.

Where incloſures have been made judiciouſly, their extent is proportioned to the ſize of the farm, to the relative ſituation of the ground, and to the rotation of crops. By the ſize of a farm is meant one plough-gate; becauſe it would be abſurd to ſuppoſe, were one man to engroſs all the land in a pariſh, that the incloſures ought to be enlarged proportionally.

tionally: And by the relative ſituation of the ground is meant the convenience of water, the throwing of lands together, as far as poſſible, that can be laboured and ſown at the ſame time, the interſection of bogs, the courſe of rivulets, the riſing of ſwells and a variety of other circumſtances, which ought to occaſion the incloſures to be made unequal in ſize or in number; but if poſſible the number ought to correſpond to the rotation. When the bounding fence is finiſhed, the ſubdiviſions even of the largeſt farms and in the moſt ſimilar ſoils, ſeldom exceed thirty acres. In moſt caſes, they are about twenty. In the Carſe of Gowrie and in diſtricts where there is need of draining and but little fall, they are even leſs. When there are no local circumſtances, that counteract the regularity of the incloſures, they ought invariably to be regulated by the extent of the farm and the rotation of crops, ſuitable to the ſoil and climate. In a ſmall farm they ſhould be leſs; in a great farm larger. This ſecures a convenience with regard to the operations of ploughing and reaping, which cannot be obtained by any other mode of diviſion.

The prices are extremely various, both of ſtone-walls and of the hedge and ditch. Stone-walls without mortar, or what are called double dykes, prevail, where the quarries are convenient or ſtones are found in the fields, or where the expoſed ſituation and ſterility of the ſoil render the growth of thorns precarious. Hedge and ditch prevail, where the land requires draining and the ſoil is of a good quality to rear the quicks. When ſtones are near and eaſily wrought, the lineal yard, four feet high, is, in moſt caſes, quarried, led and built for 6d. but in many ſituations, when a double row of ſods by way of coping is included, the long

rood of thirty ſix ſquare yards * coſts from L. 1 to L. 2 : 2 according to the difficulty of quarrying and leading; and at all the intermediate prices, correſponding to the price of labour in the diſtrict and the convenience or inconvenience of the work.

A ditch of ſix feet wide at the ſurface and of depth ſufficient to allow a proper ſlope, including thorns and paling, is executed in moſt places of this county at 13s. or 14s. the long rood; but when the ground requires ſome pick-work, and the rafters and ſtakes are dear, it coſts more. When the thorns and railing are furniſhed by the proprietor, a ditch of that width is charged 1½d. per yard. A ditch of four feet wide is wrought for 1d. per yard. In the upland, the ditch is ſometimes faced with ſtone and the hedge placed behind, in which caſe the labourer charges 3d. for both: but all theſe prices vary according to local circumſtances.

I met with one inſtance, in which the thorns of a fence of this kind were not ſet on the top of the fence, immediately behind the ſtone wall, which is the common practice, and where they are apt to fail, the firſt year, for want of nouriſhment, if the ſoil and ſeaſon be dry; they were planted at the lower extremity of the ſlope, formed by the earth thrown out of the ditch, where they found plenty of nouriſhment.

In planting hedges, attention ought to be paid to the nature of the ſoil, where they are to be placed, ſo that aquatics may be ſet in moiſt ſoils, and on dry ſoils plants that are ſuitable.

* Six ſquare yards is the ſhort rood, thirty ſix do. is the long rood. If ells are mentioned, every ell is one inch more than a yard. The inſtrument, with which ells are meaſured, is called an Ell-wand, becauſe it was made originally of a ſmall rod or twig, provincially a *wand*. Thirty ſix ſquare yards are to 36 yards ſquare in the proportion of 36 to its ſquare.

ſuitable. Alder, planted by the ſide of a river or ſtream, not only makes a ſpeedy fence, but preſerves the bank from being undermined by the current; it is continually putting forth new ſuckers from the roots, whereby the earth of the bank is matted and bound firmly together.

In marſhy ground an immediate fence may be made by driving down ſtakes of green alder or willow which ſoon ſtrike root and grow apace, provided care be taken that the bark be not ſtript off, when they are driven in. They ought to be planted obliquely and diagonally to one another, ſo as to have the appearance of chequer work, and bound with edders along the top, to prevent any ſudden danger of their being looſened by cattle or high winds. They may be planted in layers as well as truncheons. The layers are planted about a foot and a half or even one foot deep, in holes prepared for them at proper diſtances, where the plants are to ſtand and their tops cut over about nine inches above the ground. The ſhoots of the layers being nearer the earth than thoſe of the ſtakes will form the ſtrongeſt fence in the end; and may be trained ſo thick and cloſe and grow to ſuch a height as to be both a ſhelter and a fence.

Beſides the hedges formed with common hawthorn, which are very general in this county, there are ſome inſtances of a new kind of hedge, which merits attention. At Ardblair in the Stormont, the property of Doctor Joſeph Robertſon, the beſt of friends, there are hedges made of larch-trees, planted in the face of a ditch, inſtead of thorns. The ſame kind of hedge is at Belcid on the eſtate of Mr Campbell of Auchalader, in that neighbourhood: and Mr MacDonald of St Martins ſaid he was about to try that fence. They are planted zig zag, or diagonally as thorns ſometimes are. A hedge of this kind is ſaid to be ſooner fencible than

any

any other that thrives in a dry ſoil, admits of frequent pruning, and in a ſhort time will be impenetrable for cloſeneſs and ſtrength, by the branches interweaving with one another.

The late Archibald Stirling Eſq. of Kier introduced upon his eſtate, the practice of planting a hedge in the face of the ſtone-wall, oppoſite to the ſurface of the field, in an opening of three or four inches ſquare; which ſaved the expence of weeding and railing, and is in a thriving condition. In a few places there is what is called a Surrey-fence, and by ſome perſons a ſnap-dyke, which conſiſts of about thirty inches of a ſingle ſtone wall, raiſed on the top of the ditch, behind the thorns, inſtead of ſtakes and rafters, to defend the hedge and ditch.

The moſt approved mode of pruning hedges is that deſcribed in the maſterly ſurvey of Mid Lothian, in which it is recommended by Mr George Robertſon to trim the thorns in a regular ſlope from the bottom on both ſides, ending in a very acute angle or point at the top. There are many examples of hedges trained after that manner, in this county.

About gentlemen's houſes, the ſtone walls are for the moſt part ſubſtantially built and caſt with lime; but in other places they frequently conſiſt of dry ſtone, or of ſtones with common mortar. Perſons who underſtand the building of dry ſtone-walls properly, find a bed for the larger ſtones, not by means of pinnings, which is the common way, but by reſting them firmly upon one another; and afterwards they cloſe up the interſtices with pinnings to ornament the wall. No part of the weight lies on the ſmaller ſtones; they are only uſed to pleaſe the eye.

At Glendevon, on the property of Mr Rutherford of Kinghorn, about Blairgowrie, on the old eſtate of Aſhintully,

fully, at Pitcur, and in a few other places, where the ground is high and the ſtones fit for the purpoſe, the fences are Galloway-dykes. When the ſtones are very large, they are in ſome caſes built ſingle from top to bottom; but more commonly about the half of the wall is made of ſuch ſmall ſtones as have a bed, and is built double. The upper part of the wall is made of ſingle ſtones, built in the form of an arch, every ſtone with its thin edge downward, forming a wedge between the other two. The largeſt ſtones are always put in the tire, that is immediately above the double part; and every row decreaſes in ſize, towards the top of the wall. The upper courſes of Galloway dykes ought to be made as open as poſſible, to afford leaſt footing to ſheep and to let them ſee through: And if the firſt courſe of ſingle ſtones ſhall project a little over the double wall, ſo much the better. Of all dykes this is the moſt formidable to cattle. A double wall of twice the height will not turn ſheep with equal certainty. Its tottering appearance, and ſeeing light through the ſtones deters them from any attempt to ſcale it, together with the want of footing on the top. Theſe walls may be made of the coarſeſt ſtones; and when they are properly laid, having the center of gravity always reſting on the ſtone below, they ſtand better than double walls, unleſs theſe are cemented with lime and have plenty of band ſtones.

With regard to fences built with lime it may be obſerved that, except where the ſtones waſte with the weather, lime is more ornamental than uſeful in all ſtone-fences, if the dry ſtones be laid on their fair bed; becauſe lime enables the workman to conceal not only a penury of ſtones, but alſo the not laying them on the bed they ought. Beſides, nothing can at any moderate expence be contrived to prevent water getting down into a ſtone wall and thereby deſtroying the

the effects of the lime, by the expanſion of the water, owing to the alternate action of froſt and thaw. It muſt be confeſſed that ſince the building of ſtone-walls by the piece has become ſo common, it is difficult to get the dyke-builders to bed the ſtones fairly.

Even a common wall of five feet high may be rendered fencible againſt ſheep. 1. By laying on the top a tire of flags ſet on edge, ſtanding in a perpendicular poſition and of ſuch a height and length, as to project over the wall 6 or 8 inches on both ſides. The perfection of this fence conſiſts in making the flags nearly triangular, placing one angle at the top. The number of flags may be much diminiſhed, if they are ſcarce, by putting land ſtones between them, ſo as to keep them at ſix inches diſtance, which renders it impoſſible for the ſheep to pitch upon them or find footing; and if this be done, there is leſs neceſſity for the flags to project over the wall. 2. When flags cannot be got, long ſtones of any form may be uſed for the ſame purpoſe, taking care always that they ſhall project over the wall, and that a coping of ſmall field ſtones be piled above, tapering to a proper ridge. 3. Oſiers are ſometimes uſed for the ſame end, fixed into a turf-coping of double ſods, and wrought together like wicker work, each in a circular form. This requires almoſt conſtant repair, and at beſt is only a temporary fence. If it be a faced fence, and the backing good earth, the oſiers will grow, but ſmall ſtakes of alder are more certain. 4. What may be preferable to the oſiers is, that into the ſame double row of coping, ſhort truncheons of any kind of timber be driven, leaning ſomewhat to the ſide of the wall on which the ſheep are; and that their tops be bound with edders without any other filling.

In

In the Carſe of Gowrie and in moſt of the flat land in other parts of the county, where the cultivation of grain is the principal object of the farmer, incloſing of land, except open drains to carry off the water, is not deemed an improvement. Hedges breed vermin; and although ſtones could be got, the wall would cover ſome of the ſurface, and the ſtagnant water would alſo remain. In ſuch ſituations, open drains are undoubtedly the propereſt fences, becauſe they ſerve the two purpoſes of fencing and draining.

Many of the ſtone-walls and hedges have rows of trees. Where ſhelter is the object, and the ground of little value, theſe belts of planting are in many caſes forty feet, and ſometimes as many yards, broad, being filled moſtly with common firs: but where ornament alone is ſtudied, they are often narrower and different kinds of trees are always intermixed. If a hedge be the fence, the trees ought to be at ſome diſtance from it, in order not to rob it of nouriſhment or air, nor to hurt it by droping. Of all trees the aſh is the moſt hurtful in hedge-rows, the oak and the laburnum the leaſt hurtful.

All bleak countries ought to abound in theſe belts, becauſe they change the temperature of the air, and by their ſhelter form a milder climate. As far as hedges are ſuperior to ſtone-walls, in reſpect of warmth, ſo far are belts of trees, which keep the leaf in winter, ſuperior to every thing elſe. They not only form a ſcreen to protect the interior ground of the field, afford a place of refuge to cattle, both from the heat in ſummer and from the ſtorm in winter, provide them a comfortable bed to lie on and ſome graſs to feed upon, when every other place is covered with ſnow; but will withal be, in due time, a plentiful ſupply of wood for the various purpoſes of huſbandry, in a country where

nature has denied that boon, and thereby make an ample return to the proprietor for all his expences. In moſt ſituations the belts around fields of arable ground ought to be narrower, and the trees of a kind that carries leſs foliage, than thoſe around fields, which are to be always in paſture, becauſe corn requires more air than graſs; and if one day be loſt in harveſt by the ſtagnation of air, the whole crop may periſh. When the rotation does not include ſome years of paſture, perhaps there ought to be no belts, except on the north ſide of the farm or in expoſed ſituations.

My buſineſs led me many years ago to travel through ſome parts of the country and to remark the ſituation of the tenantry, who inhabited land that had not been incloſed, nor ſheltered with belts of planting. Let one inſtance or two ſuffice in place of a hundred. The farmers were wretchedly poor. Want ſat upon every brow, hunger was painted in every countenance, and neither their tattered cloaths nor their miſerable cottages were a ſufficient ſhelter from the nipping cold. Their crops were late and ſcanty, and their half-ſtarved cattle, like themſelves, ſtood expoſed and ſhivering with every blaſt. That I may not be thought to ſpeak at random, I quote the inſtance; and the doubting may make enquiry. The Quiggs, a barony belonging to the eſtate of Kier, immediately ſouth of the bridge of Ardoch, on the road between Stirling and Crieff, having been in this ſituation, was incloſed and ſheltered, in the manner alluded to, ſome years ago, by the foſtering hand of the proprietor. The climate became milder apace, the ſoil more productive, and the people more comfortable and affluent: in ſo much that I ſay, on the beſt authority, there is ſcarcely a farmer at this day, in all that barony, who is not able to purchaſe his own farm.

In

In ſome parts of the Stormont and on the way from Coupar to Perth, beſides many other parts of the county, the incalculable advantage and beauty of this ſpecies of improvement muſt ſtrike every beholder, and muſt be highly pleaſing to every man, who rejoices in the proſperity of his country. A farm on the eſtate of Balharry, near Alyth, which, about 20 years ago, being unincloſed, was let at L. 23; and yet the tenant did not thrive. He left the farm in arrears to his landlord and to the country. The ſame farm, after being dreſſed and incloſed, lets at preſent for L. 240 of a well paid rent: But the ſpirited improvements of Mr Smyth will fall to be taken notice of, with more propriety, under another article.

Every gentleman, whoſe eſtate is not already incloſed, will perhaps find his account in beginning with a ſurvey and plan, diſtinguiſhing the different kinds of ſoil, marking the land fit for tillage, and that which is only fit for graſs, and the plantations diſtinct from both. He ſhall thus have the whole under his review at once, and have leiſure to examine, to digeſt and to amend his plan, both according to his own judgment, and to hear and weigh the remarks of the beſt improvers in his neighbourhood, who have diſtinguiſhed themſelves by their taſte and their knowledge in rural affairs. This is the time to correct the general plan, rather than to undo any part after it is executed, which always implies weakneſs, precipitancy and unneceſſary expence. The whole will be divided with propriety and preciſion, ſo as to render it moſt beautiful and moſt convenient; and every part ſhall be deſtined to its proper uſe. If a houſe is to be ſet down upon it, the whole may be made an ornament to the principal reſidence, by a judicious diſpoſition of the plantations, hedges and farm-houſes. Even the farms ſhould

be divided in ſuch a manner, that the dwelling of each tenant may be as centrical in his fields, as the ſituation of the ground will admit, to facilitate his carriages and attendance. The very ſteddings of the different farms ought to claim attention; and much judgment may be diſplayed in their conſtruction and relative ſituation.

Foreſt trees are uſeful not only for warmth and ornament, but for a variety of different purpoſes; yet as they are found evidently to be injurious to corn and graſs that is near them, they ſhould rather be diſpoſed of in plantations on ſuch lands as are ſuitable to the nature of the different trees, where they can do no injury, and where the lands cannot be otherways occupied to ſuch advantage.

Incloſing is of ſuch advantage, that it is almoſt impoſſible to improve land without it. At any rate, it will never amount, while unincloſed, to its real value. Incloſing aſcertains to every landlord his juſt property, and to every tenant his own farm; and thereby prevents an endleſs number of treſpaſſes and injuries and depredations of neighbouring cattle: It dries up the bitter ſources of ruinous litigations: It promotes harmony and peace: and beſides many other advantages, it enables the induſtrious farmer to follow a regular rotation of croping and to ſow when and where he pleaſes.

Various methods have been adopted in defraying the expence of erecting incloſures in the firſt inſtance, and of preſerving them in proper repair. In place of giving any detail of theſe, let it ſuffice to mention what appears to be the moſt equitable and effectual. If a farm is to be incloſed and ſubdivided at the commencement of a leaſe, the whole expence of making the fences ought to be laid out by the landlord, who has a permanent intereſt in the ground; and in the

the groſs ſum of the rent, an equivalent may be charged for the intereſt of the money expended in incloſing. If on the other hand, a farm is to be incloſed, during the currency of a leaſe, the proprietor ought ſtill to lay out the money, and a contract be made with the tenant to pay ſuch an additional rent in name of intereſt, as may be agreed upon betwixt both parties. In the proviſion made for maintaining the fences in proper repair, the expence, as was ſaid above, ought always to be mutual and equal on both ſides, for very evident reaſons, and theſe repairs executed by ſkilful labourers, when required by either party, and compleated to the ſatisfaction of the landlord. Few diſputes take place about erecting fences, unleſs the agreement be very bungling; the great bone of contention is the keeping the fences in order; and it is preſumed that by the proviſions pointed out, much contention and many expenſive law ſuits at the end of leaſes may be avoided.

There is a great variety of gates in the county of Perth, ſome conſiſting of two leaves, ſome of one: Some moving on the center, which gives the appearance of two gates, ſome moving on one end. Moſt of them opening only to one ſide, and others opening both ways, by means of two crooks and eyes at the foot of the back part: But theſe, which ſeemed to be beſt conſtructed, were on two eſtates in Strathearn. The model * was lately brought into that country. The back of the gate itſelf (independent of the poſt on which it hangs) has a projection of three inches, in the timber on the foreſide, riſing nine inches from the foot of the moveable part. On this projection reſts the back end of the diagonal bar, which points upwards to the fore part of the gate and reaches about four feet and a half in that direction.

* See the figure, which ought to be placed here.

tion. This diagonal bar is of ſuch a thickneſs, that every one of the horizontal bars paſs through it, nicely mortiſed, except the loweſt and the higheſt. About ſix or ten inches from the termination of the diagonal bar above, there is a perpendicular one fixed in the two outſide ones above and below, and of ſuch a thickneſs as to admit all the reſt to paſs through it, mortiſed as they are in the diagonal bar. The reſt of the gate is made in the ordinary way and may be of any length. Some of them are made double, having more than one perpendicular bar: but theſe appear to be too complex and to have too many joints. It is only the ſingle gate, which has been here deſcribed; and any deſcription can hardly be underſtood, unleſs the Board are pleaſed to accompany it with a drawing. Models of both the double and ſingle kind may be ſeen now at Callander. The excellence of this gate is, that all the horizontal bars, except the higheſt and loweſt, reſt, not on the poſts only, but likeways on the diagonal and perpendicular bars; and that the diagonal bar itſelf reſts on the projection of ſolid wood, at the foot of the back poſt: ſo that it is impoſſible the joints can ſtart or the gate come aſunder, until the timber rot; or that the gate itſelf can fall forward, unleſs the pivot, on which it moves, or the pillar, on which it hangs, be faulty. It is far ſuperior to any gate, whoſe diagonal bar is fixed only by nails to the horizontal ones.

CHAP.

CHAP. VII.

ARABLE LANDS.

SECT. I. *Tillage.*

IN a country, where the quality of the ſoil in different diſtricts is ſo various, and the ploughmen are ſo different in reſpect of intelligence and experience, the tillage, which is always affected by theſe circumſtances, muſt neceſſarily be of various degrees of excellence: and let the ploughman be ever ſo expert, if the land be infeſted with ſuch obſtructions as buſhes or bogs or large ſtones, it is impoſſible that the work can be well performed.

In the lower parts of this county, where much of the ground has a gradual ſlope or is nearly in the plane of the horizon, and alſo in the bottom of ſome vallies of the Highlands, tillage is well underſtood and executed in a maſterly manner. So attentive are the generality of the gentlemen and the moſt reſpectable farmers to this matter, that competitions are occaſionally appointed in certain diſtricts, among a number of ploughmen, and premiums are adjudged to thoſe who excel. Every man knows that it is deſtruction for land to plough it wet. Stiff land is thereby battered more cloſely and rendered more coheſive, and looſe land is the more overrun with weeds. Harrowing wet is equally detrimental; and ſhearing wet no better, unleſs the grain be black victual, or the ſtraw remarkably ſtrong. See *Agricultural Maxims*, which the reader may turn over to, before he reads what is ſaid on the treatment of arable ground.

In

In ſeveral places, where the declivity of the land renders it neceſſary, and particularly in the neighbourhood of Balgowan, where the farmers ſeem to have imbibed the ſpirit of their landlord for improvement, a circumſtance is attended to, relative to tillage, which is of more importance than is commonly ſuppoſed. When the fields hang ſo much, as to be accounted ſteep, the ridges ought neither to be drawn parallel to the bottom of the fields; nor at right angles, ſtraight up and down; either of which would be inconvenient in the ploughing, and injurious to the ſoil. They ought to be drawn diagonally. The great point is to underſtand in what direction this diagonal ſlope of the ridges ought to run. In this reſpect Balgowan's tenants are perfectly correct; and it is my wiſh that their example were followed by all farmers, whoſe land has a great declivity, of which there is a conſiderable proportion not only in this, but in all hilly countries whatever. The form and direction of the ridges is contrived with ſuch judgment, that the furrow (or as Lord Kames with more accuracy calls it, the furrow-ſlice) falls eaſily away from the mold board, as well in aſcending as in deſcending the field, which is the principal ſecret. There can be no more than two diagonal lines in any four ſided figure, which is generally the form of incloſures; and if you bring a ſenſible ploughman to each of the angles below, deſiring him to look towards each of the oppoſite angles above, he will at once tell you, which of theſe diagonal directions is eaſieſt for himſelf and his horſes, and will accordingly fix on that line, by which the furrow *in aſcending* will fall moſt readily into its place, having his right hand and the mold board of his plough with a ſide-aſpect to the bottom of the field. Perhaps this may be made more plain by a deſcription. Suppoſe the field to have a ſteep deſcent and a ſouth-

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ern aſpect, the ridges are drawn from ſouth weſt to north eaſt; which is the caſe in the inſtance alluded to. Suppoſe again the field to have a northern aſpect, the ridges are drawn in the ſame direction, but with this difference in ploughing, that you *aſcend* ſouth weſt in the laſt caſe, whereas you *deſcend* ſouth weſt in the firſt. If the field fronts the eaſt, you aſcend north weſt; if the field fronts the weſt, you deſcend north weſt, i. e. invariably four points forward from the ſlope of the field, in going up the hill.

Whoever tries this method of ploughing very ſteep land, will find that one third leſs of power will ſuffice, than if the ridges were ſtraight up and down, beſides that there is leſs waſte of ſoil in the time of rain, by the water running in the furrows: And what a great ſaving is that of an additional horſe! If, on the contrary, the ridges be made parallel to the bottom of the field, all the dexterity of man and the force of cattle, that could be applied, would be inſufficient to turn every ſecond furrow up againſt the hill.

The expedient univerſally employed, according to the old ſyſtem, in ploughing fields of this kind, was, either to plough with a double mold-board, or if the mold-board were ſingle, to plough only one furrow, in going twice the length of the ridge; but moſt frequently the laſt. Both are bad huſbandry. In the former method you loſe none of your time indeed, but one half of your labour is loſt by the latter. My principal objection holds equally againſt both. All the ſoil is year after year rolling downward, and in proceſs of time the upper part of the field will be peeled to the bone and quite bare of ſoil, while a great bank is accumulating along the bottom, like a dunghill, compoſed of the richeſt land in the field: and withal the furrows are laid ſo completely on

their back that little benefit is derived from the manure, excepting it be laid on the ſurface the firſt year.

The depth, at which land ought to be tilled, depends entirely on the nature of the ſoil. Some ſoils on a gravel or ſandy bottom are ſo thin, that if ploughed with a deep furrow, the productive earth is thereby buried ſo far below the ſurface, that no crop can be expected. This happens alſo, when the ſubſoil is a hard or a wet till. Other ſoils may be ſo deep and rich, that the more freſh mould, which is brought up and mixed with the former mould in action, ſo much the better. No crops are equal to thoſe growing on virgin earth. The ſafeſt time, for trying experiments of ploughing deeper than ordinary, ſeems to be with a ſummer fallow. The influence of the atmoſphere, the warmth of the ſun, the alternate action of froſt and rain and ſnow, together with the frequent ſtirring, meliorate the moſt inert ſoil. Even the ſtiffeſt till or the coldeſt clay imbibe new and better qualities by this operation. And in this way alone is it ſafe to bring up a little even of gravel or ſand, eſpecially before liming or marling, ſeeing it is wonderful how much their nature alters.

The breadth of ridges ought to be regulated by the nature of the ſoil. The former practice was, that in a wet field the ridges were made narrow, not broader perhaps than three paces, in order to increaſe the number of furrows and lay the land dry. If the ſoil was very wet and ſpouty, they were raiſed a little in the crown: But if the land has no ſubterraneous water, raiſed ridges are, on many accounts, to be avoided. A well cleaned furrow with a narrow ridge, even although nearly flat, will ſuffice, in more caſes than we are aware of, to carry off the rain water, if there be a proper ditch at the end of the ridge, to receive it.

Practical

Practical farmers have now rejected the narrow ridges in wet ſoils, particularly thoſe that do not abſorb the rain; for it is obvious that in ſuch caſes nothing but declivity will carry off the water; and that can be beſt obtained by ridges moderately broad and properly raiſed; a number of furrows are alſo ſaved.

On a dry bottom, the ridges may be kept as flat as poſſible, in order to retain the moiſture neceſſary for vegetation; and they may, with ſafety, be made four paces broad at leaſt. The furrows in general produce leſs crop, than any other part of the ground: the fewer furrows the better, provided the land can bear it. If the field be dry, there is not only more produce, by fewer furrows, but the ridges are cloven by every ploughing, (a thing that cannot be done in raiſed ridges with deep furrows) which keeps them in an uniform level ſurface and greatly facilitates the labour of ſpring and harveſt.

Perſons, who are not accuſtomed to inveſtigate the cauſes of what they daily ſee, are deterred from making their ridges nearly flat, by the water that ſtagnates in the ſtripes of graſs and ſprits, that lie between the ridges, which they have raiſed greatly in the middle: never conſidering that they are working againſt nature, becauſe the more the ridges are rounded, the deeper are the furrows, till they become like ditches, and the more readily do clods fall down; ſo that they are, with their own hands, producing the very evil, which they wiſh to prevent. Whereas, were theſe ſtripes of flags and other trumpery torn up, were the furrows leſs deep and kept carefully cleaned and open, to allow a free paſſage to the water, the whole would flow to the open drain at the extremity of the field; and the higher the furrows are in reſpect of this drain, their relative height would

make the water flow the faſter. Care ſhould always be taken that the clods, which fall back into the furrows and dam the water, in ſuch land, ſhall be removed with a ſpade. The ſlovenlineſs of men, in this particular circumſtance, more frequently produces the ſtagnation complained of and all its baneful conſequences, than either ridges moderately raiſed or any other cauſe.

Theſe remarks appear ſatisfactory with regard to laying out ſuch land into ridges in the firſt inſtance; but where land has been formed into high or crooked ridges, it is not ſo eaſy, to perſuade men to bring back theſe to a level ſurface. The objection made by ſome farmers in the Carſe of Gowrie is this: In the action of levelling ridges, that had been, time immemorial, raiſed high in the crown, much ſoil is brought up, which for ages had neither ſeen the ſun nor ſmelled the air. This, like moſt other ſoils, which has been ſo long and ſo deep buried, is very unproductive at firſt, and blaſts all their expectations. It is perfectly conſonant to the proceſs of nature that this ſhould, in ſome meaſure, happen; and, as far as it has any weight, is an argument not only againſt levelling, but againſt ſtraightening the ridges of ſuch land. But was not every particle of that ſoil, which is ſo much reprobated, on the ſurface of the ground before the ridges were ſo raiſed by the hand of man? Was not this very ſoil, at that time, as good as any ſoil in the field? Nay, was it not much more fertile, before it was buried in the middle of the ridge, than the *new* ſoil, which the ploughman was digging up year after year, out of the ſterile furrow, to aſſiſt in gradually raiſing his ridge higher? Every man muſt anſwer in the affirmative. If you therefore bring back your land nearly to the level, in which the hand of Nature left it, you will find the very ſoil, which was then

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on the ſurface; the ſoil, which had been fertilized by the deciduous parts of plants, from the creation, until it came into cultivation; the ſoil, which Providence intended for the production of grain for the uſe of man. This ſoil has not ſurely loſt its fertility, although that fertility has lain long dormant by its being covered up in the bowels of the earth and removed from the benign influence of heaven. The fertility of a ſoil cannot be exhauſted by any other mean, but by overcroping.. It may be ſuſpended as in this inſtance, but not annihilated. Reſtore the ſoil to its native place and to that influence, of which it was deprived, and it will ſoon become equally productive as at firſt. It is not pretended that its fertility will be exerted all at once. Clay is a ſtubborn ſoil. It is neither ſo eaſily ſtimulated by manure nor by the benignity of the atmoſphere, as other ſoil. It requires time and labour and expence to ſet it in motion; but when moved it retains its powers longer and makes very ample returns.

If any thing ſaid on this ſubject is thought worthy of the attention of perſons, who are deſirous of ſtraightening and of bringing down carſe ridges, it may be proper to begin the operation by removing the *made* or meliorated ſoil, on the crown of the ridge, to one ſide; which may be done by two or three ploughings in one direction, turning the furrow always one way. This is eaſier than doing it with the ſpade. Then ſuch a quantity of the buried ſoil may be caſt with the ſpade from the crown of the ridge, as will fill up the furrows at pleaſure: and laſtly, the meliorated ſoil may be ſpread over the ſurface of the whole. If it is not thought enough to ſave the meliorated ſoil on the crown of the ridge alone; firſt one ſide of the ridge may be taken, and then the ſame proceſs repeated on the other; by which means almoſt all the wrought ſoil may be kept on the ſurface. A

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good ſummer fallow, a hearty doze of lime and the mixture of wrought mould will reanimate the new ſoil and reſtore its vegetative power to its primitive ſtate; and a very few ſeaſons will naturalize the whole ſoil, while the farmer has the advantage of ſtraight ridges, moderately raiſed. Or, as Mr Anderſon ſays in his eſſays on agriculture, relative to this ſubject, When you mean to proceed, let a number of men be collected, with ſpades, and then ſet a plough to draw a furrow directly acroſs the ridges of the whole field, intended to be levelled. Divide this furrow into as many parts as you have labourers, alloting to each a ridge or two, more or leſs, according to their number and the height of the ridges. Let each of the labourers have orders, as ſoon as the plough has paſt that part aſſigned him, to begin to dig in the bottom of the furrow that the plough has *juſt then* made, about the middle of the ſide of the old ridge, keeping his face to the old furrow, working backwards till he comes to the middle of the old ridge, going deeper as he advances, ſuitable to the height he has to bring down; then let him turn towards the other furrow, and repeat the ſame on the other ſide of the ridge, ſo as to leave the bottom of the trench he has thus made acroſs the ridge, entirely level, or as nearly ſo as poſſible. When he has finiſhed that part of the furrow alloted to him, which the plough has made in going, let him then go and finiſh in the ſame manner his own portion of the furrow, which the plough makes in returning. The old furrows ought to be raiſed to a greater height than the middle of the old ridges, ſo as to make allowance for the ſubſiding of that looſe earth.

He recommends to make theſe temporary or croſs ridges 40 or 50 yards broad at leaſt: for although ſome time will be loſt in turning at the ends of the broad ridges, the advantage

vantage that is reaped by having few open furrows, is more than ſufficient to counterbalance this loſs: and in order to moderate the height that would be formed in the middle of each of theſe great ridges, it will always be proper to mark out the ridges, and draw the *furrow* that is to be the middle of each, ſome days before you collect your labourers to level the field, to prevent any hurry or loſs of labour in the future operation of levelling. The field will thus be reduced at once to a proper level, and the rich earth that formed the ſurface of the old ridges will ſtill be kept on the ſurface of the field to be formed into new ridges.

This judicious writer adds that the direction of the ridges ought to be north and ſouth, if the field will permit, by which means, the eaſt and weſt ſides of the ridges, dividing the ſun equally between them, will ripen at the ſame time. When the ſoil is ſo wet, as to require the raiſing of the ridges, he ſays that they ought to be made 12 feet wide and 20 inches high, and to be preſerved always in the ſame form, by *caſting*, that is, by ploughing two ridges together, beginning at the furrow that ſeparates them, and ploughing round and round, till the two ridges be finiſhed. The ſeparating furrow is indeed raiſed a little higher than the furrows that bound the two ridges, but at the next ploughing, that inequality is corrected by reverſing the operation.

Mr Paterſon of Caſtlehuntly's method is, firſt to open up, with the ſpade, a trench of about 10 feet broad, from end to end of the field, in the ſame direction the ridges are to be made. The upper ſurface of this 10 feet trench is laid upon one ſide, to be removed afterwards. Then the under ſoil of this trench is levelled and dreſſed by ſpade and wheelbarrow or carts, if neceſſary, at the ſame time giving the land a gentle fall at both ends to enable the water to run off

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in the furrows towards the main drains. When this under ſoil had got its proper ſhape, he marked off another 10 feet trench, and with the ſpade threw the upper-ſoil of the ſecond trench on the new formed under-ſoil of the firſt trench, ſo as to cover it compleatly and equally: and ſo on through the whole field. The upper ſoil of the firſt trench was carried round in carts and laid on the under ſoil of the laſt trench. The appearance of the field is then regular, riſing in the middle and falling at both ends. He recommends ridges 18 feet wide. The whole expence is ſuppoſed to be L. 8 an acre.

When a hill is to be dreſſed, in order to be laid down in graſs, it ought to receive the laſt furrow by going round in a ſpiral line, without ever turning the plough; beginning at the baſe and ending at the top. This requires leſs labour and is more beautiful. In preparing the ground for this laſt furrow, it may be ploughed diagonally, to keep the ſoil from tumbling down hill, as has been mentioned above in reſpect of declivities: for this purpoſe the ſurface of the hill may be divided into three or more ſections. The ſpiral furrow is the neateſt method of finiſhing off a lawn, even of flat land near a gentleman's houſe, as it brings the whole ſurface to an uniform appearance, and pleaſes the eye more than having the lawn ſtriped with furrows.

Sect. II. *Fallowing.*

WHEREVER a proper rotation of crops is not introduced, it is almoſt unneceſſary to obſerve that fallowing in ſummer is unknown. The land intended for barley is ploughed either before winter or early in ſpring to prepare it for the ſeed-furrow in May, unleſs it be ſown after potatoes; in which caſe, nothing is given except the ſeed furrow. Wherever potatoes

potatoes are planted with the plough in drills, the land is prepared generally by two or more ploughings, before that root is planted; and the more the ſoil is pulverized by theſe previous operations, the leſs trouble there is afterwards in hoeing and in keeping the potatoes clean. There is hardly any crop, that requires a better tilth than potatoes: which circumſtance is well underſtood in the Highlands of Scotland, where the ſoil is admirably adapted for raiſing this valuable root: And if it is not propoſed to ſow any more barley, than in the potatoe bed, there is no other fallow neceſſary.

In the more fertile diſtricts of the county, where ſoil and climate are calculated for raiſing various kinds of grain, where the farmers underſtand their buſineſs and have ſtock to enable them to make the moſt of their land, a clean ſummer-fallow or at leaſt a fallow-crop is introduced into every rotation. A great proportion of the flat land being a ſtiff, cohesive clay, the only ſpecies of fallow-crop is turnip. Such a ſoil is unfriendly to potatoes. The former grows moſtly on the ſurface, and when ſown in drills, puſhes its ſtrong top-root boldly down through very ſtiff land; whereas the latter being a more tender feeder, its fibres more delicate, its pulp under ground, if lockt up on all ſides by an unyielding cohesive ſoil, it cannot expand nor forage ſo ſucceſsfully in queſt of its own ſubſiſtence. Nature therefore, the ſureſt of all guides, teaches, that of any fallow-crops on clay, hitherto known in this country, turnips are the moſt proper On loam or light ſoil, potatoes and the various kinds of garden greens thrive equally well. Cabbages and carrots and parſnips delight in a deep free ſoil.

There is no doubt but a clean fallow may meliorate the ground equally with any of theſe plants, or nearly ſo; and that when the land is very wild, no other can be uſed; yet

if the rents continue to advance, with the ſame rapidity they have done for ſome years paſt, prudence will direct the farmers to have leſs of their land idle, whatever be the nature of the ſoil, and to ſubſtitute fallow-crops more frequently in place of clean fallows. If winter vetches will anſwer in this climate, they ought to come in the place of fallow before wheat, as they can be uſed for green food or made into hay time enough to allow preparing the ground for the ſowing of wheat; even ſpring vetches will anſwer, though the crop ſhould be cut before it come to its full value.

On the ſtrong ſoils of this part of the kingdom, fallow is a preparation for wheat; on the light land it is ſucceeded by a crop of barley with graſs ſeeds. The practice in both caſes is very judicious.

In many parts of Strathern and Strathallan, where the land is extremely light and gravelly, the farmers have a practice in the beginning of winter, of *ribbing* their land, i. e. they turn up and leave a furrow alternately, ſo that the ſoil, which is turned over by the plough, is left exactly on the top of the furrow, that is not ſtirred. After this operation the field has the appearance of the indented roller of a lint-mill. The principle appears to be juſt; and is the ſame with that of gardeners, who turn up their onion and celery-beds, through the winter, to expoſe as much ſurface as poſſible to the meliorating influence of the atmoſphere. This is the winter fallow of theſe farmers. Their greateſt or only miſtake ſeems to be *ribbing* acroſs the ridges and not water-furrowing the land, except in very few inſtances: By which neglect the ground lies all winter under ſtagnant water, if the field be nearly horizontal; and if the declination be conſiderable, the ſtreams in the old furrows waſh away the fineſt part of the ſoil. Perhaps it were ſtill better if the farmer had

had time, firſt of all to plough the whole field acroſs, and after a ſhort interval, to rib along the ridges.

Weak land may be eaſily reduced to a proper tilth by ſome of the fallow or green crops abovementioned; and even ſtrong land by ſome of theſe, or by ſowing peaſe or beans, or a mixture of both; except when it is rendered foul by bad ſeaſons, by bad management, or much reduced by a ſucceſſion of exhauſting crops. In either of which caſes, a thorough ſummer-fallow is the moſt immediate reſtorative to recruit the ſoil.

If it be poſſible to overtake it, the firſt furrow ought to be given before winter; no ſeaſon being more friendly to exhauſted land under fallow, than the winter; and no ſeaſon for extirpating weeds equal to the ſummer. The former invigorates the ſoil; the latter cleans it. The ſecond furrow ought to be given in the very beginning of May, after having been well harrowed two or three weeks before; but no harrow ought to touch it from the firſt furrow until the middle of April, that as much ſurface as poſſible may be expoſed in the winter months. It is well known that froſt dilates or increaſes the ſize of the clods of earth, and that thaw will contract them to their natural ſize. Thus by the alternate action and reaction of froſt and thaw, during winter, the particles of the ſoil are looſened and the field in fallow rendered more mellow for the operations that ſucceed. From the beginning of May to the latter end of September or beginning of October, when the wheat is to be ſown, the moſt experienced farmers endeavour to plough and harrow their ſummer-fallow alternately every two or three weeks; by which means every ſucceſſive crop of weeds will have two or three weeks to grow, between a ploughing and a harrowing, and will never be able to carry ſeed, by ſtanding any

longer Every ploughing ſhould be croſs to the laſt: and the land muſt have been in v ry bad order indeed, which is not thoroughly dreſſed by this proceſs. The dung is generally ploughed in with the laſt furrow. If the land had been very poor, it may be put down with the preceding furrow.

SECT. III. *Rotation of Crops.*

THE practice of intelligent and ſubſtantial farmers on ſoils of the ſame nature is in this reſpect nearly ſimilar; while many others may be ſaid to have no fixed rotation at all.

The mode of croping land, in any country, is the ſureſt teſt of the ſtate of its agriculture. Therefore without knowing the ancient ſtate of the huſbandry of this part of the kingdom, as already detailed, and the progreſſive ſtages of its improvement, a ſtranger could not know what praiſe is due to the preſent race of farmers.

The moſt intelligent farmers in the diſtrict of Tullyallan and Culroſs and Menſirie follow an uniform rotation. On all the flat land on both ſides of the Earn, from the bridge of Forteviot to the Tay; on the clay land of the Carſe of Gowrie; upon the banks of the Iſla, from the bridge of Ruthven to its junction with the Tay; and on the beſt ſoil of either ſide of the Tay both above and below Perth, beſides ſome parts of Monteath and ſeveral diſtricts of leſs extent, where the land is either a deep loam or a rich clay, the ſame rotation is obſerved, by dividing the land into ſix lots, according to Rotation IIt. in the annexed table. The rotation on the clay land in Monteath, with ſome of the beſt farmers, is in eight diviſions, (ſee Rot 2d.) in the table. The rotation on the light land in the Carſe of Gowrie is in 5, (ſee Rot 3d) The rotation in the lands of Auchtertyre, in ſome places near Callander, and in many other parts of the

the county, where the land is light and a regular rotation followed, it is in 7, (ſee Rot. 4th) In good lands of old infield, if the farms be ſmall, the diviſions are 6. (ſee Rot. 5.) Another rotation near Callander is in 5, (ſee Rot. 6.) The rotation at Lawers is in 4, (ſee Rot 7.) Near Drummond Caſtle, on the higher parts in the vicinity of the Carſe of Gowrie and about Coupar, the rotation is in 7, (ſee Rot. 8) A rotation on ſome lands on the Leath is in 5, (ſee Rot. 9.) On large farms at Weſter Foulis, which conſiſt of ſtrong ſoil, the rotation is in 8, (ſee Rot. 10.) On other lands in 6, (ſee Rot. 11.)

TABLE

TABLE OF ROTATIONS.

	1.	2.	3.	4.	5.	6.	7.	8.
1. Carſe of Gowrie, on the banks of the Earn, Illa, Tay, Nairn Eſtate, &c.	Fallow with lime and dung.	Wheat.	Peaſe and beans.	Barley with hay ſeeds.	Hay.	Oats.		
2. Monteath.	Fallow.	Wheat.	Peaſe and beans often drilled.	Barley with ſeeds.	Hay.	Paſture.	Wheat.	Oats.
3. Light land in Carſe of Gowrie.	Beans.	Wheat.	Barley with ſeeds.	Hay or clover.	Oats.			
4. Auchtertyre and about Callander.	Green crop.	Bear with ſeeds.	Hay.	Paſture.	Ditto.	Ditto.	Oats.	
5. Ditto.	Green crops moſtly fed off.	Bear with ſeeds.	Hay.	Paſture with ſheep.	Ditto or oats.	Oats.		
6. At Callander.	Green crop.	Bear with ſeeds.	Hay.	Paſture.	Oats.			
7. At Lawers.	Turnips.	Barley with ſeeds	Hay or 2 years in paſture.	Oats.				
8. Drummond Caſtle and higher parts of Gowrie and near Coupar.	Green crop.	Barley with ſeeds.	Hay.	Paſture.	Ditto.	Ditto.	Oats.	
9. On the Teath below Callander.	Oats.	Barley with ſeeds.	Hay.	Paſture.	Ditto.	Ditto.		
10. Foulis Weſter.	Fallow or Green crop.	Wheat or oats.	Green crop or fallow.	Barley with ſeeds.	Hay.	Paſture.	Ditto.	Oats.
11. Ditto, on other land.	Green crop.	Barley with ſeeds.	Hay.	Paſture.	Ditto.	Oats.		

Upon

Upon the upland in Monteath the rotation is the ſame with No 8, except that barley is frequently taken for the firſt crop after ley, in place of oats, to avoid a heavy multure, which the oats are ſubjected to. The rotation upon the light land between Gaſk and Balgowan is much the ſame with that laſt mentioned. At Balgowan the rule in the leaſes is very ſimple, five years out of ten, in tillage, one being a green crop, the other five in paſture or hay.

In moſt parts of Strathallan, the land is kept in *thirds*, (i. e.) one third in tillage for three year, and two thirds always graſs. By this mode of culture the chief inconvenience is, that the farmers muſt once every three years, either have no barley, or ſow it upon ley, or fallow a graſs field the preceding autumn for a barley crop. By this management however, it is impoſſible they can run out the land.

Of all theſe rotations, the firſt is the moſt univerſal and the moſt approved on clay or other ſtrong ſoil. On good upland or dry field ſoil, the ſixth or ſeventh ſeems to be the beſt. The fourth or eighth on light land. There is ſcarcely any ſoil ſo poor but what may be kept in heart by this laſt management. If it is extremely poor, in place of hay, it ought to be in paſture the firſt year after barley, and depaſtured always with ſheep. Unleſs there is a ſupply of dung, (which on an extenſive ſcale of farming may be required to other fields) the ninth rotation may be ſucceſsfully adopted on land which is already in good order. Lime at leaſt muſt be laid on with the graſs ſeeds, and two or three years in paſture may ſupply the place of dung, as an addition to the ſtaple of the ſoil. If there be any dread of reducing the ſoil, the land may be left a year longer in paſture.

An invariable rule obſerved by the beſt improvers in the Carſe of Gowrie and ſeveral other diſtricts, where the cultivation

tivation of ground is properly underſtood, a rule eſſential to good huſbandry, is, never to ſow any white crop, except after fallow or a green crop; or in other words, not to ſow two white crops ſucceſſively on the ſame field. This rule will conduce much to keep the land always in good condition; and cannot be departed from without injuring the ground, unleſs dung be laid on with one of the white crops, if two ſhou d ſucceed one another; and that dung bought in. In arable farms, where the ſoil has a good body, it is another rule very generally obſerved, not to raiſe graſs but for one year in every rotation, and ſometimes to eat it green, in place of making it into hay. Whatever is eat green is ſown without any mixture of rye-graſs. But on a light ſoil it appears injudicious to make the rotation ſo cloſe; the land requiring a year or two in paſture, according to its quality, to reſtore its ſtrength, after being croped. Where peaſe and beans are ſown, either mixed or ſeparately, they are frequently drilled by the moſt intelligent farmers; which practice is gaining ground and greatly meliorates the ſoil.

I ſee by my notes, that Mr Mylne of Mylnfield propoſed upon light land, which required to be tenderly dealt with, to break it up from ley of three years old, to ſow tares upon a ſecond furrow, as early in ſpring as the ſeaſon would permit, to eat off theſe tares with ſheep, then to ſow what are called bruſh turnips *, which are not expected to produce any roots, but in the months of March and April afford an excellent food for ewes and lambs. Whenever theſe were eaten off, the field was to be dreſſed for drilled turnips, to be ſown about the 24th of June, which were alſo to be eat off

* Rape is better, becauſe it can be eat both in autumn and ſpring, and in ſpring produces much more food than bruſh turnips. *Sir William Murray.*

off with ſheep. In the ſpring following early oats were to be ſown, along with graſs; and that kind of oats made choice of, to prevent the crop from lodging *.

Although a rotation of crops, ſuitable to the nature of the ſoil, be conducive to the fertility of the ground and alſo to the profit of the poſſeſſor, yet it muſt be acknowledged with regret, that in many parts of this county, the farmers have no regular rotation. They plough the land as long as it will carry any crop, and when it will not even carry oats, they let it out to reſt, of which it has much need.

SECT. IV. *Crops commonly cultivated.*

THE culture of grain is the great object of huſbandry. The more induſtry that is employed to enrich the ſoil of any country, the greater will be the produce of that country, and the more able to ſupport an increaſing population. However ſpecious the reaſoning of thoſe writers, who wiſh to recommend the grazing ſyſtem, by alledging that beef and mutton will, from any given extent of land, ſupport the ſame population, with the bread it could produce, yet if we have recourſe to matter of fact, it will appear evident beyond contradiction, that the beſt cultivated countries both in ancient and modern times were the moſt populous; and that the arable ſyſtem did produce more human food than the paſtoral. Some diſtricts in almoſt every country are unfit for tillage; and in every judicious rotation of croping there may be one or more crops of graſs. But where the

 ſoil

* In this wet climate the oats will lodge three years out of four; this is therefore a ſafer rotation—Oats, rape, barley and ſeeds. As the barley may be ſown later than the oats, the uſe of the rape, which grows inceſſantly in ſpring, may be got, till the earlieſt graſs comes up, for the ewes and lambs. This is the practice at Ochtertyre. *Sir William Murray.*

ſoil is adapted by nature for the plough, it is a national evil to have large tracts of good arable land lying half idle, producing only leſs than the half, for the food of man, that it might afford, by a different management *.

WHEAT.

* This reaſoning is leſs applicable to Scotland than in ſome parts of England. 1ſt. Becauſe the loſs from bad harveſts is almoſt incalculable in moſt parts of Scotland. 2dly. Becauſe ſo large a portion of the country is only fit for ſheep, that muſt have winter paſture in the low grounds proportioned to ſummer paſture, and as they are conſtantly increaſing their ſummer paſture, and may therefore be increaſed themſelves, the extent of the winter paſtures muſt be made to correſpond. Indeed I aſſert that at this moment there is not north of the Tay, one fifth part of the winter paſture alloted for the ſheep, that the hills will carry, that ought to be, either for the benefit of the community, the proprietor or the tenantry. In the Weſt Highlands, where the climate is ſo wet, an arable ſyſtem is flying in the face of nature. The Highlands now laid under ſheep, produce twenty times more food than they formerly produced for the market, and their produce will yearly increaſe, from the meliorating nature of ſheep, if they be allowed a proper proportion of low ground for winter food. Indeed nature ſeems to have pointed out the grounds that lie next the hills for that purpoſe, from their being ſo ſteep and ſo ſtrong, or ſo thin and gravelly, that an arable ſyſtem in the Highlands would be juſt as ridiculous as making a ſheep-walk of the Carſe of Gowrie. *Sir William Murray of Auchtertyre.*

Anſ. When there happens to be a difference of opinion, (which is very ſeldom the caſe) between Sir William and me, on any point of farming, I am ſo diffident, that I am apt to diſtruſt my own judgment in oppoſition to his: On the preſent ſubject, I am ſo unfortunate as to differ alſo from the opinion of another gentleman of very high profeſſional knowledge in my immediate neighbourhood, with whom I have had ſeveral conferences upon this ſubject, without being able to convince or to be convinced.—There is however a meanneſs in ſubſcribing to authority alone, without conviction.—If the queſtion were about the *amount of rent*, ſheep fed on an arable farm, might claim the preference, for a variety of reaſons: but the *quantity of food* is the object of enquiry.

Wheat.

WHEAT is cultivated on the clay land in moſt parts of this county; and in ſome places of the upland, where the ſoil is ſtrong, and poſſeſſed by tenants, who are induſtrious and enterpriſing; particularly in the Carſe of Gowrie, in the diſtricts of Strathmore and Stormont, around Perth, on both ſides of the Earn from Forteviot to the Rhind, betwixt Valleyfield and Tullyallan, on the Devon near Menſtrie and in Monteath; and alſo in ſome places near Muthil, Dunblane and on the Pow. The cultivation of wheat has become general ſince a ſpirit for improvement has begun to go forth in the country; and it will increaſe in proportion to the knowledge and wealth of the farmers and to the luxury of the inhabitants. The period is not long paſt, ſince it was thought, that wheat could not grow on the Earn weſt from Kilgriſton, until the late Mr Oliphant of Roſſie ſet the example in his

 neighbourhood,

enquiry.—To do all poſſible juſtice to the objection, brought againſt my opinion, I have not changed one word of the text, which is impunged by ſuch reſpectable authority. There I have granted, that land, which is *unfit* for an arable ſyſtem, ought to be in paſture; but whether good land, properly improved, for raiſing grain, be *moſt productive of human food*, by a regular rotation of croping, or by lying for a tract of years in graſs alone, is the queſtion to be determined. We ought to reaſon *a poſteriori* on farming. Let any man aſk himſelf what is the cauſe of emigration in his own remembrance. Scotland has as many acres of land as ever; and farming is better underſtood than ever. It is unneceſſary to ſay more in this place, becauſe the queſtion may occur under another article. Our fathers had certainly too much land in tillage: the danger is that we may have too little. On this point every man muſt think for himſelf; and it is with becoming deference I hold my own opinion. Hanc veniam petimus damuſque viciſſim. *The Author.*

neighbourhood, not only in this, but alſo in other improvements. Wheat was introduced into the vicinity of Crieff by the late Sir Patrick Murray of Auchtertyre, before the middle of this century; and I am informed on good authority, that he raiſed five ſucceſſive crops of wheat on the ſame field, by the drill huſbandry, and that the laſt crop yielded eight bolls the acre.

Wheat is generally ſown after fallow or after peaſe and beans. When the land is fallowed, the firſt ploughing is given in autumn, as has been ſaid already under the article of fallow, the ſecond in May, and two or three afterwards as may be neceſſary. Wheat is ſometimes ſown on clover ley. In the Carſe of Gowrie, where this grain is cultivated on a very extenſive ſcale, and agriculture in general is reduced to a regularity of ſyſtem, which is found in few other places, lime at the rate of 40 or 50 bolls of ſhells, wheat meaſure, is laid, in the month of July, on every acre, after being reduced to powdered lime. The land is then ploughed very ſhallow; and before the laſt ploughing for the ſeed is given, the dung from the ſtraw-yard, without mixture of any other ſubſtance, is carried to the field, and thirty loads of a cart which will hold four bolls and a half of lime-ſhells, are laid on the acre in the end of Auguſt. After the dung is ploughed in, the ſeed, at the rate of ten or twelve pecks, is ſown on the acre.

When wheat ſucceeds peaſe or other green crop, as ſoon as the preceding crop is carried off the land, dung at the rate above mentioned is laid on the acre, and from fourteen to ſixteen pecks of ſeed are ſown.

When wheat is ſown upon clover ley, which is ſometimes the caſe, on thoſe farms in the Carſe, where regular rotations are not adopted, one ploughing ſuffices, immediately before

before the ſeed is ſown, which is commonly one boll to the acre.

The ſpecies of wheat generally cultivated, are the Eſſex or common white, the old red, and a kind known by the name of brown wheat, which grows browniſh in the chaff, but white in the grain. Spring wheat has been alſo tried, which produced a tolerable crop. A kind of wheat brought from the Cape of Good Hope to this part of the county by Robert Fairful, Eſq. of Struie, has been ſown for ſome years; but I do not hear that it is preferred by thoſe gentlemen who have tried it, to the common kinds.

The quality of wheat may be preſerved, a long time good for ſeed, by changing it from one kind of ſoil to another, according to the manner of preſerving the quality of other ſpecies of grain. Care ought to be taken not to bring ſeed of this or any other kind of grain from a better to a worſe ſoil, becauſe it degenerates very rapidly, and ſeldom fulfils the farmer's expectations, even in the firſt crop. It is a far ſafer practice to bring ſeed from a worſe ſoil and climate than your own, providing it be unmixed and of a proper quality.

Wheat is pickled with ſalt and water before it be ſown, to prevent the ſmutt, and when the weaker grains are ſkimmed off, and the water poured from the reſt, it is afterwards mixed with quick lime; others uſe a different and cheaper pickle univerſally known, which is leſs powerful, but more injurious to vegetation, unleſs the wheat be ſown immediately. Ten bolls on the acre is a good average return on moſt lands, under proper management; in ſome caſes, where the land is exceedingly rich, the return is more, in others leſs.

Wheat is ſown from the 10th September until Martinmas, according to the ſeaſon and other circumſtances; and if it were not for fear of loſing the proper opportunity (the *Tid*

of

of ſowing, as it is vulgarly called), the longer the wheat-ſeed is delayed, only giving it time to come fairly above ground before winter, ſo much the better; becauſe the early ſown wheat runs much to ſtraw; whereas the late wheat carries the fulleſt and heavieſt ear. In ground that is naturally dry, when the wheat is winter-proud, which commonly happens after a mild ſeaſon without much froſt, that luxuriance, which makes it too ſtrong and too forward in Spring, ought to be checked by eating it down with ſheep. This remedy is to be applied with great circumſpection. If the ſoil be wet, they may poach it too much; and if they are kept too long upon it, they may bite ſo cloſe, as to eat up the crown or heart of the plants, from which future growth ſhould ſpring. But if done with judgment, the plants are made thereby to tiller and ſend forth new ſhoots, the field receives a top dreſſing, which increaſes its fertility, the treading of the feet conſolidates the ground and fixes the plants more firmly in the ſoil, which may have become looſe and ſpungy after the viciſſitudes of the winter ſeaſon.

It was recommended by the Preſident of the Board, whoſe attention nothing eſcapes, to enquire into a circumſtance relative to the ſeed-time in the Carſe of Gowrie, which appeared problematical; and if it was found to be a fact, to endeavour to account for it: i. e. why the farmers in the flat land are enabled to ſow, in Spring, more early than thoſe in the breas or higher ground?

The breas in the Carſe of Gowrie, like all other ſloping land, which has inequalities of hills and vallies behind it, is more or leſs ſpouty, and theſe ſprings are more numerous, where the inequalities abound moſt, and riſe above the general ſurface up or down the declivity, in proportion to the depth of the vallies behind. Whereas on the other hand,

all

all flat land has but few ſprings; the water that infeſts it being only the rain, which falls from the clouds. In the former caſe the water iſſues from a thouſand ſources, wherever it can force its way; in the latter it only ſtagnates on the ſurface where the ground is hollow. The operation of draining is both more eaſy and more certain, in the latter, than in the former ſituation. In this the evil to be prevented is more hidden and concealed; in that it is expoſed to open view. Carſe land may be drained effectually, where there is a fall; ſpouty land it is almoſt impoſſible to lay perfectly dry. Surface or open drains will ſuffice in the one; many diagonal ſubterraneous drains are required in the other, to lead the water to a main drain; and after all, ſome ſprings may have been miſſed, and ſome of the ſubterraneous drains may have been ſoon choked up. In ſhort there are many chances againſt the land in the breas of the Carſe of Gowrie and all other land in ſimilar ſituations, being as effectually drained or as ſoon dry in ſpring or as ſoon ready for receiving the ſeed, in the ſowing ſeaſon, as the land that lies flat, if there be any tolerable fall. This is the caſe in many diſtricts of this county, beſides the Carſe of Gowrie. In this and many other reſpects, when cauſes are inveſtigated with care, they are found to operate often contrary to the firſt appearance of things. There are no problems in nature; they only appear problematical to us, owing to our inattention or ignorance. Suppoſing both ſoils to be equally well drained, in the breas and in the Carſe of Gowrie, the farmers in both may ſow at the ſame time; but the difficulty lies in being able to drain both equally.

Peaſe

Peaſe and Beans.

SOME ſoils are ſo light, as not to have ſtrength ſufficient to bring beans to maturity; but the ſowing of peaſe is general, throughout the county. Before the introduction of potatoes and turnips on weak land, and the practice of ſummer fallowing on ſoils that are ſtrong, the farmers had no other method of cleaning their ground but by this crop.

Peaſe and beans are ſometimes ſown together and at other times ſeparately. A mixture of them in various proportions is ſown almoſt in all places, where the farmers cultivate wheat; and in ſome places on a clay ſoil, where wheat has not been introduced.

Clean beans, or peaſe and beans, are generally ſown broad-caſt, but ſometimes they are drilled; a practice which ought to be more followed, than it is; becauſe the beans branch out horizontally and carry more pods, both by means of being refreſhed with new earth and by having more air; while the land is pulverized and better made for the ſucceeding crop of white victual. If the drills are at the diſtance of two feet, ſo as to admit of being horſe-hoed, ſo much the better.

Peaſe and beans ought to be ſown as early as the ſeaſon will admit, that this precarious crop may be got early off; and this is the more neceſſary, if they are a preparation for wheat, that the operations of the wheat-ſeed be not deranged. About five or ſix firlots are allowed to an acre, if they be mixed; but clean beans are allowed two bolls, when ſown broad-caſt: Leſs will ſuffice when they are drilled.

There is only one kind of bean cultivated in the fields throughout this county, called by ſome perſons, the horſe-bean; and ſo far as I could obſerve, there are only two kinds

kinds of peaſe, the early or ſpotted gray pea, generally known by the name of Haſtings or the Peeble pea, which is ſeldom ſo luxuriant in the ſtraw, but more prolific and of a larger grain than the old common ſpecies.

When beans, or the mixture of peaſe and beans, are ripe, they are commonly cut down with a ſickle; a light crop is ſometimes cut with a ſythe. Some think it ſafer to cut them a little before they be fully ripe, to prevent their ſhedding afterwards, when they are moved. In a favourable ſeaſon there is leſs need for this precaution; but in a rainy autumn, when this crop, by reaſon of its ſtrong and ſucculent haum, muſt lie long on the ground and thereby endanger the loſs of the whole grain, it is the more neceſſary. After they have lain a few days on the ground in handfuls, they are turned; and after a few days more, they are tied in ſmall ſheaves, with the ſtraw of the peaſe in the crop, or any other ſtraw, and ſet upright; which prevents in a great meaſure their ſuffering by being wet, admits the air more freely and renders them more handy to be carried off, when dry. The produce is various, but the average is from eight to ten bolls of a return from the acre; from a drilled crop ſometimes more.

It has been remarked, that in the Highland diſtricts, where the ſoil is for the moſt part light, the culture of beans is not attempted; yet the cultivation of peaſe is very general. In my laſt Survey, I obſerved with peculiar ſatisfaction the ingenuity of the farmers in Breadalbane and other inland places, in drying their peaſe, where the climate in autumn is frequently ſo rainy, that, by the ordinary proceſs, the crop of peaſe would be inevitably loſt. Whenever their peaſe are cut down, they ſet up three or more ſticks twelve or ſixteen feet long, tied together at the top and diverging from each

 othe

other towards the ground. They cover this frame with their peaſe, throwing them on in looſe bunches, as long as any will ſtick; thus going over their whole field and repeating the operation, until all the peaſe are expoſed, to the air, like ſo many large tramp-ricks of hay, in a graſs field. The advantage is evident; the labour is ſoon over, being much leſs than that of turning and returning the peaſe, in the common way; and where wood is plentiful, there is little expence in that article. The rain, as it falls, drops off apace, the circulation of the air is not in the leaſt intermitted, the ſhedding of the peaſe on the ground and the depredations of vermin are in a great meaſure prevented.

I heard of one inſtance of peaſe ſown with oats; and Mr Stirling of Kippendavie, who tried the experiment, ſaid that the oats not only ſupported the peaſe, while both were in the growth, which made the crop early, but kept them ſo open and upright, after they were bound in ſheaves, as to admit the air freely; by which means, the peaſe were got in ſooner than otherways. The peaſe, after they are thraſhed out, may be ſeparated from the oats, if neceſſary, by a common barn-ſieve; and when conſumed together, they make an excellent food for horſes. An ingenious friend of mine remarked upon this experiment, that as peaſe are intended for a cleaning crop, if oats be intermixed, this intention is defeated; becauſe the oats, by ſupporting the peaſe, prevent them from choking the under-growth and do themſelves impoveriſh the ground. No doubt, this mixture is not ſo good for land, as a crop of clean peaſe, but it is no worſe than a crop of oats; and the peaſe are more prolific and more eaſily preſerved.

Barley.

THIS grain is more or leſs in requeſt, according as the diſtilleries are encouraged or otherways. The conſumpt of it in beer is but ſmall, in compariſon of the quantity conſumed in making ſpirits: and the exciſe laws are ſo fluctuating, that barley ſells ſometimes at one half of the price, which it brings in other ſeaſons. Perhaps it is impracticable to render theſe laws more uniform in their operation, relative to this article, either in their principle or in their execution; but if they were brought to ſomething like a fixed ſtandard, both the tenantry and the landed intereſt would be much benefited, wherever the rents depend on the ſale of barley; and a great proportion of this county is of that deſcription.

In the more fertile diſtricts and where the clay ſoil abounds, the farmer looks on his wheat, as the principal ſource of his profit; in the hilly country, the ſale of cattle and ſheep regulates the farmer's finances; but in the midland diſtricts, barley is the ſtaple commodity; and when the ſale of that article is rendered irregular or the price capricious, by the unſteadineſs of the exciſe laws reſpecting diſtillation, it is impoſſible that the landlord can either know at what rate to let his lands, or the tenant know at what rent to take them. It is in a great meaſure a random bargain in both.

The only remedy hitherto applied in this matter (and as far as it goes, it is wiſe and ſalutary), has been, that the gentlemen of the country, who are juſtices of the peace, have the power entruſted to them of interpreting and applying theſe laws. They know the ſtate of the country better than any other; and can regulate their authority according to circumſtances. Their intereſt in the general proſperity

of the nation directs them to hold the balance even between the ſovereign and the ſubject, and their ſituation in life muſt place them far above the influence of any undue bias, in the execution of their truſt. They have diſcernment to conſider themſelves as a part of the public, while they adminiſter juſtice to individuals. They will therefore countenance and enforce the rigorous execution of the law, when it is neceſſary, or lean to the ſide of mercy, when the gripe of oppreſſion ſeems to be too ſevere.

Without entering deeply into this ſubject, there appears to be one defect even in this remedy, which at preſent is the only corrective of the fluctuation of the exciſe laws; and that defect is, that illicit trade may make great havock, before it can be checked, according to the preſent form of procedure: the revenue may be robbed, or in years of ſcarcity, ſuch as 1796, the very ſtaff of life (while the whole grain of the country is inſufficient to prevent a famine) may be ſmuggled into ſpirits, before the evil is corrected and before the juſtices have it in their power to fine a ſingle culprit. The juſtices of the peace execute the law indeed; but they have not virtually the right of *citation* before their own tribunal. A complaint may be brought, when too late; and the evil become irremediable, before the remedy be applied. This could not happen, if the juſtices had a right to ſummon illegal diſtillers, *with or without* concurrence of the officers of exciſe, as they may find neceſſary.

Bear-barley or big, which conſiſts of four rows in the ear, and long barley conſiſting of two rows, are, in ſome ſituations, ſown ſeparately, and in others they are mixed: clean barley on the ſtronger ſoils, the mixture or maſlin on ſoils leſs ſtrong, and bear where the ſoil is light. Theſe are the moſt common kinds of this grain ſown in Perthſhire, the former

former being a few weeks later in ripening than the latter. Siberian or naked barley and alſo Ruſſian barley of ſix rows in the ear, have been tried, but fell into diſuſe, by reaſon, I ſuppoſe, of the ſhortneſs of the ſtraw of both, and the thickneſs of the huſk of the laſt.

The finer the tilth the land is brought into, other circumſtances being equal, the heavier is the crop of barley; becauſe it is but a tender forager, and requires to be much aſſiſted in queſt of food.

Barley with or without graſs ſeeds, for the moſt part, ſucceeds peaſe and beans, where theſe are ſown. Where wheat is not ſown, it follows turnips and potatoes. The wheat is generally ſown upon the fallow, where it is cultivated. In ſome places, barley is ſown upon ley, where the thirlage upon oats is accounted oppreſſive. In this caſe, the graſs-field is ploughed before winter; it is harrowed thereafter, when the graſs begins to ſhoot up in the ſeams; and at a proper interval is turned over for the ſeed furrow. By this management, good crops are raiſed on clover ley, of three years old, even without manure.

Ten or twelve pecks to the acre, when graſs is ſown, commonly produce ſix or ſeven bolls, and ſometimes more, when the land is in good order *; but when graſs ſeeds are not ſown with the barley, two or three pecks more are given. Engliſh ſeed has been introduced occaſionally into the Carſe of Gowrie, but is found not to gratify the farmer's expectations, equally with the Scotch. The ſame obſervation occurs in the Survey of Mid Lothian. The cauſe of this failure

* Land may be ſaid to be in good order, when it is clean of weeds, freed from obſtructions to the plough, relieved of ſuperfluous moiſture, reduced to a proper tilth and well manured. See *Agricultural Maxims*, in the Appendix.

ure may be too violent a tranſition in ſoil or climate, eſpecially if the tranſition be from better to worſe. The climate of Scotland is unqueſtionably inferior to that of England, and there is as little doubt that the ſoil in general is inferior alſo, with ſome exceptions: Yet we have no grain that can thrive in ſuch a variety of climates as the wheat. It grows with equal luxuriance under the polar circle and torrid zone. Barley is of a more delicate conſtitution, and requires to be naturalized before it can thrive, in a new climate. Man alone, of all animals, is fitted for every climate, and wheat alone, of all grains.

Barley is ſown in May. In the vallies of the Highlands, where the ſoil, by its texture, is naturally hot, and the powerful reflection from the hills produces a rapid vegetation, it is often ſown in the beginning of June. The weight of the barley, and the return from the acre, of this and all other kinds of grain, depend ſo much on the quality and treatment of the ſoil, together with a variety of other arbitrary circumſtances, that it is impoſſible to ſpeak of theſe matters with abſolute preciſion. To ſtate the higheſt returns that are reported to have been made, might appear to be ſtraining, and to ſtate the loweſt is unneceſſary. This crop is in the county of Perth univerſally cut down with the ſickle.

Oats.

THIS grain is more copiouſly ſown than any other in this country; and it is ſo hardy, that it will produce a tolerable crop, in circumſtances, under which no other grain will thrive.

There is a great variety of different oats ſown in the county; and very probably there are diſtinctions made where

where there is little or no difference; because country people frequently denominate grain after the place, they get it from; and when two perſons have oats of the very ſame kind from different places, theſe oats, though virtually of the ſame quality, acquire different names. The old Scotch or Poliſh oats prevail. The ſpecies moſt approved of in the Carſe of Gowrie and the eaſtern diſtricts, are theſe from Coupar Grange, the Grange of Bothrie, and from the Skrone in Angus. The firſt is alſo ſown in the weſtern parts of the county, and is eſteemed, becauſe it is a little earlier than the old Poliſh oat, and meals equally well. In Monteath ſome trials have been made of the red oat; and the ſucceſs which has attended theſe Eſſays promiſes to introduce it more generally: but it thrives only on rich land. Blainſlie, which is equally early with the red oats, is much ſown, eſpecially on the higher grounds; but it runs greatly to ſtraw, and yields leſs meal than the common oat. Norfolk and Eſſex oats have been alſo tried, which are two weeks earlier than the common oats, and in this reſpect vie with the red and Blainſlie oats; but theſe are apt to ſhed the grain or *ſhake*, if allowed to be fully ripe, before they are cut down; and their ſtraw is bad provender for cattle, which is a loſs to diſtricts, where the hay is ſcarce. Another kind has been lately introduced into Monteath, which is alſo called Blainſlie; although it ſeems to me to be nothing more than a different denomination of the red oat. Like the red oat it is two weeks ſooner ripe than the common oat, yields the ſame weight of meal, is not apt to ſhake, and the ſtraw is good in all reſpects. At preſent it is in great repute and bids fair to keep its ground in good land. We have very little black oats, which the farmers were wont to ſow in moſſy and other ſoft ground; and none of the bearded

bearded gray oats, which are ſtill uſed in the braes of Inverneſs-ſhire and other high bleak countries. In elevated ſituations or in wild moſſy ground, oats of any colour or quality will ſoon become gray, bearded and black, extremely poor in the grain and thick in the huſk: And it is probable, when any of our mountains were in tillage, that the grain ſown was this meagre bearded oat, which is the pooreſt of all grain, and little heavier than the ſeed of good rye-graſs. Such is the economy of nature, ſo ductile are all her progeny, and ſuch a controuling power does the earth exert over her productions, that we not only find, as might be eaſily ſhewn, the different kinds of grain and other plants, but beaſts and birds and fiſhes and even the human race itſelf, varied according to local circumſtances, moulded to the climate, naturalized in due time to the ſoil, and accommodated to their ſituation.

The ſowing of oats begins in March and is finiſhed by the middle of April: And they are ſown for the moſt part after graſs, except in places, where huſbandry is not underſtood; where the farmers ſow oats after barley, or what is worſe, two or more crops of oats ſucceſſively.

When the land is in proper order, ſixteen or eighteen pecks will ſuffice to ſow an acre; and the return will be ſix or eight bolls. In poor land the ſowing is more and the increaſe leſs. But whenever the farmer has no more than three returns, which is not unfrequent in the higher parts of the country; the land ought to be dreſſed by a meliorating crop of potatoes or turnips, or allowed to run to graſs, becauſe, if all expences were calculated, it is a loſs, in that caſe, to attempt the raiſing of any grain. Nature intended theſe places for paſture, and they will be more profitably employed

employed in rearing cattle and ſheep, than under an arable ſyſtem of any extent.

Some experienced farmers in Monteath give the oat land a gentle harrowing, before the ſeed is caſt in, if the ſoil be ſtiff or the ſurface coarſe; which fills the deep furrows and holes, is a ſaving of ſeed, makes the grain ſpring up at the ſame time, and ripen equally in harveſt. The ſame gentlemen always harrow and ſometimes roll the barley land, if a ſtiff clay, before the ſeed is ſown.

The reaping ſeaſon begins in ſome diſtricts by the middle of Auguſt, and in others by the beginning of September; and unleſs the ſeaſon be unfavourable, the harveſt is finiſhed by the middle or at fartheſt by the latter end of October. In the Highlands, where the mountains are of great altitude and crowded upon one another, when the harveſt happens to be late, that lateneſs is not ſo frequently occaſioned by the greenneſs of the crop, as by the autumnal rains. The clouds, wafted from the Atlantic by the weſterly winds, are attracted by theſe mountains, and pour down deluges, at this critical ſeaſon, from which the eaſt coaſt is, in a great meaſure, free. In theſe caſes, the attentive farmer calls out all his people, when a favourable day ſets in, ſelects all his wetteſt ſheaves from the ſhock *(ſtook)*, ties them near the ear and ſets them up ſeparately in the ſhape of an umbrella, half-diſplayed; and if there be any wind, the ſheaves, which had been wetteſt in the morning, are the drieſt before night. This practice is provincially called *geating*; and the whole crop is not unfrequently ſet up in this manner as faſt as it is cut down, when the weather is very rainy; whereby the crop ſeldom fails to be ſecured.

It is the wiſh of the Board to render theſe Surveys as uſeful as poſſible; and therefore it is the duty and ought to be

the inclination of thoſe, who write them, to adapt their directions to all circumſtances and to the ſituation of all claſſes. In vain is it ſhown how to raiſe good crops, unleſs theſe crops are preſerved. There is a ſneer of ridicule and an air of contempt thrown on the practice of geating, which it by no means deſerves. This obloquy has brought it into ſuch diſuſe, that farmers, who wiſh to be eſteemed as being profeſſionally ſenſible, are deterred from geating, leſt they ſhould get the laugh againſt them—.Our opinions are warped with prejudice, both with reſpect to men and things, oftener than we are aware: but men of ſenſe ought to diveſt themſelves of prejudice.—In a favourable ſeaſon any man may be a good farmer and collect his crop, without injury; but in a rainy autumn and in a late ſeaſon, no other mode of harveſting bids ſo fairly for preſerving a crop, as geating every ſheaf, that is cut down wet.—It is a tempeſt alone, that tries the ſkill of a pilot.—If any farmer ſhall once experience the full benefit of this practice, he will probably keep his reapers in the field, not only when the dew is heavy or partial ſhowers fall, which deter his neighbours, but as long as the rain will allow his people to ſtand out, at their work.

The only ſolid objections againſt geating upon a large ſcale are, that it occaſions a great deal of additional labour, by binding the ſheaves twice, and that there is a loſs of grain, by its dropping from the geates on the ground. It may be anſwered, that theſe objections hold with equal force, againſt opening up the ſheaves, after they have been ſpoilt in the ſhock and have lain for weeks in the field. And it may be anſwered farther, that there is more loſs of labour, in an unſettled ſeaſon, by throwing all the reapers idle, whenever rain falls, than by binding the ſheaves twice. When the geates are dry, or ready to be gathered in, one man can bind more

more than an acre in a day, whoſe wages are not to be compared to the loſs of frequently interrupting the labour of all the reapers. It is certainly leſs waſte to loſe a few ſtalks, than to run the riſk of damaging or loſing the greater part of the crop, by its growing in the ſhock. Very little is dropt from the ſheaves, if they be carefully handled; and if any at all is dropt, it is eaſily and effectually gathered up, by raking.—Every one knows that moiſture, lodging in the ſheaves, when they are heaped cloſe together, is the cauſe of their growing. Having ſingle ſheaves and theſe opened up, prevents moiſture from lodging. If rain falls, it runs inſtantly off: and when wind blows, they are immediately dry, and fit for being bound and ſtacked. No ſeaſon is ſo rainy or inclement, as to baffle the endeavours of common induſtry, in ſaving every ſheaf of a crop, by this proceſs; but many ſeaſons, in this climate, occur, which render all the efforts of the moſt induſtrious farmer ineffectual by the common way of harveſting.

Reaping with ſythes is rarely practiſed in this county; the whole grain is moſtly cut down with the ſickle. Seven reapers generally have a man to bind and ſtook after them; or ſix, if the grain be heavy. In large fields, two men will bind to fourteen or ſixteen reapers, in moſt kinds of grain; and one man follows the two binders, to ſtook the corn. The ſtooks conſiſt of twelve ſheaves; ten ſet upon their butts, in two parallel rows, with their upper ends reſting againſt each other, the opening betwixt the ſheaves being large enough to hold the ſtooker's left foot and leg, while he is ſetting every pair upon their ends. The two hood ſheaves are opened from the knot of the band forward to the top, ſo as to be all of an equal thickneſs in the ſtraw, and laid on in oppoſite directions, as a covering, with the

butt-ends uppermoſt and touching each other. The ſtooks ought always to be placed ſouth and north; that one ſide may have the ſun in the forenoon, and the other in the afternoon. Some farmers, by miſtake, ſet their end to the point, from which the wind moſt frequently blows; but the winds may ſhift their courſe, which the ſun never does *.

A gentleman, well verſant in farming, recommends to ſet up the corns in a rainy ſeaſon or climate, not in common ſhocks of twelve ſheaves, but in ſix ſheaves, after this manner. Four ſheaves are ſet on their butts, at the diſtance of half a pace from each other, more or leſs according to their length, with all the four tops meeting in a point above, in the ſhape of the four lateral angles of a pyramid. The two remaining ſheaves are made into the form of geats and put on for a covering, the one above the other. This conſtruction will be well fitted, I apprehend, for *winning* † or drying the corn, provided it can reſiſt the violence of ſtrong winds.

In a boiſterous autumn, and frequently about the time of the equinox, the beſt made ſtooks are overturned; in which caſe ſome indolent people leave their corns ſcattered all over the fields, until the ſtorm is over. But were it not much better management, to ſet up the ſtooks, when they fell, ſo that

* Perhaps placing the ſtooks a little to the ſouth of ſouth weſt will give a fair average chance of both advantages, at leaſt by this means the winds will be taken in for their ſhare by coming nearer their ordinary currents in Scotland. *Sir William Murray.*

To make a ſtook properly there ſhould be no more ſtanding ſheaves than the two heading ones will compleatly cover, and the bottom of theſe ſheaves ſhould finiſh off the top of the ſtook, and this will reſiſt more wind than any other form. *Sir William Murray.*

† If *winning* be a Scotticiſm or new word, in this acceptation, it is eaſily underſtood and has more preciſion than *drying*, becauſe corn may and ought to be *dry*, when cut down, but cannot be *winn*, till ſome days thereafter. See *Elements of Criticiſm*, as to new words.

that the winds might dry up the rain, and that when the hurricane was over, the corns would perhaps be in a condition to be gathered in: whereas if left to lie in ſeparate ſheaves on the ground, the whole would remain drenched in water, when the violence of the wind had abated.

Every well regulated farm ought to have ſtathels, for preſerving the ſtacks from vermin and to keep the under ſheaves free of dampneſs. Unleſs the farmer has a long leaſe, it is but reaſonable that the expence of theſe and of every other building, which is of permanent advantage to the farm, thereby enhancing its value, ſhould be defrayed in the firſt inſtance by the landlord. The farmer's ſtock ought not to be diverted into extraneous channels, but applied to enrich the ſoil, that he may raiſe good crops, and be enabled to go on, in his operations, with ſpirit.

The beſt form of corn ſtacks is circular, with a cylindrical body and a conical top, diverging a little towards the eaves *(eaſing)*. The builder commonly takes care that the outer row of ſheaves be always ſloping a little, as he goes round, all the way from the ground to the crown of the ſtack; which circumſtance throws off the rain, and prevents the wind from blowing it into the body of the ſtack, to injure the corn. This is eaſily attended to, by keeping the heart of the ſtack always higher than the outſide, in the time of building.

When grain is collected, without being perfectly dry (winn), the ſtacks are frequently made with vents, which are continued paſt the eaſing, with a ſmall triangular opening built on a frame of wood, on the windward ſide, at the bottom, to admit the air. Theſe vents are often made with timber frames, either temporary, by tying a few ſticks together at the top, or conſtructed ſo as to be kept from year to year.

Their

Their conſtruction is in the form of two ladders, diverging at the bottom, to make them ſtand firm, and almoſt uniting at the top: the four ſtoops being bound together with bars at proper diſtances. This precaution is very neceſſary, in a rainy climate, or in a backward harveſt; but the vents ought never to be uſed, if they can be avoided, with ſafety to the corn, becauſe they are a lodging for vermin.

The reapers are hired from villages within the different diſtricts, or come from a diſtance, at that buſy ſeaſon, in queſt of employment. According to the cuſtom of different places, they are ſometimes hired by the hour or by the day; ſometimes by the week, and at other times during the harveſt, whether the reaping ſeaſon be long or ſhort. Their wages are various, according as the crop is forward or not in ripening, and to the number of reapers that apply. The ſmaller farmers feed them with their own houſehold ſervants; thoſe who have extenſive farms feed them in a ſeparate houſe, with pottage and milk for breakfaſt and ſupper, and bread and beer for dinner.

All the people of faſhion make uſe of wheaten bread, which is either baked in their own houſes, or bought from the adjacent towns and villages. The moſt wealthy of the farmers uſe this bread alſo at their tables, more than any other kind; and even all the inhabitants of every denomination, except in the moſt inland diſtricts, hardly think their gueſts ſuitably entertained, at any public meetings, without wheaten bread. The conſumpt has increaſed amazingly of late. You will find one, often two bakers, well employed, where not a baker nor an oven were to be ſeen, within twenty miles of the place, about fifteen years ago.

In our towns the magiſtrates are empowered to take cognizance of the aſſize of bread; but in the villages there is

no

no regulation adopted hitherto, to prevent frauds, in a matter of ſuch importance. The baron baillie of the ſuperior of each village ought to have the charge of regulating the weight and quality of bread, unleſs the neareſt juſtice of the peace, having an intereſt in the country, ſhall take that charge.

Cakes made of oat-meal are much uſed by the middling ranks. Bread of the flour of peaſe is ſtill in uſe, eſpecially in the low country, but not ſo general as in former times. The wheaten bread has very much ſupplanted the oat-cakes, and the cakes have ſupplanted the peaſe-bread. Cakes made of the flour of barley are the common bread of the Highlanders. When the barley is twice *ſhilled*, i. e. put twice through the mill, on purpoſe to take off the rind more compleatly, and then grinded ſmall, fine flaccid cakes are made of its flour, not uncommon at the tables of the affluent in theſe diſtricts: but it requires to be uſed, when newly baked, before it become hard and unpleaſant.

The farmers have need of all their attention in making choice of the grain moſt proper for ſeed. Care ought to be taken that it be not adulterated with any extraneous ſeeds; that it have no blackneſs at the extremity of the grain; and that it be not of a dark brown colour; this indicates its having heated in the ſtack, that is a ſign of its having lain too long in the fields, under bleaching rains, after being reaped. The ſmalleſt experience will diſcover, if it be mouldy, which ariſes from dampneſs, or if it be ſhrunk in the huſk, which ariſes from its having been cut green.

We ought to ſteep, not only wheat, but other ſeeds, oftener than we do; becauſe all the weak grains ſwim on the top and may be ſkimmed off; and in a dry May, when the

ſoil

ſoil is parched, the barley vegetates more equally and ſooner, after being ſteeped *.

The proper time of ſowing any grain, it is impoſſible to regulate by a ſtrict adherence to any particular day of a month. A due temperature of the ſeaſon, ſuited to the nature of the grain, with reſpect to heat or cold, drought or wet, becauſe theſe influence the ſtate of the earth, ſhould be carefully attended to. The appearance of certain birds of paſſage, whoſe inſtinct, ſo far as it goes, is a ſurer guide than our reaſon; the budding or foliation of particular trees; the flowering of particular wild plants, all of which are uniformly regulated by the ſeaſon, may, after the obſervations of a few years, furniſh the huſbandman with unerring ſigns, to direct him in ſowing, with judgment and ſucceſs. At any rate, it is much ſafer, in moſt caſes, to be ſomewhat too early, by catching a good tid, than to be too late †.

Various rules have been given about ſowing thick or thin. There are few ſubjects on which all men are agreed: Nor have I the confidence to ſuppoſe, that my opinion will paſs current with all men, on this or many other points, where there is a diverſity of ſentiments. Every individual follows his own opinion, whether it be guided by habit, by faſhion, by whim or by ſound underſtanding. I heſitate not however to ſay, that land in good order ought to be ſown thin, becauſe the grain will ſtock, the ſtraw will be ſtrong, the ears large, and the grain plump and heavy: whereas, if ſown thick, the reverſe of all this will happen; beſides that there is a waſte of ſeed and the crop will lodge and rot on the ground.

* This is an important obſervation. *Sir William Murray.*

† If the land be in high order, there is no danger in ſowing early, becauſe the crop in ſuch land is ſure to recover a check. *Sir William Murray.*

ground. Poor land which is foul muſt be ſown thick, to keep down the weeds, otherways there is no crop at all.

By the drill huſbandry, the ſeeds of grain may be ſown at any deſired depth; but this is not the caſe, by ſowing in broad-caſt: it is impoſſible to prevent the ſeeds from being unequally buried below the ſurface, although it may be in a certain degree guarded againſt by a rule already given. Some plants will ſpring from a depth, from which others will never riſe. This circumſtance claims the attention of the intelligent farmer. It is alſo of importance to obſerve, that in a light ſoil the air penetrates deeper than in a ſoil which is ſtiff. In the former therefore you may ſow deeper than in the latter; becauſe it is certain that no ſeed can vegetate, when deprived of air; and ſome ſeem to require more, others leſs.—This element is as requiſite for the vegetation of plants, as for the reſpiration of animals.—If the ſoil be ſluggiſh, the ſeed furrow ought to be ſhallow, otherways ſome ſeeds may even remain freſh in the earth and never vegetate. If the field be in good tilth, a ſhallow furrow has the additional advantage, when turned nicely, that it gives the crop the appearance of having been drilled.

Flax.

THE culture of flax is univerſal in this part of the kingdom, but is not carried to ſuch an extent in any other place as in the diſtricts of Stormont, the weſt end of Strathmore and in Athol. The farmers in other places generally grow ſome for their own uſe; and where the land is more favourable for that plant, they are able to ſupply thoſe, whoſe ſoil does not raiſe it to advantage. The clay land ſeems to be of too cloſe a texture for its tender roots, and binds too much to allow the fibres to expand themſelves in queſt of nouriſh-

ment. The light ſandy ſoil, on the other hand, is too weak to carry a heavy crop, and is too much exhauſted by it, to render the lint crop a ſufficient recompenſe for the chance of failure in the ſubſequent crops. The fitteſt ſoil for lint is a deep loam or rich haugh, on a moiſt bottom, where the pores are not ſo cloſe as in clay or till, and the ſtrength of the ſoil fully equal to the food which the plant requires.

The foot of every brook in the Highlands, where the water runs ſlowly, and plenty of ſediment is depoſited, making an annual addition to the ſoil, carries amazing crops of lint. On the banks of our large rivers, where the land is occaſionally flooded by back-water, the lint is generally a good crop: and it is raiſed ſucceſsfully, the ſecond crop, after good clover ley; which ſaves weeding; but this ought to be ſparingly tried, becauſe it is a bad rotation, unleſs a fallow crop ſucceed.

In theſe countries, from which the greateſt quantity of flax and of ſeed is imported, the moſt favourite ſoil for this crop is on the banks of large and gentle-flowing rivers, which, by their flooding, have in the courſe of ages, formed the richeſt and deepeſt mould. This may ſhow us, what is its native ſoil, and where it can be cultivated with moſt profit in this country.

In theſe parts of the county where wheat is plentifully propagated, the flax-huſbandry is leſs attended to. Judgement is diſcovered in this practice, becauſe both crops ſcourge the ground: and in a cloſe rotation an intelligent farmer can ſcarcely introduce both.

In the Carſe of Gowrie, Mr Donaldſon ſays that flax is cultivated in ſmall quantities, and ſells from nine to twelve pounds the acre, when diſpoſed of before pulling.

Lint-ſeed is eſteemed to be good, when it is large, oily, and

and of a bright colour, and the germ ſomewhat green. To know whether it be oily, a few grains of it may be thrown on hot iron, and it will crackle inſtantly and blaze briſkly; if plump and heavy, it will ſink in water.

If lintſeed be ſown, with an intention to let the flax remain to carry ripe ſeed, it ought to be thin, that the plants may have plenty of air, be in leſs danger of lodging, and have room to grow to their full ſize. If it be ſown, on purpoſe to have fine ſoft flax, it ſhould be ſown pretty thick, that the plants may riſe the cloſer together, may grow ſlender and tall, which adds much to the fineneſs of its quality. Another circumſtance worthy of notice is, that if the ſaving of ſeed is the object, the flax muſt ſtand ſo long on the field, to bring the ſeed to maturity, that the rind becomes coarſe and dry; and if the flax is the object, the crop muſt be pulled ſomewhat green, to preſerve its fine gloſſy quality; in which caſe the ſeed has not time to arrive at perfection. So that it is ſcarcely poſſible to have ſilky flax and ripe ſeed from the ſame crop *.

The moſt common time for pulling flax, is, when its ſtalks begin to turn yellow, which appearance originates firſt at the root, when the leaves of the under part begin to fall off, and the ſeeds to grow brown.—Each of the capſules has ten cells, and in each cell there is one ſeed.—Although the farmer does not chooſe to riſk the quality of his lint, by allowing the ſeed to come to maturity, yet the ſeed ought to be rippled off, after the lint, in the ſheaves, has dried ſo much, that this operation may be performed without tearing the rind; and this ſeed may be ſold to the oil-mill for having

* Perhaps lint, unleſs allowed to ripen its ſeed, is not a very ſcourging crop, but yields nothing that can be converted into manure, which is an unanſwerable objection to it, except in a very partial extent or under very favourable circumſtances. *Sir William Murray.*

ing the oil extracted. The cakes are an excellent food for cattle or may be uſed on graſs lands as a top dreſſing.

Soft water is beſt for ſteeping lint: and it is ſufficiently watered, when the reed breaks without bending, and the rind parts eaſily from the reed. It is abſurd to leave the lint a certain number of days invariably in the canal. When the weather is warm and the water is ſoft, it is much ſooner ready than otherways The longer the water has been let into the canal, before the lint is immerſed into it, the more rapid the putrefaction. Lint is ready to be taken up from the field, whenever the bark bliſters and riſes from the reed.

In order to ſave the ſeed of flax, ſome perſons who are knowing in the buſineſs, recommend to ſet up the lint ſheaves, after pulling it, in ſtooks, like grain, and when thoroughly winn, to ſtack it, until the next ſpring. The ſeed is then eaſily rubbed off by a roller, without injury to the flax, by putting the ſheaves head to head. The profit on ſaving the ſeed is eſtimated to be from L. 5 to L. 6 per acre. The farmer, by this proceſs, has the whole ſummer before him, to water and dreſs his lint, without incroaching on the operations of the autumn, in theſe reſpects.

It muſt, however, be acknowledged that this crop makes no return of manure, and that by the thickneſs of its ſtalk, the ſmallneſs of its leaf, the number of ſeeds it carries, and its fibrous roots, it impoveriſhes ſoil to a great degree. But when it is managed with judgment, it can purchaſe manure *, and beſides bring a conſiderable profit; nor does it rob the ground more than ſome other culmiferous plants, eſpecially wheat,

* Lime and marl, being only ſtimulating manures, are no proper return for a crop of lint, though they will certainly prove a temporary one. *Sir William Murray.*

wheat, provided the land be fallowed whenever the lint is pulled. Red clover and other graſs ſeeds are ſometimes ſown with flax, and are found to thrive very well.

In the latter end of October 1795, I obſerved vaſt fields of lint, in all that tract of country, between the Seedlaw hills and the Grampians, and not a little in other places, lying ſpread upon the ground, till the graſs had almoſt covered it. If this be the general practice, it is in a high degree prejudicial to the quality of the lint. The exceſſive rains of that autumn may have prevented the farmers from getting their flax dried, after it was fully graſſed and long enough on the field. But why was it not ſet upon end? why were there no attempts made to expoſe it to the wind, during any intervals of dry weather? In the courſe of two months, there muſt have been ſome intermiſſion of the rain. An enterpriſing farmer will ſeize every favourable moment, to forward the operations, in which he is intereſted; and not ſit, with his hands acroſs, waiting for a long tract of ſerene weather, which may not come, till his all be loſt. In the rainy climate of our inſular ſituation, ſurrounded with high mountains, the buſineſs of the huſbandman, muſt often, in any ſeaſon, particularly in harveſt, be done in ſnatches, or not done at all. There are favourable moments in all the buſineſs of life, eſpecially in farming, which if once paſt, a ſimilar opportunity may never recur. I knew a farmer, in ſuch a ſeaſon as is here alluded to, who ſaved his crop while his neighbours loſt theirs, by employing his people to work all night and allowing them to lie by all day; becauſe the nights were fair and clear, with ſome wind and froſt, and the days rainy *.

In

* A circumſtance that frequently occurs in bad harveſts, indeed almoſt uniformly in the climate of Scotland. *Sir William Murray.*

In watering lint it is not uncommon to give it too little time in the canal, and too much on the field. It were a more ſenſible and ſafer procedure, for ſecuring the crop, and better alſo for the quality of the lint, to let it lie in the water, until it be fully ready, and either not to ſpread it at all, or to give it only a ſhort time on the graſs. It might be ſet upon end, like the geats of corn, and expoſed to the wind, as ſoon as the water had dropped from it, for a ſhort ſpace, on the brink of the canal: and if there was any doubt of its been fully watered, a little more time might be given it in this ſituation. This is the practice abroad in the lint-countries, and in ſome places at home. The lint is thus watered equally, which is hardly poſſible, on a field, where the under part, which is always buried in graſs and corroded with dew, if it remains long in that ſituation, muſt be rotten before the upper part be ſufficiently done: and perhaps the whole may be loſt in a rainy ſeaſon, before it can be got up. By that management, the ſilky gloſs and green colour of the flax is equally and more effectually preſerved. It is a mere deception to ſuppoſe, that bleaching lint on the field will facilitate the bleaching of the cloth. No cloth is ſo eaſily or ſo uniformly bleached, as that made of lint, which is fully and equally watered, in the canal.

The uncommon attention paid to the cultivation of flax in this country, eſpecially in the diſtricts mentioned in the beginning of this article, will appear from the annexed table, with which I was favoured by Mr Arbuthnot ſecretary to the truſtees for manufactures and fiſheries in Scotland. When one conſiders, beſides the number of yards of linen cloth mentioned in the table, what quantity the inhabitants of the county muſt uſe for their own wear, which never comes to market, and is not ſtamped, and alſo the

vaſt

vaſt quantity of linen yarn, that is ſold to the manufacturers of chequed goods in Glaſgow and elſewhere, the returns from the culture of flax is a matter of great moment to this part of the kingdom, and will, in ſome meaſure, juſtify me in dwelling ſo long on this ſubject. It muſt be highly gratifying to every perſon, who wiſhes well to his country, to obſerve the progreſſive induſtry and the increaſing wealth of a ſingle county, in *only one* article, ſo well authenticated. What muſt be the growing proſperity of the county of Perth, if equally ſucceſsful in a variety of other articles! How rapid the progreſs of the proſperity of Great Britain, ſuppoſing all its counties to keep pace with that of Perth!

So great is the profit ariſing from flax, that one gentleman, who is in the foremoſt rank of improvers in the eaſtern part of the county, expreſſed an opinion that the value of the flax manufactured into home-linen, ſtamped linen, and ſold in yarn, in the ſhire of Perth, was equal to the whole land rent *. As he wiſhed to have data, either to correct or ſupport his opinion, it is to me an object of regret, that all the neceſſary data are beyond my power to condeſcend upon, with any degree of preciſion. We know what is ſtamped; And may we not compute, that the home-conſumpt which is not ſtamped and the yarn ſold out of the county and applied to various purpoſes that never comes into any of theſe accounts, is at leaſt equal to the amount of Mr Arbuthnot's ſum for ſtamped linen: in all amounting to L. 248,619 : 6 : 8, a ſum *far beyond* the opinion of moſt people?

It is ſingular that, in a court of law, a crop of lint will be found to be a green crop; and that if a proprietor were to raiſe

* In the pariſh of Alyth the whole land rent does not amount to L. 4,000, but the value of linen ſtamped there is L.10,000 at leaſt.

raiſe an action againſt a tenant for ſowing flax in place of a meliorating crop, in his rotation, the proprietor would be caſt. The only remedy in this caſe, is to ſet aſide the queſtion, and prevent any diſpute on that point, by the terms and articles of the leaſe, ſpecifying particularly what quantity of lint-ſeed is annually to be ſown.

Potatoes.

THE culture of potatoes is carried to a great extent in this county, eſpecially in the Highlands. In a rainy climate and on a light ſoil, no ſpecies of crop promiſes equal returns to the huſbandman or equal utility to the public. When new ground is to be reclaimed by a potatoe crop, they are planted with the ſpade, in what are called lazy beds, which are generally about ſix feet broad, with a trench about two or three feet wide, upon every ſide, always pointing towards the bottom of the field. When theſe trenches are marked off with a line and ſpade, the dung is laid on the bed, and then the potatoe-ſets, in rows, acroſs the bed, at ſuch a diſtance as to allow room for a hoe. The firſt ſpit from the trench is laid on the potatoes, with the graſſy ſide downwards, if the land be new; a ſecond ſpit of mould is taken and ſpread over to fill up the openings. When the young ſhoots appear, another ſpringling of earth is given from the trenches: and the hoe ſucceeds, when it is neceſſary.

In arable ground potatoes are planted for the moſt part with the plough. Previous to this, the land ought to be reduced to a good tilth. The dung in ſome inſtances is ſpread on the field, and the potatoe-ſets dropt into every third furrow. Some farmers leave the land in this ſtate, till weeds appear, others harrow the land acroſs, whenever the potatoes are planted. I ſhould approve of the firſt method

thod of harrowing. There being three furrows for every drill, which gives plenty of room for horſe-hoeing.

In other caſes, the land is drilled by being laid in ſmall ridges of little more than two furrows, thrown up againſt each other. The dung is ſpread carefully from the cart into each drill, the horſe going in one, and the wheels in thoſe on each ſide. After the potatoes are dropt in, above the dung, the plough cloſes the drills, by returning each furrow to the place, from which it was taken, in the manner of cleaving ridges. The land is harrowed and horſe-hoed, when neceſſary, as in the other method.

At other times, potatoes are planted with a foot dipple, in arable ground, after it has been duly pulverized. The dung is either put down with the laſt ploughing or more frequently laid on the ſurface, when they receive the firſt covering with the ſpade, from alleys left purpoſely between the ridges. The hand hoe alone can be applied afterwards. This method is ſaid to give the greateſt return from the acre; but the plough requires leſs labour, and is by far better for the ground.

Many complaints have been made of a diſeaſe called the curl, in various reports from the eaſt and ſouth; but it being hitherto unknown in this country I ſhall ſay little upon that ſubject. On a light mellow ſoil, with a dry bottom and a frequent change of ſeed, I ſuppoſe it ſeldom appears.

In writing a report of this nature, it is not ſo much my province to attempt giving ſpecific rules about the culture of any plant, as it is, to narrate, with fidelity, the practice of the county; and to give ſome detail of the culture adopted by our beſt farmers.

Potatoes ought to be frequently raiſed from the ſeed, becauſe they degenerate faſter than is commonly ſuppoſed.

Unleſs the ſeed is renewed or changed, they ſoon become dark-coloured at the root end, where there are feweſt eyes, after they are boiled. The proceſs of raiſing them from the ſeed is well known, and exhibits a beautiful and unexpected variety.

Of all roots this is the moſt valuable. It grows on the pooreſt ſoil, is in ſeaſon at leaſt nine months of the year, is reliſhed by every animal, affords an excellent food for man, when properly dreſſed, pays neither kiln nor mill dues, is ſoon brought from the field to the table, ſupplies the place of a fallow, by pulverizing the ground and clearing it of weeds, and yields more ſuſtenance by the acre than any plant we know, not excepting even maize, which Mr Young applauds in his account of the agriculture of France. It has already done more, and is able, by being cultivated extenſively, to do more, in keeping our people from emigrating, than any other expedient, which has been hitherto deviſed. Feed your people; and emigration will not only ſtop, but the population of the country will increaſe.

Robert Fairfull, Eſq. of Struie, in my neighbourhood, is now employing the ſame knowledge in cultivating his farm at the Roman camp of Callander, which he exemplified, in ploughing the Indian ocean, in the ſervice of his country; and is equally ſucceſsful in both. He raiſes fine farinaceous potatoes, at the rate of one hundred and twenty one bolls, an acre, being thirty-eight returns of the quantity of ſeed planted. There may be returns in other places equal to this, both in reſpect of increaſe and quality; but I quote this inſtance, becauſe the produce and the land were both meaſured by myſelf.

Sir William Stirling of Ardoch aſſured me, that he has often raiſed forty bolls of potatoes, on an acre of light moor

moor for a firſt crop, which had not formerly been worth one ſhilling of yearly rent. Value the boll at five ſhillings only; and you have this acre 200 times more productive of food than it was before. I am not prone to give implicit faith to the accounts of all the extraordinary returns we read of in books or receive intelligence of otherways; and therefore declined to trouble the reader with any thing that appeared to myſelf marvellous in that reſpect. But theſe returns above mentioned, are authentic paſt any poſſibility doubt.

Dry dung is beſt for potatoes *. Horſe dung or dry litter are the beſt. Some perſons have raiſed heavy crops, by uſing ferns or leaves of trees, as a manure; and I heard of one ſkilful farmer, who raiſed them ſucceſsfully, in lazy beds, without any other manure, except green broom, chopped into ſmall cuttings, a few inches long. If lime is applied to the potatoe crop, it ought to be laid on the ſurface and wrought there by the hoeing, or laid on the land with the preceding crop; becauſe if it be much about the roots, although it does not hurt the flavour, it generally frets the ſkin. Good crops of potatoes have been cultivated by wrapping each ſeedling in a rag of woolen cloth and laying it in the earth without any other manure.

They thrive beſt in a light dry ſoil, of which there is a great

* I prefer light or long moiſt dung for potatoes; but as to the extenſive cultivation and great utility of this root, I perfectly coincide with Dr Robertſon. We have nothing equal to it. *W. D.*

I very much reſpect Mr Dann's opinion; but in this inſtance I hold my own; becauſe I find from experience, that unleſs the dung be dry when laid in the drill, I am obliged to let it lie uncovered, until it become dry, before I plant potatoes. Wet dung or even wet land, never fails to give the potatoes of this country a cankered ſkin and a bad taſte; but this may not be the caſe every where.

great proportion in this county. Very rich loam may produce great crops, and large roots, but they are always inferior in flavour and mealineſs, to theſe raiſed on lighter and poorer ſoil. Where the land is wet, both the quality and quantity of the potatoes are inferior.—If the field be a heavy moiſt ſoil, the black potatoe ought to be planted. The outer coat of this root is of a ſooty colour, but when this coat is rubbed off, the raw potatoes are of a bright purple colour. Theſe keep longeſt in ſpring, without budding, and are good for the table.—Where the land is tenacious, they are unable to expand themſelves in the growth, or the tender fibres to penetrate the ſoil in queſt of nouriſhment. Moſſes, when they are drained, are a favourable ſoil for potatoes, becauſe the parts are eaſily ſeparated, and the root finds plenty of room to ſwell to its full ſize.—Potatoes are planted in April or the very beginning of May; and are raiſed in October, either with the plough or with the three pronged forks uſed for dung (provincially grapes). For the moſt part, they are left during winter in the field, in heaps, which are carefully covered with ſtraw and earth, well clapped down with a ſpade, and a row of long turf generally over all. Theſe heaps ought never to be in deep pits, for fear of under water: but are made on a gentle declivity, if there be any in the field, ſhaped like the roof of a houſe and lying ſouth and north, that each ſide of the heap may have the benefit of the ſun alternately, to prevent the froſt from penetrating deeper, on one ſide than on the other.

Fanciful projectors recommend to boil potatoes, not with water, but with ſteam, without underſtanding that the water removes ſome qualities of the root, leſs friendly to nutrition, which ſteam cannot extract. In all this country, the whole water is carefully poured off, when the potatoes

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are thoroughly boiled; and the pot is ſet a ſecond time over the fire, for a few minutes, which makes them dry and ſweet. The moſt palatable potatoes are eaſily diſtinguiſhed, becauſe they ſwell and burſt in the ſkin after they are boiled. If they are left to burſt too much, it is impoſſible to make them dry. The burſting alſo diſtinguiſhes ripe from unripe potatoes.

The early froſts are very pernicious to this root; and indeed to all the crops in this high latitude. But againſt this injury, which the ingenuity of man cannot eaſily prevent, the kindneſs of Providence has provided a remedy, in which we have no hand. When froſty mildews, which would blight our crops, come on before the middle or latter end of September, there commonly falls out next morning a ſmall ſhower of drizzling rain, which corrects the baneful effects of the froſt, by reſtoring the circulation of the plants.

In the reign of William the Third, when theſe mildews had occaſioned a ſcarcity in the nation, by ſucceſſive bad crops, the people, in many places, had a cuſtom of running along the unripe corns, early in the morning, with ropes extended betwixt two perſons, to whip of the froſty particles, before they were diſſolved by the next ſun. By the time, that the corns are generally filled, and the grain brought to maturity in this country, theſe ſhowers, which are correctives of the early froſt, ceaſe to fall, being no longer neceſſary for that purpoſe.

In this climate, the froſt is not only early in the autumn, but often late in the ſpring. If potatoes are planted very early in ſpring, they are in danger of meeting the late froſt, after they are ſprung up: and their ſhoots are ſo extremely tender, that, in this event, the crop is totally ruined. We have no kind of root, or of grain, which ſuffers more immediately

mediately from froſt. In planting potatoes, therefore, it is ſafer to be ſomewhat late, than too early. About ten years ago, I had ſome early-planted potatoes deſtroyed upon the 7th of June, by the froſt of one night: and a neighbour of mine had his potatoes in the ſame predicament laſt ſummer. The ſhoots of mine had been very promiſing, and about ſix inches long. They were froſt-bitten down to the very ſurface of the earth; and both the leaves and haulm became like dried tobacco-leaves, and fell off. A great number of new ſhoots ſprung afreſh from every plant, but the roots in the autumn were no larger than the yolk of an egg.—As a remedy to prevent this loſs, it is recommended to ſpread litter over them: and although it be the only protection for potatoes, which are planted before the uſual time, yet it is liable to ſeveral inconveniencies. Gentlemen may run riſks, in order to have a few early potatoes for their tables; but in the general practice it may fail, by not covering the ſurface of the ground, until all the ſpring froſt is over: For when the proſpect of danger is not immediate, the generality of mankind are prone to procraſtinate and be off their guard, allured with a gleam of hope, by which they are finally diſappointed.

The autumnal froſt is not ſo dangerous as that in the beginning of ſummer, becauſe the potatoes are ripe before the beginning of October. The decay of the haulm gives notice of the approaching danger; beyond which period it is in vain to expect any addition to their growth. The earth, however, forms a covering, which is always proof againſt the froſt of a few nights; the firſt froſts come ſlowly on: and the farmers have time, either to get up their potatoes or to protect them in the ground. In the year 1782, the inhabitants of this country were taken unawares, in this reſpect,

ſpect. Having been accuſtomed before that period to delay raiſing their potatoes, until the reſt of their crop was houſed, all their exertions were employed in ſaving their corns; and when they had leiſure, in the end of November, to look after their potatoes, they were ſo firmly locked down by the ſeverity of the froſt, that it required picks and leavers to open the ground: and the few, they recovered, were very much ſpoilt.

It may be of uſe in theſe critical caſes, to remark, that when potatoes are froſt-bitten, either in the heaps during winter, or before they are dug up in the autumn, ſuch as are not ſoft to the touch and ſpoilt beyond recovery, may be reſtored by immerſing them in cold water for half an hour. This immerſion will extract the froſty particles and make them tolerable food, although they have a heavy diſagreeable ſweetneſs, which cannot be removed. All the ſoft ones muſt be thrown to the dung-hill; even ſwine, which devour almoſt any thing that can be eaten, will not touch them.*

Potatoes not only diſagree with froſt, but alſo with being handled in rain; by lying wet, they ſoon become entirely uſeleſs.—Almoſt every perſon knows that they can be kept longer in ſummer, than is commonly done, nay even from one ſeaſon to another, by being laid in a cool place, on an earthen or ſtone floor, and frequently turned.

It was not uncommon to diſtil a ſpirit from potatoes, in the highlands, before private families were prohibited, by the exciſe laws, to diſtil for their own uſe. A little malt was added to the maſh of potatoes, in order to excite a fermentation: and the ſpirit drawn from this compoſition was by no

* This proceſs reſtores alſo the quality of other froſted roots and vegetables.

no means unpleaſant. The proceſs was ſimple; but as the law has forbidden its being put in practice, it is unneceſſary to deſcend to particulars.

Potatoes were imported from America by Sir Walter Raleigh, in Queen Elizabeth's reign; were firſt planted in the fields by the Iriſh; were long confined to the garden by the Britiſh, and cultivated only as an article of luxury, for the wealthy. About ſixty years ago, they found their way into the open fields, among us, as a national bleſſing; and their cultivation has been rapidly increaſing ever ſince.

Turnips.

Large fields of turnips, cabbages, and greens are cultivated in almoſt every part of this county, but more ſo in ſome diſtricts than in others. On all the land, except clay, where a proper rotation is obſerved, turnips and potatoes in various proportions, are ſubſtituted very ſenſibly for a fallow. Even in Glenerachd and Glengarry, which are the wildeſt and higheſt inhabited land of the whole ſhire, you meet with fields of drilled turnips, grown to a large ſize. On the clay land, although it be fit for turnips, when reduced to a fine tilth, the farmers have hitherto uſed, for the moſt part, a clean fallow; which has prevented, in ſome meaſure, the ſowing of turnips; peaſe and beans being their cleaning crop.

Wherever turnips and potatoes are grown plentifully, there can be no ſcarcity. They are ſuch an excellent ſubſtitute for meal, that in moſt caſes they ſerve the ſame purpoſe, in the article of bread, and are reliſhed for being highly palatable and nutritious. The latter is indeed more farinaceous, but the former has more ſugar. The red topt ſtand againſt the ſeverity of winter, better than the green, becauſe the bulb is more below the earth; but the green is

leſs

leſs ſtringy and more delicious. Had turnips been cultivated in the year 1795, as extenſively in the Highland diſtricts, as the potatoes were, the ſucceeding ſummer of 1796, would not have occaſioned ſuch alarm, by the apprehenſion of a ſcarcity. Even as matters ſtood, the common people in the Highlands lived moſtly on potatoes, dreſſed in various ways; and did ſend a ſupply of meal to the Lowlands.

The land, intended for a crop of turnips, ought to be well pulverized. For this purpoſe a rouſing furrow ſhould be given to it, and the rough ſtubble turned down, in the autumn; a ſecond furrow, when winter is paſt, a third in May, and the turnip ſeed drilled in about the middle of June (for they ought never to be ſown in broad caſt). I would recommend to put down the dung with the firſt furrow, for a reaſon to be given afterwards: and the lime ought to be laid on the ſurface of the ground, immediately before ſowing, and raked into the drills along with the ſeed.

The culture of turnips in the open fields was introduced into the weſt end of Strathearn by the late Sir Patrick Murray of Auchtertyre, about half a century ago; into the eaſt end, by the late Mr Oliphant of Roſſie, about the ſame period; into Monteath by the late Mr Drummond of Blairdrummond and Mr Ramſay of Ochtertyre; and even into Britain in George the I's reign, by Lord Townſhend, from Hanover.

The fly, which is the greateſt enemy of turnips, is avoided in ſome caſes, by ſowing the ſeed of two different years together in the ſame field. The youngeſt or new ſeed ſprings firſt; and if the fly devours it, then it commonly takes its departure ſuddenly, which gives the oldeſt and late ſeed an opportunity of eſcaping its ravages. The half of the ſeed being ſteeped ſtill further increaſes the difference of

the ſpringing. The ſeed is ſo cheap, that a little more than ordinary may be uſed, in order to guard againſt the riſk of loſing the turnip crop: and the late ſeed comes on faſter, than if the field were to be ſown a ſecond time; which might otherwiſe be neceſſary. The Bath Society recommend, in caſe the fly attack the young turnips, before they ſet out their rough leaves (for afterwards there is no danger), to take branches of the common elder, and after bruiſing the leaves, to fumigate them with the ſmoke of tobacco and aſſa-fœtida. Theſe drawn gently over the plants, will relieve them from the vermin. Or the boughs of elder with the berries on may be drawn along the drills, as an antidote, before the turnips are ſown. What I alluded to above is, that turnips have been often ſaved from the fly by ploughing down the dung the preceding autumn; and I never ſaw turnips deſtroyed by vermin that were ſown with lime.

If the caterpillar attacks them in any ſtage of their growth; a few hungry poultry, turned into the field in a morning, will ſoon relieve them from that foe.

They are firſt weeded by the hand, and the moſt vigorous plants left ſtanding at the diſtance of ten or twelve inches from one another. Afterwards they are horſe-hoed, as often as appears neceſſary, firſt by taking the earth from the plants, and then by returning it to the roots, to give a ſupply of freſh mould; making the plough to go always in alternate alleys, which ſaves time and is better for the turnips. Every ſucceſſive ploughing ought to be reverſed from the former.

Turnips ſucceed beſt on a dry, friable mould: and in ſuch ſituations, the land is greatly meliorated by feeding them off on the field. Sheep may be confined in hurdles and removed occaſionally. But where the ſoil is wet, the turnips muſt

be

be carried off the field, otherways the land will be poached, battered ſo much as to loſe all the previous tilth by hoeing, and rendered more difficult to be ploughed: and if they are not carried off before winter, in ſome ſoils, the travelling of horſes with carts is apt not only to poach the land, but the froſt may be ſo ſevere, that the turnips cannot be got up. To preſerve turnips from froſt and ſave the expence of carrying them farther than is neceſſary, let them be piled up in a dry corner of the field, in conical heaps, before Chriſtmas, that they may receive no injury from the froſt, which generally ſets in ſevere at that time; and if they are eaten in ſhades, fixed or moveable, the expence of carriage is, in a great meaſure, ſaved. The conical heaps may be made in this manner. Cut off the leaves and tap-roots of the turnips; ſpread ſome ſtraw-litter in the bottom of the heap; upon this put a layer or courſe of turnips, two feet thick, leſs or more according to the length of the ſtraw; then turn up the outer ends of the ſtraw, to prevent the turnips from ſlipping off; give another courſe of ſtraw and a courſe of turnips alternately, putting in the ſtraw always as at firſt, till your heap end in a point. Cover the top with ſome ſtraw, which with the ſtraw below will thatch the whole.

Cattle ought to be fed with turnips, in the ſtall, for the ſake of the dung, rather than in the fields, where the dung is dropt unequally and capriciouſly; in which caſe, it is of the utmoſt conſequence to keep them clean. For this purpoſe, I have ſeen the ſettles of the byre (cow-houſe) ſometimes floored. Rafters are laid acroſs the byre, and covered with deals, in the ſame direction with the animal's body, at the diſtance of half an inch aſunder, to let the urine drop through, and about four inches from the ground.

When turnips are uſed for feeding milch cows, perſons of

a nice palate loathe the milk on account of a by-taſte, which the turnips give it. Cuſtom will, however, reconcile moſt people to this taſte. Some of our taſtes are acquired. At any rate, this peculiar taſte would be leſs perceptible, if all the rotten leaves and all the injured turnips were carefully ſeparated from what are ſound, and given to the dry cattle: and if the turnip-taſte remains in any ſenſible degree, after this precaution, it may be removed completely by putting a little weak ſolution of nitre into the milk.

Inſtead of raiſing turnips for a winter food, to fatten cattle, it might perhaps be more profitable, to allot them for a ſpring food, eſpecially in countries, where there are great flocks of ſheep. Tame ſheep eat turnips greedily; and notwithſtanding the reluctance which wild ſheep ſometimes diſcover, there is little doubt, but they may be brought to reliſh this food if accuſtomed to it when young, or confined either till hunger compelled them once to try it, or ſome ſheep accuſtomed to that food put in along with the hill ſheep. In the ſpring, dry provender is often ſcarce, and ſheep are allowed to fall off, whereby they become ſo feeble as not to be able to bring forth their lambs; which was the univerſal complaint in ſpring 1793: or if nature ſhould enable them to ſurvive that criſis, they have ſo little milk, while pinched with hunger, that the lambs die in hundreds, for want of nouriſhment.

Swediſh turnips, which are found to ſtand the moſt ſevere winters, without being injured, may ſerve this purpoſe: and the method of raiſing them to maturity is ſo accurately pointed out by the Preſident of the Board of Agriculture, in his Report of the northern counties of Scotland, that I need only refer to his account of their cultivation. Green food in ſpring may be alſo procured by ſowing rye in the autumn

or

or by ſowing ſucceſſive crops of the common red-topt field turnips, at conſiderable intervals, for the ſpace of ſix or eight weeks, after the ordinary ſeaſon. The froſt will not deſtroy theſe, which are half grown, ſo readily as thoſe which have arrived at their full maturity. Next to the Swediſh, the ſmall yellow turnip ſtands froſt beſt.

If ſheep do not ſtand in need of this ſupply, owing to the mildneſs of the ſeaſon, or if ſheep are not the principal ſtock of the farm, they may be given to cattle, which, being allowed to go about in the open fields, eating their turnips and provender in ſhades, will become much ſooner fat, on the next ſummer's graſs; becauſe otherways they would not eat their dry food with appetite, after the ſtate of the air and the ſmell of riſing vegetation, would render them impatient to roam at large. All animals, changing ſuddenly from dry food to new graſs, take ſome time before they can be ſeaſoned, and often become lean, by ſcouring; beſides, that they can ill bear the piercing cold of ſpring nights, to which they muſt be frequently expoſed, in this variable climate.

Rye.

THIS grain is cultivated in ſuch ſmall patches, although it be generally met with in every diſtrict of the county, that were it not for two circumſtances, it might be improper to claſs it with the crops cultivated in this part of Scotland. It is ſown at the ſame time with oats, wherever it is cultivated in the Highlands, and ripens along with them. The ends of the ridges next to the farm-ſtedding would be deſtroyed by the poultry, unleſs they were ſown with this grain. The meal of it is ſeldom made into bread by the inhabitants of theſe diſtricts; they uſe it moſtly in ſpoon-food.

I ſee by my report of the agriculture of Strathearn in the year

year 1794, that winter rye was ſown on oat ſtubble in the farm of Auchtertyre, the latter end of autumn, to be converted into ſpring food for ewes and lambs; and that it was propoſed to have this crop of winter rye eaten up in time to ſow turnips or rape-ſeed the ſucceeding ſpring.

SECT. V. *Crops not commonly cultivated.*

BY paying attention to the climate and to the nature of the ſoil, it is no difficult matter to diſcern what ſpecies of crops ought to be introduced into any country. There is little doubt that the advice and example of many of the proprietors, who are eminent improvers, together with the practice of the moſt ſucceſsful of the farmers, will in a ſhort time overcome the prejudices of the moſt obſtinate of the tenantry, and introduce into this county the culture of every valuable plant, known in any part of Britain, which is ſuited to the local circumſtances of the different diſtricts. It becomes the proprietors, by reaſon of their wealth and ſuperior knowledge, to ſet the example; the moſt intelligent of the tenantry, by a little perſuaſion, will follow their footſteps, and the crowd will fall in of courſe.—Man is an imitative creature. To this principle we owe many of our attainments. To it we may owe our knowledge and progreſs in agriculture.—It is not long ſince the common claſs of tenants were ſtrongly prejudiced againſt all ſown graſſes, againſt turnips, and even againſt the potatoe, which next to corn is the greateſt bleſſing in the article of vegetable food, that this part of the kingdom ever did enjoy.

The great point in all new improvements, which the common people are prone to ſtigmatize with the title of innovations, is, once to prevail with them to begin with the moſt valuable of the new plants, and to cultivate ſome of theſe at

firſt

firſt upon a ſmall ſcale. Every thing depends upon ſucceſs in the firſt eſſays. Wherever ſtrong prejudice is on the ſide of old habits, perſeverance is not to be expected, without ſteadineſs in proſecuting what is new.

Carrots and Parſnips.

THESE roots have been cultivated in the field very ſparingly. I have not obſerved any extent of ground under carrots in all the county, except in Mr Stirling of Kier's incloſures. The carrot requires a deep free ſoil, and is very nutritious to all kinds of beaſts. Parſnips require the ſame culture.

Mangel Wurſel, or the Root of Scarcity.

THIS plant is nearly allied to the Beet; the ſame kind of ſoil and the ſame culture are proper in both. It is ſown in the ſeed-bed in March or April, and when the plants are of the ſize of a gooſe-quill, they are tranſplanted into drills by the dibble, about eighteen inches from one another every way, of the ſame ſize and in the ſame manner as the Swediſh turnips are planted out from the ſeed-bed. I have ſeen none of it in this part of the country, except what was planted by myſelf, in the garden ſome years ago. It ſeemed to be exceedingly hardy, and much reliſhed by horſes and cows; but has not fulfilled the expectations of the public, which were perhaps too ſanguine.

Rape-ſeed.

THIS plant is cultivated much leſs than it deſerves. The ground is prepared for rape or cole-ſeed, in the ſame manner as for a crop of turnips; and both are ſown about the ſame time. The rape is ſo hardy as not to be deſtroyed by froſt; and therefore is of great ſervice in hard winters for feeding

feeding ſheep. When turnips are locked into the ground by froſt, the rape may be cut off for a ſupply, and the ſtems ſhooting again early in the ſpring will produce a ſecond crop, which may be either eaten green, if there be ſcarcity of ſpring food, or allowed to run to ſeed, which may be ſold to advantage and bruiſed for extracting the oil. A gentleman in this neighbourhood, whom I ſhall have occaſion to mention as a great improver of waſte lands, ſows a crop of cole-ſeed ſometimes on moſſy ground.

Sain-foin.

A SINGLE inſtance has not occurred in all the county of the cultivation of this plant; and therefore this article ſhall be devoted to a judicious obſervation of Mr William Dann of Gillingham, upon my former ſurvey, that it may attract the public attention. "As I have ſeen no account of the cultivation of ſain-foin in any part of Scotland; I would recommend it to be tried on ſome of the light ſoil mentioned in the Report of the County of Perth. Probably it might anſwer to be ſown on ground that is incloſed, where the under ſtratum is either chalk or gravel: and if cultivated, I alſo recommend, that it be cut, *when in the height of bloom;* that afterwards no cattle be put on the ground *until the latter end of September;* and that it be not paſtured after December."

Rhubarb.

THIS plant grows luxuriantly in the climate of Perthſhire; and owing to the great profit, which it is calculated to bring, it is ſurpriſing that the culture of rhubarb has not claimed more attention and been adopted on a more extenſive ſcale. Gardeners and others raiſe it to great perfection; and there is a conſtant demand for it as a medicine. The preſent Duke

of

Athol ſome years ago cultivated the greateſt quantity ever known in this county —There is ſuch a rage for every thing that is foreign, that rhubarb of Scottiſh growth is generally rejected in the ſhops, knowing it to be ſuch: which may have prevented its cultivation.

Tobacco.

THE culture of tobacco was introduced into this neighbourhood, and probably into other parts of the county, during the latter end of the war with America. It became ſo dear, when our trade with that country was interrupted, that we reſolved to try what could be done to ſupply our demands, by raiſing it at home.—The habit of uſing tobacco is like all our other luxurious gratifications, which become more inveterate by indulgence, while the pleaſure ariſing from the ſenſations they afford, is diminiſhing every day. I raiſed tobacco about that period eighteen inches long in the leaf, and twelve inches broad. But an act of parliament, prohibiting its cultivation, ſoon put an end to all our experiments relative to this plant.

Tares.

TARES are cultivated ſucceſsfully upon almoſt any ſoil. If ſown in autumn, they make an excellent green food for ſheep in the Spring; if ſown early in Spring, they are a hearty feeding for horſes between the firſt and ſecond cuttings of the clover, which may be needed, when a ſevere drought retards the after math of clover; and if ploughed in, when moſt luxuriant, they afford an excellent manure, to prepare the ground for another crop. In this county little attention has been paid to tares, leſs perhaps than they deſerve, becauſe they ſpring earlier than any other plant we

have, ſtand the winter well, grow to a great length, are always green and ſucculent, and are well calculated for ſpring feeding.

Buck-wheat.

THIS plant has been alſo cultivated in the county of Perth, particularly by the late Colin Campbell, Eſq. of Carwhin, on his eſtate of Edinample; but the cultivation of it is by no means general, although milch cows fed with it will yield an extraordinary quantity of milk, uncommonly good for making butter and cheeſe; and if allowed to come to maturity, the grain is a rich feeding for hogs and poultry.

Liquorice, Chicory, Madder, and the other plants, of the culture of which I have neither heard nor ſeen an inſtance in this country, are not to be taken any notice of.

I REQUEST the indulgence of the reader, while I make a few obſervations on the ſituation of the crop, during my tour in the latter end of autumn 1795; and while I ſtep aſide to give a few directions to the inhabitants of the Highland diſtricts, relative to a better mode of croping their land. Theſe are thrown in at the end of this chapter, becauſe they might ſeem to interrupt the connection between the ſubjects that went before.

The different operations of huſbandry, both in the ſpring and autumn, are ſo much regulated by the ſeaſon, and the ſeaſons are ſo variable in this climate, that it is impoſſible to treat of theſe matters with abſolute preciſion. It has been remarked above, that an induſtrious farmer will ſeize the proper opportunity, although a little earlier than the ordinary ſeaſon of ſowing, and wait patiently for that opportunity,

nity, although a little later. It is always safeſt however to be rather ſoon than late, if the ground be dry, well ſheltered, and of a ſouthern aſpect.

The reaping ſeaſon for the ſeveral crops has been, for the moſt part taken notice of, in the preceding account of each crop. In moſt parts of this country, it commences in the end of Auguſt, is general in September, and if the weather be tolerable, is finiſhed in October. In high expoſed ſituations, or where the farmers are ſo ſlovenly and ſtubborn in ſpring, as not to ſow their grain, in proper time; and even ſo inattentive, as to leave their crop too long in the fields, after it is cut down, the harveſt is often later.

Mr Donaldſon ſays, that in place of mentioning the periods at which harveſt commences, and is finiſhed in the Carſe of Gowrie, or the return from the various ſpecies of crops, he judged it more correct to ſtate them in ſeparate tables, taken from the journals of a particular farm: And I refer the more readily to theſe tables, becauſe of the opinion I have of Mr Donaldſon's accuracy, who reſided for ſome years in the Carſe, and becauſe theſe dates and prices correſpond with my own notes, relative to ſimilar diſtricts of the county. See his Report, p. 17, 18.

TABLE OF HARVESTING DIFFERENT KINDS OF GRAIN FROM 1788 TO 1793.

Years.	Wheat.	Spring Corn.	Barley.	Harveſt commenced.	do. finiſhed reaping.
1788	11 Sept.	7 April	6 May	25 Aug.	16 Sept.
1789	11 ditto	6 ditto	9 ditto	27 ditto	19 ditto
1790	13 ditto	3 March	6 ditto	27 ditto	19 ditto
1791	14 ditto	7 ditto	4 ditto	18 ditto	10 ditto
1792	4 Oct.	9 April	7 ditto	29 ditto	23 ditto
1795	10 Sept.	25 March	3 ditto	28 ditto	26 ditto

AVERAGE

AVERAGE PRODUCE PER ACRE, OF EACH SPECIES OF CROP, ON A FARM IN THE CARSE OF GOWRIE, FOR SIX YEARS, COMMENCING WITH CROP 1787, AND INCLUDING CROP 1792; AND ALSO THE AVERAGE PRICES AT WHICH THEY WERE SOLD IN EACH OF THESE YEARS.

Crops.	Wheat.						Barley.						Oats.						Peafe and Beans.						Early Peafe.						Total.		
In years.	Average produce per acre.			Average price per boll.			Average produce per acre.			Average price per boll.			Average produce per acre.			Average price per boll.			Average produce per acre.			Average price per boll.			Average produce per acre.			Average price per boll.			Average of grain.		
	B.	F.	P.	L.	S.	D.	B.	F.	P.	L.	S.	D.	B.	F.	P.	L.	S.	D.	B.	F.	P.	L.	S.	D.	B.	F.	P.	L.	S.	D.	B.	F.	P.
1787	6	3	0	1	2	1 $\frac{3}{4}$	6	3	0 $\frac{3}{4}$	0	14	5 $\frac{1}{4}$	9	0	0 $\frac{1}{4}$	0	14	9	7	3	2 $\frac{1}{4}$	0	12	9 $\frac{1}{2}$	None.						7	1	1 $\frac{1}{2}$
1788	7	1	0 $\frac{1}{2}$	1	1	10 $\frac{1}{4}$	9	3	3 $\frac{1}{4}$	0	13	2	11	2	0 $\frac{1}{2}$	0	12	10	6	2	0	0	10	9 $\frac{3}{4}$	None.						8	0	2 $\frac{1}{2}$
1789	9	1	0 $\frac{1}{2}$	1	3	6 $\frac{1}{2}$	6	3	3 $\frac{1}{2}$	0	16	8	9	1	1	0	15	9	5	3	0 $\frac{1}{4}$	0	14	9 $\frac{1}{4}$	None.						8	0	1
1790	6	3	0 $\frac{1}{4}$	1	2	1 $\frac{1}{2}$	8	1	3	0	15	5	11	1	0 $\frac{1}{2}$	0	14	8 $\frac{1}{4}$	6	3	1 $\frac{1}{4}$	0	14	1	4	0	2	Price, fame as peafe & beans.	0	14	1	8	0	0
1791	7	3	0 $\frac{1}{4}$	1	0	7 $\frac{1}{2}$	10	1	0	0	18	0 $\frac{1}{2}$	10	0	3	0	15	2	11	1	1	0	12	9	13	1	1 $\frac{1}{4}$	0	12	9	9	0	2
1792	7	2	3 $\frac{1}{2}$	1	2	0 $\frac{1}{2}$	5	1	0	0	19	6 $\frac{3}{4}$	8	0	0	0	16	9 $\frac{1}{2}$	5	0	0	0	18	6	2	3	1 $\frac{1}{4}$	0	13	6	6	1	1 $\frac{1}{2}$
Div. by 6.	45	2	1	6	12	4	47	2	2 $\frac{1}{2}$	4	17	3 $\frac{1}{2}$	59	1	1 $\frac{1}{4}$	4	9	11 $\frac{3}{4}$	43	1	0 $\frac{3}{4}$	4	3	9	20	1	0 $\frac{1}{2}$	0	0	0	47	0	0 $\frac{1}{2}$
Gen. ave.	7	2	1 $\frac{1}{2}$	1	2	0 $\frac{2}{3}$	7	3	3	0	16	2 $\frac{1}{2}$	9	3	2 $\frac{1}{4}$	0	15	0	7	1	0	0	13	11 $\frac{1}{2}$	6	3	0	0	13	11 $\frac{1}{2}$	7	3	1 $\frac{1}{2}$

Potatoes.						Hay.				Flax.			
Average produce per measured boll			Average price per boll			Average produce per acre.	Average price per ſtone.			Average produce per acre.	Average price per ſtone.		
B.	F.	P.	L.	S.	D.	Stone.	L.	S.	D.	Stone.	L.	S.	D.
54	1	0	[illegible]	ſtated		200	0	0	6	13	0	12	0
75	2	0	0	4	$8\frac{1}{4}$	100	0	0	5	16	0	12	0
62	0	0	0	4	$7\frac{1}{2}$	266	0	0	7	$26\frac{1}{4}$	0	12	0
48	0	0	0	6	0	83	0	0	6	$18\frac{1}{4}$	0	12	0
70	0	0		4	$2\frac{1}{2}$	200	0	0	$6\frac{1}{4}$	$13\frac{1}{2}$	0	12	0
53	0	0	0	8	$1\frac{1}{4}$	187	0	1	0	$34\frac{1}{2}$	0	12	0
362	3	0		7	$7\frac{1}{2}$	1036	0	3	$6\frac{1}{4}$	$121\frac{1}{2}$	3	12	0
60	2	0		5	$6\frac{1}{4}$	$172\frac{2}{3}$	0	0	7	$20\frac{1}{4}$	0	12	0

N. B. It ſhould be remarked here, that the above average return from the acre is upon a farm not under a regular rotation of croping, and therefore the general average of the crops is conſiderably leſs than it would have been, had the farm been croped in ſix parts, as formerly mentioned.

The boll of wheat weighs fourteen ſtone Amſterdam; barley, eighteen ſtone; oats, from fourteen ſtone to fourteen ſtone and a half; and peaſe and beans, from thirteen to fourteen ſtone.

In

In October 1795, when I travelled over the moſt diſtant corners of this county, to explore ſuch places as I had not viſited in 1793, the ſituation of the crop was deplorable beyond deſcription. Wheat, barley, oats, peaſe, and beans, in very many places, lying like a common wreck:—the bands and head-ſheaves growing and become green, like new ſpring clover, all matted together; and the under ſheaves, where they had not been bleached with the ſtorm, of a black and rotten appearance. In the fertile vale of Athol, ſcarcely a ridge was cleared, and yet very few remained uncut down. In Breadalbane there was more to reap, but there was more ſaved. In the low countries there was very little to cut down, but a great deal in the fields, expoſed to all the injuries of the weather.

This devaſtation was, no doubt, in a great meaſure, (but I fear, not altogether,) occaſioned by the rainy ſeaſon. Late ſowing prognoſticates late reaping; and continuing to ſhear, when one ought to be gathering the crop, is always a fatal error in harveſt; eſpecially where the climate is ſo variable as ours. There were that very autumn, two or three weeks, in the latter end of September, without a ſhower. This tract of fair weather, it is preſumed, was general. In ſome parts of the county, this favourable juncture was ſeized, and every ſheaf was got together without a drop of rain. The operations of the field went on night and day, almoſt without intermiſſion. And many farmers about Callander had their harveſt-work cloſed, by the 24th of September.

Where reapers cannot be got, where farms are very extenſive, and the crop of various kinds, longer time is required to complete the labours of harveſt, than otherways. Yet as there is no inſtruction equal to a leſſon of experience, it is hoped, that the harveſt 1795, will be long remembered

in

in the tract under review, and that the damage then ſuſtained, whether it was unavoidable or not, will teach ſome of the farmers to ſow their grain earlier; will teach them all to exert every nerve, at that critical ſeaſon, to collect their corns, whenever they will keep; not to neglect an opportunity of gathering a little, unleſs much be winn; in no caſe to reap when they ought to be leading in (houſing) their grain; and not for a moment to loſe ſight of the principal operation, which crowns the labours of the whole year. It is not uncommon at this ſeaſon to have froſt and ſome wind at night, and a drizzling calm rain by day. I have known the active in ſuch circumſtances, ſave their crop, while the indolent were aſleep.

In the highland diſtricts of this country, the reapers cut low, level, and clean, to a degree almoſt unknown in any other country. This practice I obſerved with pleaſure, in Athol, Breadalbane, and the adjacent diſtricts. This practice I earneſtly recommend. Low ſhearing produces additional provender, and if all the ſtraw is not required for the purpoſe of food, cattle will reject the coarſe, which ſerves for litter, and being trodden under their feet, makes an increaſe of dung; whereas if it be left in the field, by means of high ſhearing, you have leſs litter and leſs dung. If a long ſtubble were to be ploughed in before winter, it might do good to the ſoil, but after it is bleached with wind and rain, and corroded with froſt, all its juices, all its manuring virtues, are in a great meaſure loſt.—The gentlemen, who ſurveyed the weſt riding of Yorkſhire, have ſet this matter in the cleareſt point of view, by the very able and judicious report they have given of the huſbandry of that country.

Mention

Mention was made above of the different ways in which grain is ſet up in the fields to winn, and how the ſtacks are commonly built. I ſaw alſo a very ingenious farmer build his corn ſtacks in the form of little houſes, upon pillars that went round his ſtraw yard, where he meant to feed his outlying cattle. A ſolid wall of ſufficient maſon-work formed the outſide, and the pillars went round the inſide of the ſtraw-yard. Beams of a proper length were firſt laid from one pillar to another, and rafters were laid acroſs from the wall to the pillars, by way of flooring; upon which the ſtacks were built of any length and height that was neceſſary; their roofs being neatly thatched and ſecured with ropes. The cattle below are protected from the ſnow and rain, the grain is preſerved from dampneſs and vermin, and the farmer ſaves every particle of manure.

Thiſtles and the larger weeds are taken from the oats and barley when they are in the ſhot blade, by means of a long wooden forceps; which is very much uſed in the Highlands. A man walks through the corn with his ſhoes and ſtockings off, and nips up the larger weeds from the root: but where the land has not lain for ſome time in graſs, or has not been occaſionally cleaned by a fallow crop, a great number of ſmall weeds eſcape notice at this ſeaſon, and infeſt the ground from year to year. This evil prevails moſt, where large ſlices of the land are left unploughed, as boundaries between the alternate ridges of neighbours, in the ſame plough-gate; which are a perpetual nurſery of weeds, beſides the loſs of ſo much land lying waſte. Theſe earthen boundaries (baulks) are wearing faſt out, in this country; and it is to be hoped will ſoon diſappear.

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In a conſiderable proportion of the county, eſpecially towards the Highlands, the common claſs of farmers are only beginning to turn their thoughts towards a proper rotation in croping their land, and to the cultivation of ſome very uſeful plants, which have, for ſome time, been introduced into the ſyſtem obſerved in the lower diſtricts. I hope therefore to be forgiven, by the intelligent farmer, (who may paſs over the following digreſſion) while I ſtep aſide a little to give a few plain directions to my friends in the Highlands of Perthſhire, to moſt of whom I have the honour to be known, and from whom I truſt, I have the credit, that I ſhall only direct them, according to the beſt of my judgment to what is conducive to their intereſt.

Without the concurrence of the proprietors and of their factors, neither the following improvements, nor any other, can ſucceed: but where the gentlemen are ſo much enlightened, and the common people ſo acute, there is the moſt ſanguine hope, that the tenantry will liſten to advice and proſecute their own emolument. And if a few in either claſs are ſtill of ſo little diſcernment, as ſlaviſhly and blindly to perſevere in following the huſbandry of the laſt century; theſe are certainly ſo few in number, that the improving practice of others, on all hands around them, will ſoon put them out of countenance.

Upon every plough gate of land, a field ought to be encloſed, not leſs than ſix acres of ground; if it be nine or twelve, ſo much the better; and if the land be ſo much broken, that this number of acres cannot be got contiguous, let them be incloſed where they can be got.

1. Let one ſixth, being the pooreſt of the land, be aloted, the firſt year, for potatoes and turnips, planted in drills. The method of managing potatoes is well under-

ſtood; turnips are as eaſily managed, only that they require to be frequently thinned, unleſs they be completely thinned at firſt.

2. Againſt the ſecond year of your rotation, let barley and graſs-ſeeds be ſown after the potatoes and turnips, giving the land a ſprinkling of dung. Sow one-third leſs barley than ordinary, when graſs-ſeeds are intermixed. After the barley is harrowed, and the ſtones and weeds and roots of graſs taken off, ſow ſixteen pounds of red clover and two or three buſhels of rye-graſs, one after another, upon the acre. Harrow theſe with a buſh of birch or ſome other wood, that has a ſmooth top and many branches, fixed in the harrow; but beware of the harrow edging to one ſide, and making furrows in the ground. Over all, in a calm day, throw ſome lime finely ſlaked and equally ſpread. A ſecond buſh harrowing with the lime completes the operations, unleſs you have a roller.—That ſame year, plant another ſixth of your incloſed land with potatoes and turnips.

3. The third year of your rotation, ſow barley, clover, and rye-graſs, after your fallow crop as formerly. Plant potatoes and turnips in your third diviſion. Cut down your hay, when the firſt flowers of your clover begin to turn brown, and the rye-graſs to become yellow at the root. Draw out ſome of your rye-graſs from the ſwath; tie it in ſheaves, and ſet it up to dry in ſtooks, without heads, till it be fit for thraſhing. In the mean time, after your hay has lain two or three days in the ſwath, turn it with a rake or fork in a fine forenoon, and after tedding and turning it once or twice, put it up in ſmall cocks in the evening, never to be ſpread more, unleſs the weather be very unfavourable. The ſecond or third day thereafter, if there has been

no

no rain, you may put every two cocks into one, making the tops of every two old cocks the bottom of a new one. By this time, the hay ought to be in a condition to reſiſt ſome rain, without being ſpoilt. In the mean time you thraſh your rye-graſs, and clean the ſeed from the chaff. Take out the clover leaves and the ſtumps of graſs with a corn ſieve (or riddle). The rye-graſs ought to be ſhaked from the flail, and mixed with the reſt of your hay. By joining two or three of your ricks together a ſecond time, it is unneceſſary to ſtir it any more, till you put it up in the tramp rick. When the ſecond crop of clover begins to carry flowers, you may begin to cut it for houſe-feeding to the cows or horſes, as you have occaſion.

4. In the fourth year of the rotation, you go on as formerly, planting a new diviſion with roots, ſowing barley and graſs ſeeds after your laſt fallow crop, reaping the hay and ſaving a neceſſary quantity of rye-graſs ſeed for your own uſe: and from the lot, which was under hay the laſt year, you may either make hay this year, if the appearance be promiſing in May, or conſume it in paſture. If it be in paſture, and your land not ſubdivided, you may tedder a beaſt, eſpecially a milch cow to eat up the graſs.

5. Againſt the fifth year of the rotation, you fallow a new diviſion with turnips and potatoes; and go on with the reſt as formerly directed. This ſeaſon you have two diviſions in paſture and one in hay. In your paſture I would recommend to ſpread the dung that is dropt on the ground, once a week or every two weeks at fartheſt, otherways much of the graſs will be kept down, and the manure will not be equally divided.

6. The laſt year of the rotation, you fallow the remaining lot, and you have alſo barley, hay, and two lots for paſ-

ture, and in the oldeſt diviſion of your paſture you ſow oats; which completes the rotation. Having thus eſtabliſhed your rotation, you may follow it regularly for the future years of your leaſe, having 1. Turnips and potatoes, 2. Barley with graſs-ſeeds, 3. Hay, 4. Paſture, 5. Paſture, 6. Oats.

This method of croping gives a cleaning to your land once in ſix years, to free it of weeds, and two years to reſt the ground and recruit its ſtrength, while at the ſame time, it is receiving an addition of manure. Your paſture will riſe early in ſpring, to ſupport your beaſts when provender is ſcarce, and the natural graſs ſcanty. You have the weedings of your turnips for houſe-feeding, before the ſecond crop of clover is ready, after the hay is cut; you have this ſecond crop of clover through the autumn, to bait your cows at mid-day and at night, which will increaſe and enrich their milk, or it may aſſiſt in feeding your horſes. But if not required for either of theſe purpoſes, you may allow it to ripen, and when your earlieſt barley is ready, by mixing it with the barley ſtraw, it may be ſtacked up, and will make good provender for the winter. Your turnips will feed your cows about Martinmas, when the paſture in the open fields ſhall fail, which will afford plenty of milk, or fatten well, with a little dry provender given occaſionally; and your diviſion of hay will produce more and better food to your beaſts than three times as much ground under ſtraw or the ordinary ſort of meadow.

Upon all light land in the Highlands this is the moſt profitable method of croping. It is equally beneficial to the proprietor and tenant. The land is kept conſtantly in good order. The poſſeſſor reaps the full benefit of his ground

every

every year, and at the end of the leaſe it is in proper condition.

Where the ſoil is naturally rich, the only deviations from this rotation, that can be adopted with any degree of ſafety, are; either to have the land in five diviſions, and only one year in paſture; or to have the land in ſeven diviſions, with two crops of oats ſucceſſively and two years of paſture; or while the land is in ſixes, as firſt mentioned, to have two crops of oats, and only one year in paſture; but very few kinds of ſoil in the Highlands can, without injury, ſtand this laſt mode of croping, unleſs ſome manure be laid on the green ſward, previous to the firſt crop of oats. I approve of none of theſe deviations.

The plan now propoſed is only a firſt eſſay to thoſe, who are willing to introduce and make trial of an improved method of farming. But whenever ſix or more acres are gone over and the rotation completed, a whole incloſure may be croped according to what is recommended with each of theſe ſmall lots. If the farm conſiſt of more incloſures than ſix, the ſame rotation may be followed in two places at once, or each field may be more years in paſture. The ſize of incloſures ought in all caſes, to be regulated by the extent of the farm; even the length of twelve acres in each, on great farms.

If proprietors ſtudy their own intereſt and that of their tenants, they will give leaſes of ſuch a duration, as will encourage the tenants to cultivate the ground in this or in ſome ſimilar manner. They will either incloſe land, upon which the farmer will obſerve the rotation, charging a certain intereſt for the money laid out, or engage to pay the tenant the value of his fences at the end of his leaſe.

If the farmers are not totally blind to their own intereſt, they

they will never hesitate to become bound to have at least a small portion of their land brought into good order and rendered more productive, as a specimen of the cultivation, which would be proper, and which, it is hoped, will in process of time, be adopted upon all the arable land of their farms.

In many of the Highland estates bounding fences are already built around the arable ground of the several farms; in others there is only a head-dyke between the hills and green ground. Without entering on the discussion of that question, whether in the dawn of improvement, inclosing ought to begin, by making a bounding fence, that embraces the whole arable ground of a farm, or by making small inclosures upon a regular plan and in regular succession, of the land already in tillage; I would lay it down as a maxim, that an arable farm is never at its value, either to the proprietor or tenant, even although inclosed round, until the subdivisions are completed: and the sooner that one or more of these subdivisions are made and regularly croped, the sooner will the propriety be seen and the benefit felt, of finishing the whole.

It cannot be questioned, that the proprietors of Highland estates have equal intelligence, equal spirit and an equal desire of doing good to their country, with those in the low lands; and if some of the farmers are behind their brethren, in the more fertile provinces of the low country, in respect of stock or the knowledge of cultivation; they are not behind them in spirit or discernment. Their want of stock can only be remedied by increasing industry and a superior improvement of their soil; and their knowledge of agriculture can only be increased, by listening to advice and by following that practice, which is justified by experience.

CHAP.

CHAP. VIII.

Grass.

NATURE is the nurſe of all plants. The ingenuity of man may vary them into different ſhapes, may reject one ſpecies and cultivate or even improve another; but he muſt have the ſpecies at firſt put into his hand. Among all the plants we know, which are deſtined for the ſupport of animal life, graſs ſeems to be the favourite of nature, becauſe it is the moſt univerſal. Browſing animals are unable to rear food for themſelves. If the induſtry of cultivation were requiſite for their maintenance, they muſt periſh: therefore the bounty of Providence is every hour cultivating food for them. Man has ingenuity and induſtry, therefore he is ſo far left to his ſhifts, that the plants, which he delights to live upon, require, in this climate at leaſt, to be cultivated with attention and labour. His intelligence is exerciſed, and his induſtry required to provide ſuſtenance ſuited to his nature. By the ſweat of his face he muſt eat his bread. In all civilized nations this economy is obſervable; and it ſcarcely forms an exception, that among ſavage tribes, man lives moſtly upon browſing animals; and theſe upon ſpontaneous graſs. In this caſe, graſs ultimately conſtitutes the baſis of human food, becauſe it is the food of thoſe beaſts on whoſe fleſh mankind live; and man being unable to live immediately on graſs, it is concocted for him and prepared for his food, by being changed into living creatures, through the kindneſs of Providence. But being, by the formation of his teeth and other parts of his body,

more

more a granivorous than a carnivorous creature; ſo ſoon as he riſes to his own rank in the ſcale of nature, ſociety is eſtabliſhed, the wants of men increaſe, and in place of the ſcanty, precarious ſupply, ariſing from animal food alone, the fields are cultivated, labour is employed, grain is raiſed, and abundance ſmiles on all the land.

Sect. I. *Meadows and Paſtures.*

In the county of Perth, which abounds in lakes and rivers, it is natural to expect a conſiderable proportion of marſhy, ſoft land, unfit for tillage. This is the moſt common deſignation of meadow in this country; it is perhaps more proper to name all land, from which hay is taken, meadow. Where there is a fall, drains have been made, the ſoil laid dry, and very abundant crops raiſed; but in ſituations, where draining is difficult, or impracticable, the ground has been employed in meadows or paſtures, which are more or leſs productive, according to the quality of the ſoil and the quantity of its moiſture.

Theſe meadows are moſt frequent at the upper end of lakes, where the principal river that feeds the lake, has been carrying down ſoil and other looſe materials for ages, incroaching on its dimenſions every year, and forming a gradual addition to the ſolid land. The brooks alſo which deſcend from glens ſituated on the ſides of lakes, have in courſe of time, carried down the ſtones, gravel, and ſoil of theſe glens, into the lakes, forming triangular promontories of very rich land, more or leſs extenſive, according to the weight of water, which is the cauſe *. The larger brooks likeways, which

* Similar to this is the cauſe of the production of carſe or clay land in the Friths of Scotland, and probably every where elſe. Rivers, flowing

which fall at right angles into rivers, whoſe banks are not very high, and whoſe courſe is not very rapid, in many in-

 ſtances

flowing thro' tracts of rich land, become muddy when they happen to be ſwelled with rain, and carry down a great quantity of the ſoil. The coarſe materials are all depoſited in the firſt ſtill water; the finer particles have ſo little ſpecific gravity, above that of water, that they are carried along, while the leaſt degree of current remains: and their fineneſs, or if you will, their richneſs is in every caſe proportionable to the length of their courſe, the flowneſs of their motion, and the nature of the ſoil, from which they are brought. The fineſt always go fartheſt. When rivers in this ſtate diſembogue themſelves into an arm of the ſea, their current is totally ſtopt; and every particle of ſediment they contain, ſubſides. This conſtant accumulation of ſoil, ſince the beginning of time, or at leaſt ſince the deluge, has been gaining on the ſea, and forming tracts of the fineſt cohesive ſoil. If the ſoil of the back ground be pale till, the new land partakes of that colour; if it be red till, or loam, or moſſy, the carſe is tinged with theſe ſhades. Even the pooreſt back ground will form carſe of conſiderable fertility, becauſe nothing is carried to the tide-way, except the richeſt part of the ſoil. But ſuch rivers as are here alluded to, generally take their courſe in large vallies of the richeſt mould.

Hence it follows, that the clay land next the ſea is naturally the moſt productive; but the comparative barrenneſs of the more remote carſes is corrected by the long action of tillage and the addition of manure, ever ſince they were reclaimed.

Where theſe rivers overflow their banks, before they arrive at the ſea, they depoſite fine earth, but not the fineſt of their treaſures. In ſuch ſituations they form haughs, which are more or leſs fertile, in proportion to the ſtillneſs of the river, with which they are inundated.

The ſediment of water forms argillaceous earth. The deciduous parts of plants and the exuviæ of animals compoſe calcareous earth. The natural richneſs of the latter depends on the ſpecies of plants, which in a ſtate of decompoſition have in the courſe of time entered into its ſubſtance, and on the quantity of the ſpoils of animals it has received: But theſe original qualities of ſoil would lead into a diſ-

quiſition

ſtances, choak the courſe of theſe rivers and throw back the water, forming temporary lakes or moraſſes, and render the adjacent land unfit for tillage. In all theſe caſes the heavier materials ſink deepeſt, while the finer particles of the ſoil are depoſited on the ſurface. Hence the natural cauſe of the extreme fertility of ſome meadows.

In all countries, where there are many vallies, and their declination ſmall and the rivers flowing ſmoothly, meadows are frequent: and in the inland diſtricts of this county, there is ſuch an extent of this kind of ground, that it might appear tedious and unintereſting to deſcend to particular inſtances.

It muſt be confeſſed, that in many places, theſe meadows are very much neglected, where ſomething might have been done, to render them more uſeful. They are overcharged with water a great part of the year. The graſs is coarſe, unpalatable to cattle and unfit for hay. Little or nothing grows, except ruſhes, flags, willows, and other aquatic plants. In many parts of the county the meadows are abandoned as incurable, where ſome cultivation ſeems to be applied to the arable ground. There are other inſtances, where induſtry has turned its attention to this ſpecies of cultivation. Willows, allers, and other bruſh-wood are grubbed up; and the hillocks that grow about their roots by the accretion of mud, are ſhaved off, to enable the mower to paſs his ſythe over them with eaſe. In other places the ſuperfluous moiſture, wherewith the land was overcharged, is carried off by draining

quiſition, which to ſome readers might appear too long and to others not ſufficiently intereſting: yet whatever have been the primary qualities of any piece of land; they are very much changed by cultivation, although never totally eradicated.

draining, where that improvement was practicable; and the finer ſpecies of meadow-graſſes riſing ſpontaneouſly occupy the room of flags and ruſhes.

Unleſs meadow ground can be laid dry, in ſuch a manner, as to bring it under the plough, in a regular rotation of croping, it ought, if poſſible, to be ſo far drained as to relieve it of ſuperfluous moiſture, which is unfriendly to the common meadow-graſſes, and to be flooded occaſionally with freſh water fraught with ſediment. The ſediment of calcareous earth is of all others the moſt fertilizing; but that of minerals will check vegetation. This is the higheſt improvement, of which that land is capable, and the cheapeſt manure it can receive. But it muſt not be flooded, when the graſs is long and intended for hay, becauſe the quality of the hay is leſſened: There is a chance of ſome ſand adhering to the ſtalks, which renders it injurious to cattle, and of the hay being ſo much warped, if the crop be heavy, that it becomes difficult to be mown. Neither ought a field to be flooded ſoon before cattle are let in upon it, when in paſture, becauſe in this caſe, it would be liable to poaching: nor ought the water to remain long at once, eſpecially in the warm ſeaſon, becauſe the water would gather a green ſcum, which lies down on graſs, like a ſheet, even after the water is diſcharged, and prevents vegetation, by excluding free air and the influence of the ſun.

It is not only improper, in flooding meadows, to let the water remain upon them any longer, than till the ſediment has wholly ſubſided; but attention ſhould be paid, to bring in the water, when it is moſt muddy, which generally happens in the ſpring and autumn. In ſevere winters, the land is in danger of being too much chilled, eſpecially if the water is locked in by froſt; and in ſummer other unfavourable

circumſtances already taken notice of may occur. Water, that has been ſtrained, *i. e.* water which has already depoſited its fertilizing particles on one meadow, is not ſo valuable a manure for another, as freſh water from the brook.

When the field is almoſt horizontal, or ſpouty all over, or the declination againſt draining it, I would adviſe laying it up in ſmall ridges with the ſpade, in the form of potatoe lazy-beds, from ſix to ten feet in breadth, more or leſs, according to the ſwampineſs of the ground, digging the trenches between the ridges of ſuch depth, as may lay the ridges dry. If this be done in ſpring, a crop of potatoes may be got the ſame ſeaſon; which will bring the ground into a fine tilth, for ſowing graſs-ſeeds and grain next ſeaſon; or if the work be done in ſummer, it may be ſown at any time with the ſeed of meadow-graſſes. Of theſe the meadow fox-tail (alopecurus pratenſis) and the rough ſtalked meadow-graſs (poa trivialis) are moſt proper for wet ſeaſons; and they do very well, when ſown together, becauſe the latter expands itſelf more than the former. The meadow feſcue (feſtuca pratenſis,) and the ſweet ſcented vernal graſs (anthexanthum odoratum,) which alſo ſpread in different degrees, form a mixture for moiſt land. Smooth ſtalked meadow-graſs (poa pratenſis) and the creſted dog-tail (cynoſurus criſtatus) are well adapted for dry paſture.

Beſides theſe, there is a variety of other meadow-graſſes ſome of which are valuable for being early, others for being hardy, others for bringing a weighty crop, and others for ſuiting the nature of different ſoils and climates. Whoever wiſhes to have his meadows in good order, muſt clear them of all obſtructions to their being cut in hay or uſed for paſture.

In

In ſituations, where water cannot be commanded, ſome other manure ought to be laid on graſs grounds, which are intended for hay. Marle or lime or aſhes will make an excellent top-dreſſing, where the ſoil is dry; but where it is moiſt, it will be more proper to uſe dung; and this dung ought not to be long or mixed with much litter, or newly made, bec uſe it will ſoon become parched, and the juices will be exhaled by the ſun and wind, before its virtues are abſorbed by the ſoil. Small dung, mixed with rich marle, is preferable.

The channels for conveying water to flooded meadows, ſhould have ſuch a gentle declination, that the force of the current may not carry ſtones or gravel, to choak the canals themſelves, or carry that trumpery down on the flooded land. And the ſmaller channels, by which the water is divided and ſpread, ought to be made with the ſame precaution. The drains alſo for carrying it off, ought to be made in the ſame manner, that the water may retire ſlowly, without carrying any of the ſoil away, and as little as poſſible of the ſediment.

Paſtures in more elevated ſituations than thoſe hitherto alluded to, are every where to be met with, in the Highland diſtricts of this county. Theſe conſiſt partly of land exhauſted by ſcourging crops, till the land can yield no more to the gripe of avarice, which then is left to go into ſpontaneous graſs. They conſiſt alſo of green ground, which had never been reclaimed, in ſituations, which admit not of the operations of agriculture. It is to be hoped, that owing to the ſpirit of cultivation, which has gone forth, the period is not far diſtant, when all the arable land left in paſture, will be ſown out with white clover and other graſſes,

correſponding

correſponding to its nature, and that it will be enriched occaſionally by water or ſome other fertilizing ſubſtance.

Many thouſand acres, of the very beſt arable ground, both in this county, and in all the counties of the kingdom are lying in paſture, around the houſes of wealthy proprietors, which have not carried an ear of corn for many years, and may continue indefinitely in the ſame ſtyle.—In ſullen and ſolitary magnificence the owner ſits alone, ſurrounded with ſheep in place of men.

If the public have an intereſt in the lands of individuals and any right to enquire into the manner, in which they are occupied, and into the uſes, to which they are applied, which, it is preſumed, ought to be the caſe in every well regulated ſociety, and under every government eſtabliſhed on liberal principles, this practice of laying half a pariſh waſte, ſhould claim the cognizance of the legiſlature. On a ſmall ſcale the injury to the public is not ſo hurtful, but when carried to exceſs, it requires but little penetration to diſcern that it is a national evil of the firſt magnitude, and every man muſt acknowledge its ruinous conſequences, who eſteems men to be preferable to ſheep.

In many parts of Scotland, whole diſtricts are laid waſte; the inhabitants are chaſed away and nothing to be ſeen except enormous ſheep farms. It beautifies a country to have well dreſſed lawns around the manſions of the great; nor is the injury to the community ſo hurtful, when theſe lawns are of moderate extent: but their is no apology, except avarice, for reducing large tracts of the country to a ſolitude by converting good arable ground into ſheep farms of immenſe extent.

In the laſt year, 1796, while government gave a bounty for the importation of grain; while perſons of all ranks were obliged

ged to reduce the quantity and quality of their bread; while the humane were either parochially or individually finding it neceſſary to purchaſe meal for the poor to keep them from ſtarving; while all diſtillation of grain was prohibited, under the moſt ſevere penalties, and the public loſt the revenue ariſing from that branch of exciſe; while theſe and other circumſtances demonſtrated the alarm, that had ſeized the public mind from an apprehenſion of ſcarcity, there was an extent of land lying unproductive of grain, which had been in tillage thirty or forty years ago, that would have produced grain more than ſufficient to ſupply the defect, at the uſual prices, without importation. An appeal to a ſingle fact proves this, without any farther reaſoning. Not a third part of theſe graſs lands were broke up in ſpring 1796, and yet in 1797 when this crop came to market there was ſuch plenty in the country, that the prices fell more than 50 per cent.

May not this evil be remedied, by ordaining that beyond a ſtated number of acres of graſs ground, ſpecified according to the circumſtances and ſituation of different claſſes of men, every acre of arable land in the poſſeſſion of any perſon, which ſhall not revert under the plough, in a certain number of years, ſhall pay a tax to government; and that this tax ſhall either increaſe yearly, ſo long as this ſurplus of arable land ſhall continue in graſs; or that the tax be laid on, in the firſt inſtance, proportionally to the ſurplus, in a geometrical progreſſion, according to the tenor of the tax on windows.

Few taxes can be propoſed, which are not objectionable in ſome reſpect or other. Thoſe are the moſt hurtful, which militate againſt the national proſperity; whereas theſe laid on the luxuries of life are liable to feweſt objections, in ſo far as many of them give bread to the induſtrious, and affect

fect neither our population nor commerce. This tax may be objected to alſo, but no man can pretend to ſay, that it will either cut the ſinews of induſtry, cramp our trade, ſend our money out of the country, grind the face of the poor or leſſen the population. Nay, it would operate powerfully in an oppoſite direction, and muſt eventually contribute greatly to the common good.

In ſome of theſe reports and in other publications on this ſubject, it is maintained that the balance between graſs and corn will find its own level, i. e. when corn riſes to a high price, graſs-lands will be ploughed; and when the price of grain is low, more land will return to graſs. This reaſoning is very common; but I doubt that it is more ſpecious than ſolid. If the population were always ſtationary, the argument is concluſive. But population is both fluctuating and extremely delicate: as much ſo, as commerce. Duties may be ſo light as to encourage trade and enable it to increaſe; heavier burdens may reſtrict it ſo far as to become ſtationary; and burdens ſtill heavier may diminiſh or annihilate it. Bread at a certain price may increaſe population; bread at a higher price may not diminiſh it, but only render it ſtationary; and bread at a price ſtill higher may diminiſh or diſcourage it. Dearth or the want of bread therefore, although it ſhould not diminiſh the population, may and certainly will retard its increaſe: and when cauſes, hoſtile to population, prevent its increaſe, the price of bread may be moderated by the want of that increaſed population, far below, what the price would have been, if theſe adverſe cauſes had not exiſted, and the population had been cheriſhed and allowed its full ſcope.—This ſubject requires attention; and every perſon who conſiders it maturely will ſee its force without my ſpending time in any illuſtration.—The population

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of a country is not only affected in the manner alluded to, but by the comparative prices of the neceſſaries of life in that country and in thoſe around it.

If manufactures continue to increaſe in this country, and the price of every article of food to riſe, even with the population we have, the price of labour will become ſo enormous that we ſhall ſoon be underſold in every market: whereas, if food were kept tolerably cheap, at leaſt as cheap as in our power, by turning arable land now in graſs into cornfields, and thereby rendering it more productive, both our manufactures and our population would increaſe, with rapidity; the price of labour of all kinds would be moderate, which nothing can effect but an increaſe of population; and our manufactured goods, after paying a reaſonable duty to government, would, in every competition with foreign nations, be preferred in the market, both as to price and quality.

SECT. II. *Artificial Graſſes.*

RYE graſs and red clover are the artificial graſſes moſt eſteemed in this county. If the rotation admits of the graſs lands lying a few years in paſture, there is commonly ſome white or yellow clover or rib-graſs added, according to the preference which different farmers may give to either of theſe plants. The proportion in which they are mixed, when ſown, is altogether arbitrary. When hay is the object, the rye-graſs predominates; when the crop is to be cut for green food, there is always more red clover and leſs rye-graſs.—It is worthy of being remarked, that the oftener red clover is cut green, without being allowed to carry ſeed, the longer it will laſt in the ground.

In moſt caſes, the ſeeds of graſs are ſown with another

crop, commonly barley, in this county. Immediately after the barley is harrowed, the graſs ſeeds are ſown and covered with a bruſh-harrow; and afterwards the whole is rolled neatly down. Some farmers ſow the graſs ſeeds, when the other crop is a few inches high. An ingenious neighbour of mine recommends to ſow the clover ſeed a week or two earlier than the rye graſs, when they are to be in the ſame field; becauſe the clover plants, having at firſt a very tender ſtem, and the rye-graſs being apt to claſp around them, the former is often thereby either killed or ſtunted in the growth.

The beſt time for cutting clover is, when the flowers are all fully blown, and the earlieſt begin to turn brown. If allowed to ſtand longer, the roots of the ſtalks loſe their leaves, and become hard and ſticky; and the plant is ſo much exhauſted, that it takes a long time before it ſend up new ſhoots.

When cows are fed on clover during ſummer, if the crop be luxuriant and the farmer underſtand his buſineſs, he does by no means allow them to go to paſture on the field. Although it be a little more trouble, he will find his account in cutting the clover and carrying it to the ſtrawyard to feed his cattle. My reaſons ſhall be mentioned in the Section upon feeding. This practice is followed by the farmers about the Eaſt bridge of Earn, and in other parts of the country, where rural economy is properly underſtood.

Perſons ſkilled in the tendance of cattle fed on clover, adviſe not to let them remain long upon it at one time, until they are taught by inſtinct to know its effects, eſpecially if the clover be wet; and withal to keep them in motion. Nevertheleſs, ſome of them may ſwell; in which event, let a chopin (two Engliſh pints) of new milk be poured into the belly

belly of any that are affected, by means of a horn; and if that does good, the doſe ought to be repeated. But if the beaſt does not recover, let blood, and give it a puncture in the flank, at a diſtance from the intrails, put in a quill or ſome other tubular ſubſtance, to allow the wind to eſcape, and keep the animal in motion.

The firſt crop of ſown graſs is for the moſt part made into hay; yet a gentleman in Strathearn, of ſuperior knowledge in agriculture, recommends eating up the firſt year's crop by ſheep, when rye-graſs and white clover only are ſown, and when it is intended that the land ſhall remain ſome conſiderable time in paſture. By this management, he promiſes from his own experience, a more abundant crop the ſubſequent years; becauſe the graſs is rendered thicker and ſtronger by the manure of the ſheep and the ſuperior number it can maintain.

In the laſt Section, which treats of meadows, mention was made of particular kinds of graſs, naturally ſuited to different degrees of moiſture in the ſoil. This may be the proper place to take notice of ſome other kinds, which may be cultivated ſucceſsfully on a dry ſoil; and which will, no doubt, be cultivated, when agriculture is more improved, and the comparative value of the ſeveral graſſes properly underſtood. There are two great claſſes of the culmiferous graſſes; theſe, whoſe leaves wither, as the plants advance to perfection and carry ſeed: and theſe, whoſe leaves do not decay, but retain their verdure and their ſucculence, in ſimilar circumſtances. The laſt claſs without doubt is the moſt valuable; and even of them the feſcue graſſes excel the reſt. The ſheep's feſcue graſs (feſtuca ovina) excels all thoſe of the ſame family. It is the ſweeteſt to the taſte of animals, the cloſeſt in the pile and the moſt verdant in

any unfavourable ſituations, of all the feſcues. Its leaves which are ſo ſmall and rounded in the edges, that they appear to be tubular, ſpring up in thick tufts; and new plants are ſet off on every ſide from the fibres, until all the intervals of vacant ground are filled up, and the whole ſurface becomes one cloſe matted carpet of graſs, as thick as it can ſtand.

Sain foin, lucern and burnet, as above mentioned, are not cultivated in this county; and when they come into repute, the farmers can have recourſe to treatiſes upon agriculture, which give ſpecific directions about their cultivation.

Sect. III. *Hay harveſt.*

The great object in making hay is to preſerve as much of the natural ſap as poſſible. The proper time of cutting it therefore, is when the crop of graſs has attained its higheſt degree of perfection; when the plants are in full blow, and before their flowers begin to fade. If cut too green, the hay ſhrivels and loſes much of its bulk; if allowed to ſtand till the ſeeds are ripe, the ſtem becomes hard and wiry, the roots loſe much of their natural ſap, the after math is leſs abundant, and the principal part of the hay is in danger of crumbling away into ſhort ſtumps, under the various operations which it muſt undergo. Better to be too ſoon than too late; eſpecially if the crop be heavy and in danger of lodging.

When the ſaving of ſeed is the object, the clover or rye-graſs or any other kind of graſs is ſown clean and unmixed. If the climate be favourable, the ſecond cutting of clover will produce ripe ſeed; but in a northern latitude and variable climate, ſuch as that of Scotland, it is much ſafer to take the firſt crop. In order to bring the crop equally forward

ward and make it produce the greateſt quantity of ſeed, the red or white clover ought to be kept down till the middle of May, with ſheep, and then left to come forward to its full maturity; which will make it about two weeks later than if it were intended for hay. The ripeneſs of the ſeed is known by rubbing it with the hand, and its parting freely from the huſk. When cut down and carefully dried, the flail ought to be applied the firſt ſunny day, to thraſh out the ſeed: continuing to dry and thraſh every bunch alternately, until no ſeed remain. The ripeſt and beſt ſeed drops firſt.

Rye-graſs, when ripe, may be cut and bound up in ſheaves, like corn, and thraſhed out in the ſame manner. Where the rye-graſs has been mixed with clover, the hay is ſometimes thraſhed out of the cocks; but it does leſs damage to the hay, to draw out the rye-graſs from the ſwath, to bind it in ſheaves, and when thoroughly winn, to thraſh it out by itſelf.

In making hay of clover and rye-graſs, ſome farmers adviſe to allow the hay to lie in the ſwath for two or three days; and after the ſuperfluous moiſture and dew are evaporated, in a dry day, either to ted it a little, or turn the ſwaths, and in the afternoon to make it up into ſmall cocks, ſuitable to the ſtate of the hay. The only objection to this management is, that the hay on the ſurface of the ſwath is apt to be blanched by the weather, the juices exhaled by the ſun, and the flavour of the hay leſſened. This diſadvantage is, in a great meaſure, only imaginary; becauſe, after the hay has lain a day or two in the cocks, the whole becomes ſo much alike, that the expoſed part can ſcarcely, if at all, be diſtinguiſhed from that, which was in the bottom of the ſwath. The dried part imbibes the juices of the moiſt, and

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the moiſt is kept open and more acceſſible to the air by means of the dry.

The practice of others is to cut down their hay in a dry day, and in the afternoon of the ſame day to make up their hay into ſmall cocks, by which means the whole juices are preſerved and the damage of blanching compleatly obviated. The objections to this mode are, that it occaſions unneceſſary labour; that if rain happens to fall, the cocks are ſo moiſt, that the hay may ſpoil before it can be opened out; and that they are ſo ſmall, if wind blows, they are in danger of being overturned. As a remedy againſt its being too moiſt, it is recommended to draw two handfuls of hay to be laid acroſs on the top, by way of a thatching to the cocks; and in the laſt caſe, to preſs them down a little with the hand, will render them more firm.

Mr Paterſon of Caſtlehuntly, in the Carſe of Gowrie, makes his hay, by employing a perſon to follow the mowers, who turns the hay over and over, till it be compleatly winn. If the ſeaſon be favourable, it is put into the tramp-rick in the ſtack-yard. Upon his farm 300 ſtones of 22 lb. Engliſh to each ſtone is accounted a good crop from an acre of land; which is not uncommon in that diſtrict and in ſeveral other parts of the county. In the year 1786, he had 6000 ſtones of hay from a field of 13 acres, ſown originally among wheat; and for the ſecond crop of the ſame field, that ſeaſon he received L. 2 : 13 : 4 per acre.

The late Mr Mylne of Mylnfield, in that neighbourhood, had a cuſtom of eating his hay, ſometimes, with ſheep, cloſe to the ground, till the 15th of May, provided the ground be perfectly dry; and by the middle of July, he told me, that he reaped from 250 to 300 ſtones of hay, by the acre, from the ſame field; which is as much as is expected, when not eaten

eaten down in ſpring. The hay in this caſe is only about two weeks later than ordinary, and the field is enriched by the manure of the ſheep, beſides the rich ſupply of food which they receive. This practice is ſomewhat ſimilar to that of Sir William Murray of Auchtertyre, in conſuming the firſt year's crop of ſown graſs with ſheep, mentioned above in the Section on paſtures. Nor do I ſee any objection to either, unleſs the ſheep bite ſo cloſe as to cut off the bud from the heads of ſome of the red clover, which would render theſe plants uſeleſs. Sir William recommends only rye-graſs and white clover, and perennial red clover.

One precaution in hay-making is abſolutely neceſſary, never to make hay up into the firſt cock, when it is in the leaſt degree wet; otherways it ſoon becomes mouldy, by ſitting ſo cloſe together, as to exclude the air.

Whether a farmer thinks proper to make up his hay into the firſt cocks in either of the two ways above-mentioned, or in any other, which he may prefer; yet when theſe cocks are to be turned and two or three of them put into one, according to the condition of the hay, he ſhould not neglect to put the drieſt part of the old cocks next to the bottom of the new ones; and continue to do ſo every time the ricks are turned, until the hay be ready for the tramp-rick.

It is almoſt unneceſſary to adviſe a farmer of experience, that in making tramp-ricks, they ought to be ſecured, by one rop over the top, in the direction of that point from which the moſt violent winds are expected to blow at that ſeaſon, or by two tranſverſe ropes, which is the ſureſt way; and that the ropes ought to be ſo fixed at the ends, as to draw no rain into the hay. The tramp-ricks ſhould alſo be neatly raked down the ſides, and well drawn all round cloſe to the bottom, ſo that the rain may fall from the ſides into the

the earth; not leaving the hay in a flounce at the ſkirts, in a ſlovenly manner, which part of the hay is entirely ſpoilt, if it remains long in the field. If tramp-ricks are made, where the hay grew, make them always on the crown of the ridge, that the water may run freely off in the furrows: But it is more adviſable to carry the hay to the place, where the ſtack is to be made, than to make the tramp-ricks in the field, becauſe the ſecond crop of that year, and the growth even of the next year, is injured on the ſpot, where theſe ricks ſtand; and beſides, all the hay will be at hand, in making the ſtack, to get it cleverly finiſhed, in caſe of a change of weather.

When hay has ſtood in the tramp-rick ſo long, but no longer, than is neceſſary to keep it from heating, becauſe the ſurface is often injured by the weather, the ſtack is frequently made in an oblong form, which is vulgarly called a ſow. This ſtack is not perpendicular, either at the ſides or ends, but diverges gradually from the bottom up to the eaves. Then it is roofed in with the ſhape of a pavilion. Some farmers propoſe as an improvement of the roof, that there be two eaves on the ſides of the ſtack; one at the beginning of the roof, which every ſtack muſt have, and another about a third way from that to the top. The part betwixt the firſt and ſecond eaves, ſlopes leſs; the part betwixt the ſecond eaves and the top, is finiſhed either to the ſquare, or a foot or two above it. But in a ſtormy climate, it is ſafer to be a foot or two above, than at the ſquare. This and many others of our improvements were introduced into this country from beyond the Tweed, where they were brought to perfection by that generous, enterpriſing, and high ſpirited people.

It is computed that a ſtack of rye-graſs hay, which is a year

year old weighs, for every cubic yard, ten or eleven ſtones, of Dutch weight, viz. 17½ lb. Engliſh, to the ſtone; clover and rye graſs ſomewhat leſs, and clean clover ſtill leſs.

It has been generally underſtood, but not examined with ſufficient accuracy, that four-pence is as good a price for hay weighed from the tramp-rick in Auguſt or September, as ſix-pence at Candlemas or March, i. e. that hay does decreaſe one third in weight during that time. An experiment of Mr Robert Webſter at Mains of Errol will throw ſome light on this matter. He weighed two ſtacks of hay from the tramp-rick, in Auguſt 1793, each conſiſting of 400 ſtones of ſimilar hay, from the ſame field, and at the ſame time. Wiſhing to aſcertain how much the weight would decreaſe, he re-weighed the one upon the 17th of February 1794, which produced 372 ſtones; and the other being re-weighed upon the 26th of May 1794, produced 336: The firſt having only decreaſed at the rate of 7 per cent. inſtead of 33 per cent. as is commonly ſuppoſed; and the decreaſe of the ſecond being 16 per cent.

By a ſimilar experiment with the crop of 1795, Mr Webſter found the decreaſe of the weight of hay about 16 ſtones more in every 400 ſtones, than it had been in the crop of 1793; but ſays that the hay was cut more green in the laſt, than in the firſt inſtance; which muſt always affect the decreaſe of weight for ſeveral months, after hay is put into the ſtack.

Although there is no doubt that hay as well as other vegetable ſubſtances will heat, when put together in great quantities, either too green or with much of the natural ſap; yet there are ſo few inſtances of hay ſtacks taking fire by internal heat, that it appears ſuperfluous to give any directions about that matter, except recommending that the hay be

more properly winn, before it is made into a ſtack; leaving vents in the ſtack, if the hay be moiſt. A moderate degree of heat will do it no harm.

In the vallies of the Highlands, near the heads of lakes and at the confluence of rivers, where the land is low and liable to be flooded by natural cauſes, it has been remarked already that there are extenſive fields of natural hay. In theſe ſwamps and wet meadows, the hay is various in its quality, according to the ſpecies of graſs that predominates in the ſoil; the wetteſt bottom producing the coarſeſt graſs, and the drieſt the fineſt, but leaſt abundant crop. In general bog hay, as it is called, is about one third inferior in quality to that from ſown graſs: and the method of making it ſomewhat different. This hay is commonly ſo ſoft, that if made up into cocks without tedding, it might ſit too cloſe to become pervious to the air and wind; the blades are ſo ſmall, and the ſeed ſtalks ſo few, that the rain would penetrate into the cock. It muſt therefore, in that rainy climate, even at the riſk of having its juices exhaled, be often opened out, and expoſed to the ſun and wind, in good weather, before it be ſtacked or put into the barn. But an intelligent farmer is careful to preſerve its quality as much as poſſible, and for that purpoſe, expoſes his hay, juſt as much and no more than is requiſite for its preſervation.

The natural hay of rich ley ground is preferable to that made of clover and rye graſs, for carriage and ſaddle horſes, which are much upon the road. The former gives them better wind; the latter renders them puffy. I learned from a nobleman, whoſe office at court gave him an opportunity of examining thoroughly into this matter, that good ley hay is much ſought after both for his Majeſty's horſes, and for other horſes of this deſcription about London.

SECT.

SECT. IV. *Feeding.*

WHEN ſtock is fed judiciouſly, regard is paid to the nature and quality of the food, the purpoſes intended, the time neceſſary to accompliſh theſe purpoſes, and the taſte of the animals to be fed.

In the ſection relative to the culture of turnips, ſome remarks have been made about feeding with that uſeful root, which it is unneceſſary to repeat in this place. Previous to the introduction of ſown graſſes and field turnips into this country, the cattle were fed in ſummer by paſturing on natural graſs in the fields; and in winter they were ſupported by dry provender. This limited ſyſtem is going daily into diſuſe, or rather undergoing an improvement, in proportion as farmers acquire more knowledge in rural economy, and the feeding of cattle becomes more an object of attention.

In ſeveral parts of this county, where this ſubject is properly underſtood, the milch cows are generally fed in the houſe or in a ſhade, while cut clover is in ſeaſon; and allowed an airing once a day in an adjoining field. Although this practice is attended with more labour, than leaving the cows to paſture at large in the clover field; yet the advantages which other ways attend it, by far overbalance the additional labour. The clover is ſaved from being covered in many places with dung; the field is ſaved from poaching in rainy weather; the dung-hill for the next year is greatly augmented; the milk will be more copious; and double the number of cows maintained on the ſame extent of ground.

The quantity of butter and cheeſe ſaid to be produced from the acre, or from a certain number of cows fed in this manner, is often exaggerated; at leaſt appears to be ſo. I

decline therefore to quote inſtances of either. It is ſufficient for the ſatisfaction of thoſe, who wiſh to adopt this method of feeding their dairy, that of all others, it is the moſt productive at the ſame expence.

Horſes are alſo kept in better condition and more economically fed, by cut clover, than by allowing them to run about and tread down their food in the field.

An ingenious improver told me, that cattle fed upon turnips will eat one third of their weight in 24 hours; but others have found, that by being conſtantly ſupplied for one day, they can eat a great deal more. Perhaps they may not be able to eat a great deal more, every day ſucceſſively. The ſame improver ſays, that a horſe of about L. 20 value will eat eleven ſtones of green clover in the ſame time.

The danger ariſing to cows from eating too plentifully of green clover, was taken notice of in the ſection relating to clover; and a remedy was pointed out to ſave their lives.

Turnips, cabbages, oil duſt, the offal of diſtilleries and greens, are uſed for feeding cattle, when the cut clover fails. In this caſe and in all others, cleanlineſs is of the utmoſt conſequence. The conſtruction of ſettles proper to inſure the removal of urine and to keep the cattle clean, while ſupported on this diuretic food, has been mentioned under the article relating to turnips.

When cattle are fed on paſtures, care ought to be taken to examine the quality of the plants natural to theſe fields. On examination, many plants may be found, which are noxious to browſing animals; and the effect of ſwallowing theſe is frequently productive of diſeaſe and ſometimes of death. The moſt hurtful are henbane, hemlock, the deadly night ſhade, drop-wort, and yew. If there is plenty of wholeſome graſs in the field, cows are taught by inſtinct to avoid

avoid theſe and any other plants, which are injurious to their health: but when they are confined in narrow incloſures, where theſe, or any of theſe plants, abound, and are pinched with hunger, it is impoſſible that they can all eſcape. Spring is the ſeaſon of greateſt danger, when perhaps wholeſome food is ſcanty, and little choice left to the cattle.

Cows in ſpring have a natural tendency to ſcouring, when firſt removed from dry provender to graſs. Herbs which are antitodes to this diſorder, ſuch as agrimony and cummin, might be ſown within their reach. If the field has not been eaten bare before winter, the mixture of old graſs will in ſome meaſure prevent the laxative effect of the new. The old graſs will alſo protect the new, and enable it to riſe more early; beſides that the circulation is in ſome degree reſtored in the root of the old graſs itſelf. If the herd be few in number, the change from dry to green food may be gradual. By either of theſe precautions the danger is leſſened.

Milk in its various modifications conſtitutes a conſiderable proportion of the food of the ordinary claſſes of mankind; and finds its way, in certain quantities, as an ingredient, into the luxuries of the wealthy. How neceſſary is it therefore to attend to the health of milch cows, by paying attention to their food; that this juice, which we derive from them, and upon which we all live in a greater or leſs degree, may be, not peſtilential but nutritious, to ourſelves. The magiſtrates of great towns eſteem it to be a part of their duty, to take cognizance of the quality of meal and bread ſold to the inhabitants, and of the weight and quality of meat expoſed in the ſhambles; while the quality of the milk, offered to ſale, which is materially affected by the healthineſs of the cows and the nature of their food, has not, or at leaſt very ſeldom, been an object of their attention.

It

It is commonly remarked, and I believe with juſtice, that the ſame number of acres of paſture-land will feed cows better, when divided into two or three incloſures of a moderate extent, than when all are depaſtured at once, in one great incloſure. The cattle will carry more beef and tallow at the end of the ſeaſon, when they are changed alternately every two or three weeks from one incloſure to another. It is not ſo certain, however, that this maxim applies with equal ſucceſs to the feeding of ſheep, which naturally affect a wider range than the ſluggiſh cow.

It is often recommended to put animals of a different ſpecies into the ſame field to feed together. Sheep and horſes may thrive in this ſituation, becauſe the horſe eats the fat graſs that ſprings immediately from the dung of that ſeaſon, while a ſheep prefers the poorer and cleaner graſs. They both bite cloſe, and have an equal chance for food, while it laſts; but cows have no chance with either of them, if there be any ſcarcity.

How many ſheep or cows or horſes can be maintained on any given number of acres, it is almoſt impoſſible to aſcertain with any degree of accuracy, where the quality of the ſoil, the richneſs of the graſs and the ſize of beaſts is ſo various. The bleak mountains of this county are now depaſtured by ſheep alone, with a few gleanings of the former goats, and are thereby becoming more verdant every year, and capable every ſucceeding ſeaſon of feeding more on the ſame extent of territory. The lower paſtures, not in cultivation, are alſo improving, by being the reſidence of ſheep in winter and ſpring. Yet it is a curious fact, that the heath is not extirpated ſo rapidly on the low, as it is on the high hills. This may perhaps be occaſioned by a difference in the manure of the ſheep at different ſeaſons. It is more powerful

ful in ſummer and autumn, while they frequent the higher hills, becauſe they live more plentifully and eat food in its higheſt luxuriance, than it can be, while their food is moſtly withered graſs and their meals more ſcanty, which is the caſe in winter and ſpring. The heath itſelf may be ſtronger on the ſkirts than on the tops of the mountains, and conſequently baniſhed with more difficulty.

The paſture upon good land, after one or two crops of hay have been reaped from it, is as rich in many parts of this county as in any part of Britain: The graſs is as luxuriant and the pile as cloſe, the natural white clover and daiſy as thick as they can ſtand. And the great ſpecimens which are given of the produce of an acre, either in milk or weight of meat in other places, we may, without a bluſh, claim to ourſelves. Within ſight of the window, where this report is written, twenty four ſheep and lambs, many of them the large Engliſh breed, are feeding upon two acres and a half of graſs: and as a proof that they have abundance, the owner is obliged to turn in other cattle occaſionally to keep down the graſs, to prevent its running into ſeed and becoming uſeleſs.

CHAP. IX.

Gardens and Orchards.

HOCTICULTURE is making rapid progreſs in the county of Perth: but where there is ſuch an extent of territory, ſuch a variety of climate and of ſoil, it naturally follows that this ſpecies of improvement is more attainable in ſome diſtricts than in others. Along the circuitous bank of the Seed-

law

law hills, and indeed in the whole Carſe of Gowrie, the mildneſs of the air, the ſhelter from the north and eaſtern blaſts, the depth and fertility of the ſoil, and the ſloping aſpect to the ſouth, like a hanging garden, which the general appearance of the country exhibits, invite the induſtry of man and indicate the intention of nature, to render this favoured ſpot productive of fruit. There are upwards of twenty orchards in the Carſe of Gowrie. That of Monorgan lets for about L. 100 of yearly rent. Seaſide brings ſomewhat leſs; and others in proportion to their extent. Mr Donaldſon, who wrote a report of this part of the ſhire of Perth in 1793, ſays, that the fruit from theſe orchards, which conſiſts of apples and pears of all the various kinds, are partly ſold in the neighbouring towns, and the remainder is exported to Montroſe, Aberdeen, and other parts on the north eaſt coaſt of Scotland.

Many of the gentlemen in the Carſe have gardens, which are at once an evidence of their induſtry, of their taſte and of their opulence. It was to me a matter of regret that I could not view them all. That of Mr Paterſon of Caſtlehuntly has 300 feet of glaſs. He has introduced ſteam into his hot-houſe, for raiſing melons with dung, and ſteam alſo into the vinery and peach-houſes. He entertains no doubt that ſteam will anſwer for pine-ſtoves. He has peaches, nectarines, apricots, almonds, walnuts and figs on a wall. Similar attention I underſtood was paid to horticulture in other parts of the Carſe.

Next to the Carſe of Gowrie, the beſt expoſure in all this county for raiſing fruit is the foot of the Ochills, from the bridge of Allan to Dollar. The rays of the meridian ſun are reflected ſo powerfully from the precipitous hills on the north, that all the productions of the earth are reared, as in a hot

a hot bed. Along the north ſide of the water of Earn, from the village of Comrie to its confluence with the Tay, the fine ſloping banks are favourable to the growth of fruits of various kinds: In the vicinity of Perth, in the tract of the Tay and of the Iſlay, and in many parts of Monteath, the ingenuity of man has ſeconded the benignity of nature, in cultivating different kinds of fruit. Nor are the vallies of the Highlands defective in ſhelter; although the ſoil in general is too thin and light for nouriſhing the trees, which carry the larger fruits. In theſe higher diſtricts, ſtone fruit, ſuch as geans* and cherries, abound. The trees thrive well, live long and carry fruit of the fineſt flavour and moſt ſavoury taſte. The cream-coloured cherry of Advorlich and the black gean of Caſtlemenzies are highly eſteemed in reſpect of beauty and reliſh. It is ſingular that this fruit, which is a native of Aſia, and unknown in Europe until Lucullus brought it to Italy, after the Mithridatic war, ſhould arrive at ſuch perfection, under all the diſadvantages of climate and ſoil, peculiar to the Highlands of Scotland. Such a powerful influence does Nature exert over all her productions, that in due time ſhe will accommodate both plants and animals to their ſituation. This controuling power of Providence is leſs attended to than it ought. To it we owe many of the comforts of life.

The fruits that grow on ſhrubs are in the higheſt perfection in a thouſand places. The gooſe-berries and currants of Lawers and Kippenroſs, both for variety, ſize and flavour, are inſtances out of many to what pitch theſe fruits can be brought by induſtry. The ſeveral kinds of pot-herbs and roots are not only raiſed in gentlemen's gardens, but by the farmers and villagers.

* A kind of ſmall cherry.

Although my directions from the Board led me to Caſtle-huntly, which induced me to pay attention to Mr Paterſon's garden, the reader is by no means to infer, that there are not ſimilar gardens, ſeveral made and others making, in different parts of the county. At the houſe of Dunkeld, at Belmont Caſtle, at St Martins, at Roſſie, at Drummond Caſtle, at Gartmore, at Cardroſs, at Blairdrummond, at Kier, and in many other places, where there are proprietors of taſte, no labour is ſpared and no expence is grudged to bring horticulture in all its branches, to the higheſt ſtate of improvement, of which this climate renders it capable.

To ſome readers what has been ſaid may appear tedious and unintereſting, while others may account it ſuperficial by reaſon of its brevity.

CHAP. X.

Woods and Plantations.

THE Highlands of Scotland, like all other countries where the land is not overcharged with water, was at one period under wood. Tillage and other cauſes have removed the veſtiges of trees, in certain ſoils; but their roots and trunks are found almoſt every where in moſs, both in the flat land, in the vallies, and on the very tops of hills. The progreſs of population, the neceſſity of cultivating land to procure farinaceous food, deſtroying the favourite haunts of wild beaſts, and the faſtneſſes of lawleſs men, all contributed their ſhare, in laying the country naked, by the deſtruction of the talleſt foreſts. Even in the bottom of Moſs-Flanders in Monteath, which is in moſt places from 10 to 12 feet deep, the roots of trees are ſaid to have the marks of the hatchet.

hatchet. The crowded population, which the feudal ſyſtem, being altogether a military eſtabliſhment, encouraged in later times, and the exigencies of the ſtate in requiring ſo often a multitude of ſoldiers, unproportioned to the extent or fertility of Scotland, in order to reſiſt fierce invaſions and contend with powerful neighbours, brought every inch of land into tillage, which, according to the ideas of theſe times, was capable of producing grain. Nothing was left unploughed, where the rude huſbandry of our fathers ſuppoſed an ear of corn could grow. The woods were baniſhed into the ſteep declivities of glens or among rocks and ſtones and other places deemed incapable of cultivation. The open country was totally diveſted of cover; becauſe the growth of timber was conſidered as an obſtacle to abundance of food, or in other words, to population. The ancient barons, more eager for warfare and the extenſion of their property than for its improvement, conſpired with the ſpirit of the times to deſolate the woods.

About the beginning of this century, woods began to claim ſome attention. For fifty or ſixty years back, the poſſeſſors of ſome eſtates in this county thought of repairing the devaſtation, which had formerly been permitted or encouraged on the growing timber. They ſaved what remained of their woods and made new plantations, in places convenient for that purpoſe. Within theſe laſt thirty years, plantations have increaſed rapidly both in ſize and number. In the Stormont, in Athol, in Breadalbane, in Strathearn, in Strathallan, in the Carſe of Gowrie, in the vicinity of Culroſs, in Monteath, almoſt in every corner of the county, there are thriving plantations, which conſiſt of a variety of foreſt trees, adapted to the nature of the ſoil, that do honour to the ſpirit and judgment of the owners. They are

already an ornament to the country and a profit to the poſſeſſors.

In former times a few favourite trees might be ſeen about the reſidence of a great man, ſome of which may have ſtood for centuries and become venerable by their years; but the ſcale has been greatly enlarged in this part of the empire, beyond all example at any period or in any age.

The (pinus rubra) Scots fir is the moſt common pine in theſe plantations. It is extremely hardy, is naturally ſuited to all climates and almoſt to all ſoils; although it ſeems to prefer the colder regions, being found to thrive within the frigid zone. The larch has many years ago been introduced into this county, as a variety in our plantations. Mr Marſhal remarks in his Survey of the central Highlands in 1792, "that there are Larches at the Caſtle of Blair Athol and Dunkeld, planted fifty years ago, which meaſure full eight feet in circumference, at five feet from the ground; and that a ſimilar luxuriance of growth has taken place at Taymouth." The largeſt larches in this county, or perhaps in ſeveral counties around it, are at Monzie, which meaſure five feet in diameter, and about fifteen in circumference. There are larches of a great ſize at Blair-drummond, Gleneagles, Roſſie, and many other places in Perthſhire. I ſaw larches planted 47 years ago two feet and a half diameter at five feet from the ground, correſponding very nearly to what Mr Marſhal ſays; a ſize to which no other ſpecies in this country would arrive in the ſame time. The boards had very little white timber at the edges. Poſts of larch, which had been put into a moſt ſoil about fifteen years ago ſeemed ſtill to be freſh and ſtrong.—It is only of late that this tree has been generally planted and its excellence known in this country.

It

It is the moſt rapid in its growth of any tree we have, and the moſt valuable ſpecies of the pine. It is cloſer in the pores, has fewer knots, and the wood is more durable than the common fir, and withal it increaſes double the number of cubical feet, in any given time; which is a ſingular excellence.

Larches are well adapted to this climate, and are ſaid to have been brought into Scotland, by one of the Dukes of Athol, from the frozen mountains of Carniola, which are a continuation of the Alps, bounded by the Gulph of Venice. They make excellent floors and beams for houſe-building, and are uſed in Venice and Switzerland for that purpoſe. They make excellent planks and maſts for ſhips. Coxe ſays that the veſſels on the Lake of Geneva are made of larch. Painters have truſted their works to this wood, as being proof againſt the worm, for which reaſon Pliny calls it *immortale lignum*. He ſays it was imported into Europe from Sardis.

Aſh, elm, plane, beech, oak, laburnum, and a variety of other different kinds are intermixed in our plantations, which have a fine effect, by diverſifying the appearance, and relieving the eye from a dull ſameneſs, which never fails to diſguſt. The aſh and the elm are the moſt uſeful, for the purpoſes of huſbandry, the pine claims the next place. The oak is excellent for ſhip-building, and its bark brings a great price. The aſh and the elm turn their backs to the ſtorm when planted ſingle, as do the larch and the beech; but the plane ſtands erect, ſpreading his branches equally on all ſides, in defiance of the ſtorm. The ſame may be ſaid of the oak upon the beſt authority:

——————— Quercum
Alpini boreæ nunc hinc, nunc flatibus illinc

Eruere

Eruere inter ſe certant: it ſtridor, et alte
Conſternunt terram, concuſſo ſtipite, frondes;
Ipſa hæret ſcopulis; et quantum vertice ad auras
Æthereas, tantum radice in Tartara tendit.
Æn. iv. 441.

In large plantations, there are varieties of ſoil and expoſure; and every kind of timber thrives beſt in a ſoil peculiar to itſelf. The trees, which keep the leaf in winter, afford the beſt cover, where ſhelter is wanted; and of all theſe the ſpruce continues longeſt to carry branches near the root. Taſte in planting is diſcovered by the variety; and judgment is ſhown by having every tree of a plantation in that ſoil, which correſponds to its nature. An elegant writer on huſbandry ſays

Fraxinus in ſilvis pulcherrima, pinus in hortis,
Populus in fluviis, abies in montibus altis.

The oak prevails in the vallies of the Grampians, where there is a genial climate, and the ſoil light and dry. Aſh grows ſpontaneouſly on the ſides of every brook, river or lake: The alder delights in ſwamps and ſpouty ground; and the birch climbs boldly to the brow of every hill. In the low country there are many natural woods, where the plants found cover and the ſituation of the ground was unfriendly to the operations of the plough: but in many of the moſt bleak and expoſed places, hardly a ſhrub can be ſeen, to afford ſhelter from the cold, or to hide the ſterility of the ſoil.

In chooſing plants of foreſt trees, or indeed of any kind, it is proper to bring them from a nurſery, as ſimilar in the quality of ſoil and expoſure, as poſſible, to the ſoil and climate, where they are to be planted out. The beſt ground for a nurſery is a free rich ſoil, in an expoſed ſituation, the freeneſs

freeneſs and richneſs of the ſoil give the plants many ſmall fibres, and the ſituation being expoſed prevents the plants from being delicate. Many plantations have failed, by bringing young trees from rich and warm nurſeries, near great towns, to a poor ſoil and a bleak climate; and many have alſo failed by putting down trees in ground unſuitable to their nature.

It is a ſingular phenomenon, that when the ſeeds of trees are thrown into the ground, although the ſtem may happen to be pointing downward, and the root upward, or both root and ſtem in a horizontal or oblique poſition, yet the ſtem uniformly raiſes its head perpendicular to the horizon, even when ſown awry or on ſloping ground, and the root as invariably turns itſelf downward.—Naturaliſts have puzzled their heads to account for this energy in plants, from natural or viſible cauſes; but they have done ſo in vain. That ſtructure, if there be any ſtructure, which gives the fibres ſuch different, nay oppoſite qualities in righting themſelves, is a myſtery beyond our reach. Their motion is regulated and their poſition ſettled by an inviſible hand, which conſtantly ſuperintends the moſt minute as well as the greateſt operations of nature.

Natural fir woods are very frequent in the north of Scotland, although they are rare in this county; yet it would be unpardonable to paſs over that article in ſilence. The family of Struan Robertſon has time immemorial drawn a conſiderable revenue from the fir-wood on that eſtate, which grows naturally on the ſide of Loch Rannoch; and Colonel Robertſon, the preſent proprietor, with his uſual politeneſs, communicated the dimenſions of his woods along with other information, for this report; which merits my public thanks. His natural fir wood covers two thouſand

five

five hundred and ſixty-ſix acres of land; which is the moſt extenſive foreſt in one continued tract, in the county of Perth. His detached woods of oak, birch and alder intermixed cover three thouſand eight hundred and ſixty-nine acres.

There was a conſiderable tract of natural fir ſeveral years ago near Tyndrom on the eſtate of Breadalbane; but at this time there remain only a few gleanings. Natural firs are growing in one of the parks of Finlarig on the ſame eſtate, and in ſome other parts of the county; but all theſe are on a ſmaller ſcale.

There are more oak woods and of greater value, in this county, than in all the reſt of Scotland. The copſe of oak is cut once in twenty-four or twenty-ſix years. A few ſpare trees of the moſt promiſing appearance and of the beſt figure are left at proper diſtances, from one cutting to another, and ſometimes for three or four cuttings. The ſtreighteſt are generally ſpared, without attending to this circumſtance, that crooked oak is more eagerly ſought after by ſhip-builders and brings a higher price, than oak which is ſtreight. Yet as copice wood is the object, ſtreight trees injure it leaſt. Scotch oak has been found in general too cloſe in the grain to bend for ſhip-ſides, and even for the ſame reaſon it is found to ſnap over when uſed as ribs to a ſhip; its cloſeneſs in the grain is the effect of ſlower growth, owing to frequent checks by early and late froſts.

The purchaſers of theſe woods begin to cut about the firſt of May, or as early as the bark will riſe; which depends on the progreſs of vegetation, in particular ſeaſons, and the natural circulation of the fluids, that are always more copious in the rind, which ſeparates the outer bark from the ſolid timber. It is from this part that trees and ſhrubs increaſe

creaſe their diameter, and have therefore a ring for every year of their age. The cutting of oak-woods, for the moſt part, ſtops betwixt the middle and the end of July. This period is too late; becauſe the ſhoots, which the ſtock ſends forth after that time, are too tender to ſtand the winter's froſt, and a great part of the top generally dies, which retards the growth of the enſuing year and deforms the plant.—It ſeems peculiar to the oak to ſpring twice, or to have two ſucceſſive growths in one ſeaſon; the firſt in Spring, the ſecond in Auguſt. Contractors are for the moſt part bound to have the lot, deſtined to be cut in one year (provincially the hag) cleared by Candlemas, or at fartheſt by the middle of March, in order not to hurt the young growth of the following Spring; and in caſe of failure are ſubjected to damages, which is generally a forfeiture of the timber left behind.

Inſtead of cutting all oak woods at a particular age, without regard to the ſoil, it might perhaps be more proper to cut woods which grow on dry, barren ſoils, at twenty years old, before the growth languiſhes, before the ſtunted trees gather moſs, and the bark next the root becomes hard and ſapleſs. This moſs muſt be ſcraped off, before the bark can be ſold, and when the bark hardens on the tree, it cannot be peeled without much difficulty. The young ſhoots will ſpring more vigorouſly by that management, than when woods of this deſcription are allowed to attain the ordinary age. On rich ſoils, they may ſafely be allowed to grow, till the trees are eight or nine inches diameter at the ground; becauſe thriving woods increaſe more in weight of bark during one year towards the latter end of their ordinary time of ſtanding, than they do in double that ſpace in their younger years. But if they are left to ſurpaſs the ordinary

period, the ſucceeding growth ſuffers; becauſe the ſhoots from young ſtocks are always more vigorous, than from thoſe which are old.

If the advantage of the copſe alone is attended to, no ſtandard ſhould be left, except ſuch ſeedlings as appear neceſſary to renew the ſtocks, where old ones are wearing out; becauſe when left for three or four cuttings, they ſeldom ſpring, except in the following caſe. They will always ſpring, if the large ſeedling be peeled ſtanding, and to prevent ſplitting, be not cut down till Chriſtmas.

It was lately diſcovered at the houſe of Buchanan, the principal ſeat in Scotland, of his Grace, the Duke of Montroſe, that although aged oaks, when cut down, very rarely or never ſend forth young ſhoots from the parent ſtock; yet if the earth be cleared away, ſo as to expoſe the roots, to ſome diſtance from the old ſtock, young ſhoots often ſpring from the bark of theſe roots. This diſcovery merits attention; and may probably be tried with ſucceſs, with regard to all the aged trees of ſuch claſſes, as uſually ſpring from the ſtock, when they are cut down young.

The bark of theſe trees at an advanced age is ſo exceedingly thick and ſo very dry, that the tender ſhoots neither can penetrate the coat that reſiſts them, nor find juices to nouriſh them, whereas the roots that had been covered with earth, have bark which is thin and juicy, by not being expoſed to the injuries of the weather, and therefore the ſhoots can more eaſily get through their bark and find nouriſhment to puſh them forward.

When the bark is dried, it is ſent off to the tanners; and if they reſide any where on the coaſt, it is carried to the neareſt port. Some years ago, one ſhilling was accounted a good price for the ſtone of 17½ lb. Engliſh (provincially Dutch

Dutch weight); now one ſhilling and ſix-pence is very common, and the price is ſtill riſing.*—The crooked timber, of a proper ſize, is ſent to the ſhip-carpenters in the different dock yards; the other timber is either made into ſpokes and ſent to the great towns for the uſe of the coach-makers, or ſold to the country people for various purpoſes, or reduced to charcoal for the foundries. But the practice of charing timber does not prevail ſo much as formerly, becauſe the managers of theſe furnaces char the pit-coal found in their neighbourhood, and uſe it in place of the other; which ſaves them the expence of a long carriage.

The bark of the birch tree was formerly more uſed in tanning leather, than at preſent; becauſe it ſeems that its virtues are leſs than that of the oak. It gives the leather a beautiful light brown or yellow colour. The bark of the willow and the mountain aſh is uſed equally with oak bark. The laſt is a powerful aſtringent; is ſaid not to be much inferior to the Peruvian bark, and to be a good ſubſtitute for it. Tanners eſteem it principally, becauſe it excites a fermentation in their pools.

For ſome years back, in cutting woods on moſt eſtates, the ſtocks are peeled to the ground; whereas according to the former practice, the bark was never allowed to be taken off below the ax, or the place where the tree was cut. By the preſent method, the young ſhoots are better ſpread and have more air, than when they grew all in one buſh. They are nearer the earth, each ſtanding on its own baſe; by which means they reſiſt the winds more firmly, and acquire their nouriſhment from the ground more directly and plentifully, than through the medium of the parent ſtock, or by forming a cruſt of new timber around it. Care ſhould however be taken, not to allow the ſtocks of oak to be peeled below

* It has again fallen ſince this Report was written in 1797.

the ground, which might happen either by intention or neglect, when a ſtrong ſlice of bark is drawn off; becauſe the new ſhoots ſpring only from ſuch parts of the ſtock, as have bark above ground or very near the ſurface, where the air can freely circulate.

Oak woods newly cut are commonly incloſed, either with a ſtone wall or railed in with a part of their own timber; and are preſerved from cattle, for the ſpace of five, ſix, or ſeven years, according to the option of different proprietors. But unleſs the ſoil be uncommonly rich, in five years, or even in ſix, the young ſhoots are neither high enough, to be out of the reach of cows, which eat them greedily, nor ſtrong enough to reſiſt their weight, when they preſs upon them, in order to reach at the ſucculent buds on the top. Horſes are not apt to do ſo much miſchief, unleſs they are preſſed with hunger. When oak woods are eaten or cropt with cattle, they will never thrive, until they are cut over at the ground; and in this caſe, the ſooner it is done, the better.

All copſe is weeded, ſome at one age and ſome at another, according to the faſhion of particular countries or the opinion of different proprietors. Nature points out the proper time of beginning this operation. The ſtronger ſhoots never fail to throw the weaker ones aſide in the ſtock, which ſtretch out ſomewhat obliquely in queſt of air. There may be a few weak ſhoots in the heart of the ſtock; but they are moſt frequently forced to the ſides.—Some perſons are ſo careful of their oak woods as to weed them twice. In weeding oak woods no indulgence ought to be ſhown to birch or any other ſpecies, which interferes with the oak; becauſe the oak grows ſlowly and is eaſily chocked by other kinds which are far inferior in value. This practice is recommended by the example of Mr Drummond of Strageth and others.

Pro-

Proprietors, who are careful to improve their finances, by a proper management of their woods, do often, when their woods are newly cut, plant all the vacant ſpaces, with trees ſuitable to the nature of the different kinds of ſoil. Wherever hazel grows, acorns ought to be ſown, or rather young oaks planted. Two or three cuttings of the hazel, which is done at ſmall expence, would ſuffice, until the oaks got the maſtery.—The hazel and oak delight in the ſame ſoil and expoſure, a dry gravel on a ſloping bank, and not far up the hill. Hazel woods have ſome oaks, and oak woods have ſome hazel interſperſed; which ſhows that they are kindred plants in reſpect of nouriſhment, although very different in point of value. The hazel ſells for hoops, which in an inland ſituation are of little account, whereas the oak is the moſt valuable timber we have, were we to reckon on the bark alone. It is entirely owing to negligence in this reſpect, that we ſee oak woods all over the country infeſted with hazel, birch and other trumpery; becauſe every time the wood is ſaved, all the vacant ſpots, where timber will grow, we find, are ſown at random by the hand of nature with ſome kind or other.

Ornament and utility ought to be chief objects in planting. A good judge of human nature ſays,

Omne tulit punctum, qui miſcuit utili dulce.

Oak ſeems to be of all others the fitteſt tree for theſe purpoſes, in an inland ſituation; becauſe the bark yields a quick return, from the ſucceſſive cuttings of the copſe, every twenty-ſix years, nearly equal to the value of the land, on which it grows; and the timber ſerves the ordinary purpoſes of the country; whereas other timber may not find a market, if remote from water carriage. While the attention of gentlemen is directed to adorning their reſidence, no

ſpecies

ſpecies of trees is ſo well adapted for this purpoſe, as that which ſprings from the ſtock and is a permanent beauty. If ornament alone is the proprietor's object, although other foreſt trees ought not to be excluded, the oak ſeems to deſerve a preference, by being allowed to riſe to its full ſtature. It is the longeſt lived tree known in this part of the world, the yew alone excepted, and in its aſpect imitates the boldneſs and grandeur and duration of our hills.

The moſt approved mode of planting trees, eſpecially of oak, where there is not already whins or broom to afford ſhelter, is to begin by planting larch or birch in the field deſtined for the plantation, at the diſtance of eight or twelve feet; and to keep the oaks in the nurſery, tranſplanting them every third year, till the larch or birch have got up to three or four feet high. Then the oaks ſhould be nearly of the ſame height, and put out in the open ſpaces, at the diſtance of fourteen feet, as nearly as may be; this being the diſtance ſuited to the future ſtocks of the copſe-wood. The larch and birch ſhould be pruned, as they interfere with the oak, until the former attain ſuch a ſize, that they can be cut out, for ſlabs or other ſimilar purpoſes, leaving for beauty, what may be thought proper.

The beſt method of planting pitted trees, after rejecting all that are not well rooted, and pruning off the injured parts of the fibres, is, when they are about four feet high, to make pits, twenty inches wide at the top, and as nearly as may be, fourteen or ſixteen inches at bottom, and of this depth; except in wet ſoils or among rocks, where it is more adviſeable to make the pit ſhallower than fourteen inches, and to collect a hillock of earth round the root of the tree. In making theſe pits, care ſhould be taken, to lay the ſurface ſeal or ſod to one ſide, the good earth next it to another,

ther, and the bottom earth to a third. In planting, the ſod ought to be thrown into the bottom, with the red ſide uppermoſt, the root of the tree placed on that ſod, and the good earth thrown on the fibres, with as much more of rich earth as may cover them completely, obſerving always to throw in that good earth as lightly as poſſible and to ſhake the tree gently, that it may mix fairly with the roots. Then the bottom earth ought to be put in and preſſed with the foot, leaving a hollow ring next the tree, if the ground be dry; but if the ground be wet, leſs preſſure with the foot will ſuffice; and in this caſe it was ſaid already that a hillock ought to be raiſed above the ſurface, that the trees might find nouriſhment, when they expand their roots.

Trees ought to be planted as ſoon as poſſible after they have been raiſed; but if it ſhould happen otherways, or that the ground and ſeaſon be very dry, their roots ſhould be moiſtened in water, before they are put into the pits, to reſtore the tone of the fibres, that the juices may flow the more readily into the alimentary canals.

Before agricultural improvements were ſo well underſtood as they are of late, or occupied ſo much of the attention of all ranks in this country, many mooriſh tracts of land were deemed incapable of cultivation, or of making a return in any other way equal to their being planted. Proprietors, even in the Carſe of Gowrie and in the Stormont, being actuated by this principle, about twenty years ago, planted the waſte lands upon their eſtates, with Scots firs. They have now found that this ſoil, by being wrought, will make good arable land, and will be more profitably employed in tillage. Some thouſands of acres have accordingly been cleared; the plantations rooted up; the ſoil ſubjected to the plough, and let at a progreſſive rent, in ſome caſes, amounting

ing already to twenty ſhillings the acre. Betwixt Coupar and Perth, a tract of thirteen miles, the plantations on two thouſand acres, upon both ſides of the public road, have been grubbed up; and the operation is ſtill going on, both there and in other places.

So powerful is the principle of imitation, that we all go frequently one way, until we have gone too far. All men can imitate example, but all men cannot reaſon ſo as to form a principle of action to themſelves.

In a certain degree this operation is ſalutary; but if carried to exceſs, it will leave the face of the country naked; and perhaps in all caſes, the coſt is not counted, nor the ballance fairly ſtated between the plantation and the produce ariſing from ſome poor ſoils, by an arable ſyſtem: yet it muſt be admitted, that no trees are equal in value to corn and graſs, either to the landlord or the public, where the cultivation of theſe can be proſecuted with ſucceſs.

CHAP. XI.

WASTES.

ALL unproductive land, which is abandoned as unimproveable, whether it be a common or not, may be called waſte. Nature has been ſo kind to ſome ſpots, eſpecially low lying meadows, where there is plenty and no more than plenty of moiſture, for raiſing the meadow graſſes, that it is doubtful in many caſes, whether the induſtry of man can render them more productive than the benignity of nature has already done. Many ſuch tracts of meadow ground in this county might be pointed out; which may be traced in a great

great meaſure, from what has been ſaid in the Section on meadows.

Waſteneſs admits of various degrees. Some land in a ſtate of nature may be worth ten or even fifteen ſhillings an acre of yearly rent; while other land is not worth ſo many farthings: and betwixt theſe extremes, there are many gradations. Even the land, which is worth fifteen ſhillings in its natural ſtate, may in a certain ſenſe be called waſte, if it could be brought by cultivation, to be worth twenty or thirty ſhillings: and the neglect in this caſe is more cenſurable, than in abandoning ground of leſs value, which by a variety of untoward circumſtances is almoſt incapable of cultivation. In the county under review, there are many thouſand acres in theſe ſituations; more however in the laſt ſtate than in the firſt. When the condition of land can be meliorated, it is waſte in the proportion between its natural and ameliorated condition; but when its produce cannot be increaſed, which is the caſe with many of our mountains, it ought to remain in its preſent condition. It is not the intereſt of any man to attempt an improvement, unleſs the expence be refunded by the produce; yet in many caſes the probability on the ſide of profit is very ſmall. It is unfair therefore to ſtigmatize thoſe as indolent, who make no attempts to improve land, which is not capable of being reclaimed. But this is no excuſe for the indolence of others, who make no efforts, where the ſubject is inviting, and the probability of profit in their favour.—After all, *improveable* is an indefinite term; and the laſt generation thought many ſpots unworthy of culture, which we now ſee converted into good arable land. There may happen to be a piece of naughty land, near a gentleman's door, whoſe barren appearance is an eyeſore, and he muſt improve it at any expence.

It appears to be impracticable to improve the high heath-clad mountains in the interior diſtricts of Perthſhire, in any other manner than by ſtocking them with ſheep, or by ſpreading upon their face, the innumerable rills, which deſcend from their brows. Either of theſe will extirpate the heath. All the land within the old head dykes, and the other green ground at the baſe of the hills may and ought to be improved. The low lying moors, which have been long abandoned to their natural ſterility, ſeem to be capable, by proper attention, of making tolerable returns, ſome by one ſpecies of improvement, and ſome by another, judiciouſly adapted to their ſoil and other peculiar circumſtances.

1. *Moſſes.*

THE original formation of moſs or peat-earth is ſo well aſcertained and ſo accurately deſcribed in almoſt every treatiſe on agriculture, that it is unneceſſary to enter into any detail on that ſubject. The moſt uſeful queſtion relative to this ſpecies of land, is, what is to be made of moſſes, and how they are to be rendered productive.

Moſſes of ſmall extent, where there is a mixture of other earth and the fall conſiderable, are generally pared and burnt, with profit; but if there be little or no fall they may be planted with potatoes in lazy beds for a firſt crop, and the furrows left open for drains. With the firſt or ſecond white crop, the ſeed of common graſſes, which is always to be met with in meadow land, ought to be ſown; which will yield a heavy crop of hay for ſome years and afterwards a plentiful ſpring of ſtrong coarſe paſture, conſiſting moſtly of the aquatic plants.

Where there is plenty of bruſh wood, deep moſſes, with a good fall, are moſt frequently drained, and drawn in ridges

ridges like other land. The drains may be made with faggots, put in, either longitudinally and ſloping, having the ſlope of the truncheon always in the direction of the fall; or they may be laid tranſverſely, in the ſhape of a St Andrews Croſs, and the land afterwards pared, burnt and levelled. *

Nearly ſimilar to this mode of improving moſs-land, are the directions contained in a communication from a gentleman in Airſhire to another gentleman in my neighbourhood, which is ſaid to be borrowed originally from the practice in Ireland. The principal difference is that he directs the moſs to be *delved* or dug up with ſpades, and the manure to be chiefly lime.—Having not ſeen or heard of this improvement of the moſſes in the county of Air, when my firſt report was printed, I ſhall now give it fully, and am inclined to do ſo the more readily, becauſe it is found by experience to be effectual.

"The firſt thing to be done, is to mark and cut proper maſter-drains, eight feet in width by four and a half in depth, declining to two and a half at the bottom; which drains coſt in Airſhire at the rate of one ſhilling per yard. In ſome inſtances it will be found neceſſary to cut theſe drains much deeper, and conſequently at greater expence; and the drains are almoſt in every caſe ſo conducted, as to divide the field into regular incloſures, as well as to carry off the ſuperfluous water.

"Then the ridges are marked off regularly, and in breadth ſix or ſeven yards; ſeven yards are preferable; which ridges

* The ſpade for paring ought to be ſimilar to that uſed in Scotland for caſting Turf, provincially the Flaughter-ſpade; only a little more ſcooped in the iron and rounder in the fore part, having a perpendicular knife, ſtanding up at one ſide of the iron ſole, to cut the ſod, as the Highlanders have to the *lugged* ſpade, which they frequently employ in caſting peats in tough moſſes.

are formed with the ſpade in the following manner. In the center of each ridge, a ſpace of about twenty inches is allowed to remain untouched; and on each ſide of that a furrow is opened, which is turned inward ſo as completely to cover that ſpace, like what is called the feering of a gathered ridge. Thus begun the work is continued, by cutting with the ſpade in breadth about twelve inches and in length as may ſuit, till the whole be turned over, to appearance as with a plough, reaching back to the furrow that bounds the ridge. That furrow is a ſpace about two feet, which is cut out, and caſt on the ſides of the ridges. The depth of this diviſion-furrow ought to be regulated by circumſtances, ſo as not to lay the ridge at firſt too dry by being raiſed in the crown, and at the ſame time ſo as to bleed the moſs and conduct the water to the main drains.

"The next operation is to top-dreſs the ridges with lime, the quicker the better, at the rate of from four to eight chalders to the acre. Five or ſix chalders being the ordinary quantity. I have even ſeen conſiderably more applied with effect. The field thus prepared is ready to receive the ſeed, which is ſown in the ſeaſon, whether dry or wet is a matter of indifference, and harrowed in with a ſmall harrow, drawn by two men. Four men, with eaſe will harrow at leaſt five or ſix a-day; two and two by turns, drawing the harrow and breaking and dividing the mould with ſpades."

"But I would recommend planting potatoes, as preferable for a firſt crop, becauſe oats for the firſt year frequently miſgive. The potatoes are planted in what is called the lazy-bed way. The method is ſimple and attended with little expence; and the moſs is prepared for them in every reſpect and limed as before directed, for a firſt crop of oats. The beds are marked off acroſs the ridges, in breadth from five

five to ſix feet, with intermediate alleys of about two feet as a furrow. The beds are covered over with a thin ſtratum of dung. The ſets of potatoes are laid on the dung and covered from the intermediate furrows; which is followed with another covering, in all, about four or five inches.

"I not only conſider the planting of potatoes at firſt as the moſt certain crop, but the moſt ſucceſsful method at once of reclaiming the moſs, not owing perhaps ſo much to the influence of the dung in aiding the fermentation already begun in the moſs, by means of the lime, as to the effect of the potatoe-crop in over-ſhadowing the ground and cauſing a ſtagnation of air, which prevents the exhalation of moiſture, and thereby accelerates the putrefaction and decompoſition of moſs; and alſo to the effect produced by the roots in dividing the moſs, ſeparating its particles and rendering it into mould. This practice is now followed in general, wherever dung can be commanded; and the produce is between forty and fifty bolls from the acre. When the potatoe-crop * is removed, the ridges are again put into proper form; which is done, not by throwing the manured ſurface into the trenches between the beds, but by making two or more cuts with a ſpade into the ſides of the beds which are puſhed in oppoſite directions to cloſe the lips of all the trenches.

"If potatoes are not planted as a firſt crop, the field is prepared for a ſecond crop of oats, by cutting the furrows acroſs the ridge and turning them over, and by cleaning out the diviſion furrows. To prepare for a third crop, the ſame operation is performed.

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* Potato crop is an abſurd expreſſion, but we muſt uſe it for want of one which is more proper. Cuſtom has given a currency to many abſurd phraſes.

" The moſt proper ſeaſon to prepare the moſs for a firſt crop is early in the preceding ſummer. In which caſe, the lime aided by the heat, the harveſt rains and the winter's froſt, has a powerful effect in promoting the proceſs of putrefaction: conſequently a mould is formed to receive the ſeed, the enſuing ſpring. Although I mention the preceding ſummer as the proper ſeaſon to prepare for a firſt crop, the common practice is to prepare for it in the courſe of the preceding winter; and to prepare for the crop of the ſecond year as ſoon as convenient after the removal of the former crop.

" The firſt year's crop is ſometimes good, but very uncertain, becauſe the lime has not had time to exert its influence. The ſecond year's crop will run from five to ten bolls, the acre. A firſt crop after potatoes is ſeldom leſs than ten bolls; ſome times conſiderably more, from the acre. Early oats, the ſmall Dutch or Poliſh oats are ſown as preferable. The grain produced is equal to any in the country. In general, four or five, or even ſix ſucceſſive crops of oats are taken without any additional manure, and without any apparent ſigns of the ſoil being exhauſted. On the contrary the moſs is now converted into a dark brown mould; and what alone renders it leſs productive of corn crops is its running into ſweet luxuriant graſſes, the ſoft meadow graſs, the daiſy and white clover. Along with the fourth, fifth or ſixth crop of oats, graſs ſeeds are ſown, which in common produce an abundant crop of hay, and afterwards afford excellent paſture.

" I now conſider the moſs to be in a permanent ſtate of improvemnet; and if its own fodder be converted into manure, and applied to its own uſe, together with an occaſional aid of lime, it will in my opinion be forever productive in

potatoes

potatoes and corn crops. In ſupport of that opinion, a field of mine has been in crop ſince the year 1783. When it began to run into graſs, it was completely delved over, a freſh quantity of moſs turned up, top-dreſſed anew with lime, and planted with potatoes in drills, and hand-hoed. After the potatoes a crop of barley was taken and followed by ſucceſſive crops of oats; the laſt to be barley alſo with graſs ſeeds. The ſame rotation to be continued by way of experiment." So far the Airſhire gentleman, on whoſe paper no alteration has been made, except in the punctuation and trifles of that nature.

The Board of Agriculture directed me to enquire with care into the improvements, now carried on at the moſs of Blair-drummond or Kincardine, which is a part of Moſs-flanders; but as it would be difficult to abridge a long detail of operations and other matters of fact, on the one hand, and on the other, the whole circumſtances taken accurately down might ſwell this article beyond meaſure, it has been recommended to adopt the account of that moſs printed in the Encyclopædia Britannica; which may be found in the Appendix ſubjoined to this Report, N° 2. The Preface to that Appendix is written by Doctor Walker, profeſſor of Natural Hiſtory in the Univerſity of Edinburgh, and the Poſtſcript relative to the ſchool is added by another gentleman, who had the beſt opportunity of knowing the truth of all the circumſtances he relates.

But notwithſtanding the diſtinct view, which theſe papers give of the operations in the moſs and of the ſituation of the tenants planted in that colony, there is one omiſſion which I muſt ſupply. In none of the papers alluded to is juſtice done to Mrs Drummond, whoſe benevolence is no leſs eminent than her conjugal virtues, and whoſe good offices to

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the people in the moſs is by no means inferior, in her own ſphere, to that of her huſband. If any of them are hungry, ſhe feeds them; if any are cold, ſhe clothes them; if any are ſick, ſhe viſits them; and if any require medical aid, ſhe pays Mr Wingate, a ſurgeon of eminence in the neighbourhood, for his medicines and attendance.

I cannot expreſs the gratification I felt at the happineſs of about ſix hundred Britiſh ſubjects in this ſettlement, who otherways muſt have been loſt to their country. Men, women and children were employed; their houſes ſnug and their fuel plentiful; their gardens, their patches of clover and their corn-ſtacks beſpoke their induſtry. Contentment and health appeared in every countenance; and when mention or inquiry was made of the favours they receive, every tongue ſpoke the language of gratitude and eſteem. *

2. *Moors.*

THERE is a great tract of moor or waſte land, unfit for any uſeful purpoſe, except planting, betwixt Auchterarder and Tullybardin, and weſtward to the military road or farther. A few half ſtarved ſheep may be ſeen in ſome places on its ſkirts, but the great body of the moor in its preſent ſtate is uſeful neither to man nor beaſt. A ſmall plantation of Scotch firs have grown ſeveral years in one place of this moor, to a conſiderable ſize; and many other ſpots are planted by different proprietors, which are generally in a thriving condition, and ſhow that it is a proper ſoil for firs. As the moor is already divided, if the co-terminous heritors would put in permanent Land Marks on their reſpective limits, and be at the joint expence of a bounding fence round the

* Theſe acts aſcend to heaven and bring down upon the nation the bleſſings of plenty and peace. *Mr William Fox.*

the whole, each paying in proportion to the number of acres of his property incloſed, this great plantation would raiſe ſuch a foreſt, as would ſhelter the bleak country around it and be productive of a vaſt return: And although pine woods are not eſteemed beautiful objects, yet they certainly are as pleaſant to the eye, as gloomy heath.

Any graſs within the confines of this moor is no doubt let to the tenantry, by whoſe farms it is ſurrounded, and they probably may have a privilege of caſting fuel upon it; but theſe ſervitudes might eaſily be compounded with the tenants, if the proprietors were in earneſt.

At preſent every acre of heath is at an average ſcarcely worth a ſixpence of rent; but let it be called one ſhilling, which is more than the value. If it were planted, we may reaſonably ſuppoſe every tree grown to timber would in eighty years be at leaſt worth five ſhillings. There are firs in this part of the country, planted between ſixty-five and ſeventy years ago, which are ſelling at preſent from ten to fifteen ſhillings; and ſome of them bring twenty ſhillings: but allow eighty years for any difference which may be in ſoil or climate, and take only one half of the loweſt price.

Suppoſe what might be planted of the moor in queſtion, to be ſeven miles long and three miles broad, at an average. If the incloſure were a regular figure, having ſeven miles on two ſides, and three on the other two, the bounding fence would be twenty miles long; but on the ſuppoſition that the figure be ſomewhat irregular, having exterior and interior angles, let the fence be called thirty miles in length, which is a large allowance.

The area of this moor, ſeven miles by three is twenty-one ſquare miles, which are nearly equal to ten thouſand ſeven hundred acres. Every acre will plant three thouſand four

hundred and twenty-two trees, allowing ſixteen ſquare feet to each. At an early period, which depends on the ſtrength of the ſoil, and the progreſs of the young trees, one third ſhould be taken out, when they begin to interfere; and each of the remaining trees will occupy twenty-four ſquare feet. At a ſecond weeding, when it appears neceſſary, another third of the original number may be cut down; and the remainder, being one thouſand one hundred and forty, which are left to grow to timber, will each of them occupy a ſpace of forty-eight ſquare feet; which is ſufficient for any ordinary fir. Many large firs grow vigorouſly in leſs room.

This moor is differently denominated from the properties of the gentlemen, who have an intereſt in it. For the ſake of brevity I ſhall call the whole the moor of Orchill.

CALCULATION of the Expence and Profit in planting the Moor of ORCHILL.

PLANTATION *Dr.*

	£.	s.	d.
To rent of 10,000 acres, at 1 for 80 years, at 5 *per cent.* compound intereſt - -	519,607	13	10¾
An earthen fence of 30 miles, 6 feet high, at 4d. *per* yard, with compound intereſt for 80 years, at 5 *per cent.* - - - - -	43,614	1	6
36,615,400 fir plants, at 1*s.* 6*d.* the 1000 of 3 years old, with compound intereſt, at 5 *per cent.* - - - - - - - -	136,103	8	0
Planting ditto, done by 6 men to an acre, at 1*s.* 3*d.* each *per* day, with compound intereſt, at 5 *per cent.* for 80 years -	198,865	6	8
	£898,190	10	0¼

Two

PLANTATION *Dr.*

	£.	s.	d.
Brought forward - - - - - -	898,190	10	$0\frac{3}{4}$
Two foresters, at £ 20 each of yearly wages, for keeping the fence in repair, weeding, &c. with ditto interest, at 5 *per cent.* for 80 years * - - - - - - - -	38,849	3	$3\frac{3}{4}$
	£ 937,839	13	$4\frac{1}{2}$

PLANTATION *Contra Cr.*

	£.	s.	d.
By 12,205,133 trees, 80 years old, being one third of the number planted, and valued at 5s. each - - - - - -	3,051,283	5	0
Ditto number of weedings, taken out before 20 years, and valued at one halfpenny each, with compound interest, at 5 *per cent.* for 60 years, amounting to	474,955	12	0
Ditto number of weedings, taken out before 30 years, valued at one penny each, for 50 years, at 5 *per cent.* comp. interest	583,163	5	$4\frac{1}{2}$
Balance in favour of planting †	£ 2,114,243	11	$7\frac{1}{2}$

* In the formula, by which these annuities are calculated, S represents the amount of the annuity at the end of any number of years; *d* the annuity, *r* the amount of £ 1. at the end of one year; *r*—1 the rate of interest, and *t* the continuance of the annuity $S = \frac{ar.^{t} - a}{r - 1}$

† Suppose that not $\frac{1}{3}$ but $\frac{1}{4}$ of the trees are left to grow to timber (being 855 on every acre, each occupying 64 square feet), still the balance in favour of planting will be £ 1,350,085 6s. 8d.

The

After allowing the value of the weedings to go for back-gone trees, and other contingent expences, not adverted to, which is ſurely enough, the profit is beyond conception, unleſs one were at the pains to make a calculation, which in the preſent caſe, it is hoped, has been done with all poſſible accuracy, in order to ſet this important ſubject in a clear point of view.

Were this plan to be adopted by the proprietors of this or other large moors, larches might be planted in ſome places, eſpecially along the boundaries of different properties; and wherever the ſoil or the bleakneſs of the expoſure is thought unfriendly, larches might thrive better than common firs, being the hardieſt and the moſt valuable plant of the two. If there happen to be rivulets, aſh would thrive on their banks, and elms, oaks or beeches on any dry ſpots of green ground. This variety would remove the dull ſameneſs of the plantation and enliven the proſpect. Eight or ten rows of ſpruces, as having of all trees the beſt ſhelter, by continuing, to any age, feathered to the ground, might be planted next the fence, to defend the whole plantation from ſudden guſts or ſtreams of wind. The expence on the plants might be, in a great meaſure, ſaved, and the trees rendered more congenial to the climate, by having the ſeed ſown in the country; and three boys would ſuffice for three of the men, which would ſave one fourth of the expence of putting down the plants.

Whoever

The prime coſt of the fir-plants is £2,746 3ſ. which may in a great meaſure be ſaved; and of planting £4,012 10ſ. of which one-fourth may be ſaved. After the firſt 15 or 20 years, the foreſters will pay themſelves out of the ſale of weedings; and their wages may be ſaved entirely after the laſt weeding at 30 years.

Whoever has beheld the aſtoniſhing plantations at Cullenhouſe in the county of Bamf and at Monymuſk in Aberdeenſhire by the late proprietors of theſe places, and alſo by other heritors in different parts of the kingdom, who had a taſte for improvement and underſtood their intereſt, will ſee the propriety of turning ſuch moors as this, to account. It is not a mere experiment; it is not without precedent; it is no chimera. They have many patterns before their eyes. What a vaſt profit would ariſe from ſuch an undertaking, beſides the pure joy of giving bread to the perſons employed and the pleaſure of advancing and enriching their country!

That every poſſible chance of doing good may be embraced, and that perſons, having ſmall waſtes, may eaſily diſcern the profit of planting ſuch ground, it may be proper to accommodate the calculation to a ſmall ſcale.

One acre of land at one ſhilling of yearly rent, by compound intereſt at five per cent. for the ſpace of eighty years, is worth £48. 10. 11½. The ſame acre planted with common firs, and weeded down by various thinnings to one thouſand one hundred and forty, and ſold at the end of eighty years for five ſhillings each, would amount to £285. And if more valuable timber were planted, it would fetch more.

Whenever the land will not let at more than one ſhilling, or one ſhilling and ſixpence, the acre, and is unfriendly to cultivation by the plough, it is by far the beſt method of turning it to account, to plant it full of trees ſuited to its nature. Even common firs in this way, will bring a ſum equal to ſix ſhillings an acre of yearly rent; and moreover it is of no ſmall conſideration, that the moſt barren and bleak moor, by this management, will be rendered perfectly green; and if depaſtured by ſheep, when the trees are cut down,

down, it will remain green, and continue to let at a decent rent.

Were gentlemen of fortune to allot a ſmall ſum annually, perhaps from £ 10. to £ 50. according to their income, for raiſing plantations on different parts of their eſtates, the advantage to their heirs and to the public, would be incalculable in every point of view. Nor do I ſee any ſolid objection againſt it. It is in vain to reaſon with thoſe, who will do nothing for poſterity, becauſe poſterity has done nothing for them; as Swift expreſſes the argument of the ſlothfully ſelfiſh. The moſt plauſible objection to this reaſoning is, "That if all the low moors and other places not of the value of one ſhilling an acre yearly, and unfavourable for tillage, were planted, the country would be ſo much overſtocked with timber, that it would give no price." * This objection might be got rid of by anſwering that ſo long as the value of an acre in planting was ſuperior to one ſhilling of yearly rent, even the deſire of *profit* ought to recommend planting; nor ought a generous man to regret that the public were ſerved in timber at a more moderate price.—But this ſubject claims attention; and the following conſiderations are ſubmitted to the reader. If the premiſſes in the objection do not exiſt, the concluſion, being only hypothetical, muſt fall to the ground. There is little hope that all proprietors will plant their moors in any one generation, and therefore little danger that the country will be overſtocked with timber. Their views, their taſte, their mode of expenditure and many of their other habits are ſo extremely various, that there is no period, in which all or even a conſiderable number of them will adopt this mode of improvement.

The

* An objection made by a gentleman of large property in Fife.

The fir-woods on the ſhores of the Baltic are decreaſing ſo faſt, by the continual and growing demand upon them, that they have retired far to the inland parts of theſe countries; and the neceſſary land carriage, together with the freight, inſurance and duty, has raiſed the price 50 per cent. within theſe few years; and if this goes on, it is difficult to ſay to what amount the expence of foreign timber may ariſe. If the price become exceſſive, and that there be no ſupply of native fir, the improvement of the country, in the article of building, which is ſo ornamental to it, will become ſtationary; none being able to afford the expence of lodging themſelves comfortably, except the affluent and the great.

In countries at a diſtance from water carriage, where there is no pit-coal, and where the moſſes are altogether or nearly exhauſted, the inhabitants muſt feel the inconvenience of being in want of an article, which is ſo very neceſſary to their comfort, unleſs they have wood to burn. Some counties in England and many parts of the continent are in a deplorable condition in this reſpect. A ſupply of wood for fuel can never in theſe circumſtances be plentiful, without extenſive plantations on land which is unfit for graſs or corn.

It is a preſumptive proof that this country was warmer and the temperature of the air more mild, than at preſent, when our very mountains produced grain. This mildneſs of the climate was occaſioned by nothing elſe, than the woodineſs of the country at that æra. Reſtore the cauſe and the effect will follow. The more wood there is in a country, in northern latitudes, the more temperate the climate; and the more genial the influence of the air. Add to this, that in point of beauty, there is no compariſon between a bleak moor covered with ſtunted heath, and a waving foreſt, clad with the livery of nature.

On

On the ſkirts of the moor of Orchill, there is a belt of ſand, on which broom and furze are growing, particularly on the eaſt, towards Auchterarder. The ſoil, in which furze is found, invites the induſtry of the huſband-man, with an aſſured proſpect of an immediate and abundant return. Where broom grows, the ſoil is lighter, and has for the moſt part, a gravelly or ſandy bottom. The former is a good mould, and fitted for moſt crops. The latter is well adapted for turnips and red clover; and after reſting a few years, will bear plentiful crops of grain; but having a weaker body than the former, it requires to be tenderly dealt with in cropping. Let not the huſbandman be ſurpriſed to ſee theſe plants riſe, even at the interval of fifty years or more, after they ſeemed to have been extirpated; for the ſeed of ſome plants remain long in the ground, without being deprived of the germ or vegetative principle.

Marl abounds in the country around this moor; and is well calculated to ſtimulate ſuch ſoils. Nature has indeed provided, in moſt ſituations, ſome manure that will increaſe the fertility of the earth. Lime is now carried to that part of the country; and the numberleſs little rills, which deſcend from the moor, in all directions, after rain, would enrich the graſs in many places, as may be ſeen in every little hollow between the hills. All theſe act indeed as a ſtimulus alone, which is moſtly the caſe with every ſpecies of calcareous earth, of which they are entirely compoſed: but when argillaceous earth can be had at hand, it adds to the quantity of ſoil, ſtrengthens the ſtamina, binding together the looſe particles of ſuch land as this, and thereby enables it to ſtand more frequent tillage.

From behind Culroſs all the way to Blairingone, there are ſeveral tracts of waſte and barren moor. The Earl of Dundonald

Dundonald has planted much, in this diſtrict; but more ought to be planted. In the moor between Gaſk and Maderty, and all the way from Dollary on the weſt to the vicinity of Perth on the eaſt, there are large tracts of ſtunted heath, that might be planted; and the ſtately plantations growing on ſome parts of this moor ought to induce the proprietors of other parts to follow the example. There is ground fit only for being planted, between Invermay and Newtown: and on the verge of the bank eaſt from Aberdalgie to the great road. In the two places laſt mentioned, trees of hard wood, which are more valuable than firs, would thrive and come to perfection.

In plantations of fir, where the ſoil is tolerably good, young trees of hard wood, eſpecially oaks and elms, may be put in among the firs, which protect them and do not much retard their growth by exhauſting the ſoil: but care muſt be taken to cut down occaſionally ſuch of the fir trees, as interfere with their tops, by firſt loping off the branches, and then laying down the trunk; which practice may be continued, until all the firs thought neceſſary to be taken away, are felled. In this manner one may have the benefit of almoſt two plantations on the ſame ground at once; the young trees being well advanced, before the older ones are taken out of their way. This practice is becoming more general every day. In other caſes a belt of firs is planted round, to protect other trees in the middle of a plantation, without which precaution the interior trees, in certain ſituations, would be too much expoſed; but this management is leſs to be depended, unleſs the ground be level, and the firs ſomewhat tall, before the other trees are planted.

On the higher parts of the Sherrif moor, near Dumblane, there are near ſeven thouſand acres, calculated only for be-

ing planted. The lower parts of this moor are, in ſome places, cultivated; and the ſoil being deep, if it were drained, pared and burnt, might be improved ſtill farther up, on the weſt ſide of the moor. The higher parts being planted with trees, and the ſkirts being reclaimed by tillage and graſs, would be an ornament, to a country which is naturally cold and bare; and that ſpot, which in the year 1715 was ſignalized by a victory obtained by the friends of our conſtitution in church and ſtate, would now be a proof of the induſtry of their poſterity and of the truth of Virgil's remark.

"Scilicet et tempus veniet, cum finibus illis
Agricola, incurvo terram molitus aratro,
Exeſa inveniet ſcabra rubigine pila:
Grandiaque effoſſis mirabitur oſſa ſepulchris." GEOR.

The vaſt fir woods already mentioned, which are growing naturally in Rannoch, beſides others in Strathſpey and elſewhere in the north of Scotland are raiſed much farther above the level of the ſea, than any of thoſe places recommended for plantations of fir in this report. The plantations of Lord Dundonald behind Culroſs and thoſe on the Knock of Crieff are thriving on a ſoil as poor. Theſe inſtances, and the fine plantation lately cut down at Turleum, behind Drummond Caſtle, a higher ſpot than any of them, may open the eyes of men to ſee what might be done on the Sherif moor, on that of Orchill, and in ſimilar places, which at preſent are of very little value.

In many other parts of Strathallan; in all the tract between Dunblane and Callander above the arable ground; between the Port of Monteath and the bridge of Doune, on both ſides of that moor, and in many other places, where the land is of little value, where the country is expoſed

or

or wood ſcarce, proprietors would find their account in planting.

The vallies of the Highlands do not ſtand ſo much in need of artificial cover, as the Champaign country below. Their broken ground and the natural woods, which almoſt every where cover the declivity of theſe vallies, afford them abundant ſhelter: yet at the entrance of every opening into the highlands, there are extenſive plantations; and in various parts in their moſt inland Glens. From Dunkeld to the Caſtle of Blair, a tract of twenty miles, on both ſides of a majeſtic river, the proſpect is every moment diverſified by alternate views of extenſive woods and large plantations. From Logierait to Taymouth and even to Killin, it is impoſſible to enumerate the extent of the planting, where there was any defect of natural wood; eſpecially about the Earl of Breadalbane's Caſtle and on both ſides of Loch-Tay, to the diſtance of ſixteen miles. From the houſe of Auchtertyre, by Lawers and Comrie, to the ſource of the Earn, the taſte and judgment of the proprietors' have been diſplayed by the variety of the trees they have planted, and the extent of waſte land they have covered. At Gartmore, at Callander, and many other places in ſimilar ſituations, the ingenuity of art has conſpired with the beauties of nature to ornament the country with wood.

Beſides the moors mentioned above, there are ſome other *low-lying* waſtes, covered with a thin ſtratum of moſs, on a bed of gravel, which produce nothing but heath; one at Comrie, one at Dunira, one at Doune, one near Callander, and in other places. Mr Drummond of Comrie, who lately purchaſed Dalganroſs, has boldly lined off ſtreets and a market place through the very heart of the moor, fued out part of the ground, and the new ſettlers are going on with ſpirit,

to lay on new ſoil and otherways to improve one of the moſt barren ſpots in the country; and men will be enabled to live, where a few years ago ſcarcely a ſparrow could find ſubſiſtence. Such are the effects of induſtry under the direction of good ſenſe!

The moor in the vicinity of the houſe of Dunira has been reclaimed ſome years ago. Mr Dundas has planted the moſt barren ſpots, with a variety of trees ſuited to the ſoil: and wherever there was any depth of earth, the expence of cultivation has been rewarded by extenſive and rich fields of graſs. The plantations on the flat below will ſoon vie with the waving oak woods on the declivity of the winding hills and in the face of rocks, with which this ſingular place is ſurrounded.

In the vallies of the Seedlaw hills there are ſeveral ſpots of ſhort heath, which are planted; but there are others of a better quality, which ought to be top-dreſſed with lime or marle, to raiſe a ſward of graſs. The climate in general is too unfavourable for raiſing much grain; but potatoes and turnips, ſucceeded by a crop of barley and graſs ſeeds might grow in many places, which at preſent are totally neglected.

There is a common belonging to the town of Coupar, which conſiſts of ſixty acres; and another betwixt Alyth and Rattray, called the fore-hill, of more than one hundred acres; and another between Alyth and Jordanſtown, belonging to Lord Airly and the proprietors to the ſouth, two miles long and one broad, within this county, which ſtretches alſo into the county of Angus, eaſtward, for two miles, with patches of arable land interſperſed. The diviſion of the moor of Alyth, has been three different times attempted by ſubmiſſion and as often fruſtrated by the death of the arbiters. At preſent it is again referred to the arbitration of Lord

Lord Dunſinnan and another gentleman. There is much good ſoil in this common, and when it is divided, there is little doubt of its being reclaimed and making good returns.

Betwixt Eaſſie and Ketins in the ſame country, there is a waſte of ſix miles in length and about half a mile broad at an average, which produces very little, except ſome bad paſture. It is almoſt a dead level, and a bed of ſand, ſcarce worthy of being improved, by any returns to be expected from it.

The common of Rattry has been divided, but not improved. It is indeed very barren; but if it were wrought, it would produce turnips and then graſs. The moor of Blairgowrie is in a progreſſive ſtate of improvement; and if perſevered in, will ſoon exhibit a laudable ſpecimen of the induſtry and intelligence of the proprietor. The great point is to bring ſuch land as this to bear graſs; and after it is once green to depaſture it with ſheep, which in due time will thicken the ſward, increaſe the vegetable mould and enable it to carry a few crops, in a judicious rotation.

The foreſt of Alyth has a good ſoil, but wants climate. It has lately been divided between Sir William Ramſay of Bamf, Mr Smyth of Balharry, Mr Moriſon of Naughton, and Mr Boyle of Tullymurdo, after a litigation of ſeventy years. What a vaſt expence would it ſave to the public, to deviſe a law upon equitable principles that would ſhorten theſe vexatious pleas, about the diviſion of commons!

There is a large tract of waſte land, which is not very high, along the ridge which ſtretches weſtward from the caſtle of Methven, on the ſouth ſide of the river Almond. One part of this moor was a common, the diviſion of which was referred to Lord Methven as ſole arbiter, which is now divided to the ſatisfaction of all concerned.

Such

Such thin * moors, as the moſt of theſe taken notice of, are generally improved in various ways, according to the ſyſtem adopted by different farmers. One improver ſays Pare and burn; then ſpread the aſhes with a little lime; ſow turnips, which ought to be fed off with ſheep the firſt year. The ſecond year plough again for turnips, and feed off in the ſame manner: then lay down with barley and graſs-ſeeds. This mode of reclaiming moor, is recommended by a gentleman on the Nairn eſtate, betwixt Perth and Dunkeld.

Another gentleman on the oppoſite ſide of the Tay recommends to plough moor in winter; to let it lie in this ſtate all next ſummer; during the courſe of the ſecond ſummer, it ought to be ploughed from three to five times as may appear neceſſary. Then lime and ſow with oats, the third ſpring; and againſt the fourth year lay down the ground with a crop of barley and graſs ſeeds.—Some proprietors, who wiſh to be more expeditious, begin by trenching through the winter, at the rate of four pounds an acre, for a crop the ſucceeding ſpring. This is the practice between Perth and Coupar.

I have met with noted connoiſſeurs in agriculture, that have figured much in writing on the ſubject, who would pare and burn the thinneſt ſtratum of moſs on a ſubſoil of gravel or ſand, according to a general rule, which they have laid down for treating all moors in the ſame manner. It is but fair to add, what they urge, in defence of their opinion: Not a particle of the ſoil can be annihilated by any operation of ours; the ſame number of particles remain after it is all reduced to aſhes, which the ſoil formerly contained. This

* Compoſed of the deciduous parts of heath on a ſubſoil of ſand or gravel.

This puts me in mind of boys, who white a ſtick for a certain purpoſe, until it be ſo worn down that it become uſeleſs for any purpoſe whatever.

The opinion of other improvers of moor is, that the land ought to be ploughed and lie in that furrow for one year; that againſt the ſucceeding ſpring and ſummer, it ought to be croſs-ploughed and harrowed, till the clods are reduced, limed the next autumn, drawn in ridges and ploughed for the ſeed furrow in ſpring. This method of reclaiming moors is recommended by a gentleman's factor in Strathearn, and is very ſimilar to the practice betwixt Perth and Coupar. Both have this to recommend them, that the quantity of ſoil is not diminiſhed, where there ſeems to be ſo little to ſpare.

Mr Buchanan of Camſmore in this neighbourhood, who has improved upwards of five hundred and fifty acres of new ground of this kind, (which is as much perhaps as any other perſon in Perthſhire has done,) lays lime on the ſurface in the ſummer or autumn, and leaves it generally for two or three ſeaſons, ſpread in this manner, that it may ſink into the ground and mix intimately with the ſoil. If the land has been well limed, the firſt crop will be tolerably good; the ſecond heavy; and the land is by this time ſo well pulverized, that it is eaſily made for barley and graſs ſeeds, the following year. In ſome caſes, he interpoſes a fallow crop of potatoes or turnips, between the ſecond crop of oats and the barley crop. By this management I have ſeen on his new ground the two firſt crops of oats remarkably good; the ſecond eſpecially, which exceeded ſix bolls an acre. His moors cultivated in this manner, where the ground was high, the heath as tall as a perſon's knee, and the ſoil not worth one ſhilling an acre in its former ſtate, have continued

to

to carry graſs crops and let at between nine and ten ſhillings of yearly rent, for the ſpace of twenty years, without any future dreſſing, and without any ſymptoms of the heath attempting to ariſe. Farmers may grudge to loſe the intereſt of money laid out in lime, for the two or three years, before the land be in crop: but this is a fallacy; the intereſt is not really loſt. The ſoil is meliorated to ſuch a degree, by the top dreſſing of lime, that the graſs raiſed thereby does more than repay the intereſt of the lime. Much expence is alſo ſaved, by ploughing only once for every crop of oats.

There is a certain barrenneſs of ſoil, in which the heath delights; and whenever that barrenneſs is removed, it does not thrive; neither does it thrive in the other extreme of the pooreſt ſoil and moſt expoſed ſituation.—To every plant there is a particular quality of ſoil, a certain degree of moiſture, of warmth and expoſure, which is natural. Different plants, as well as different animals, have peculiar climates, which are accommodated to their conſtitution: and even in the ſame country, one ſpecies of plants is found in the vallies, and another in the hills; nay in the ſame field and ſoil, if its nature and qualities be changed by cultivation, its productions will change of courſe. Allow your drains to ſtop in a field which had once been properly dreſſed; let it become ſour, ſpouty ground, it becomes inſtantly filled with ſprits, ruſhes and other aquatics.

Drain and cultivate the ſame field again; theſe coarſe graſſes diſappear, and others, which are peculiar to dry land, ſucceed in their place. Fold ſheep, lead rivulets, or lay enriching manure on the moſt barren ground, which is not overcharged with water, and the richeſt carpet of cloſe fine graſs will ſpring up ſpontaneoſly. Remove theſe, before it be

be fully ſaturated, and it will gradually return to its former ſterility. Were all plants fitted by nature to thrive only in the ſame circumſtances, we would have at leaſt the half of the globe, without any plants at all; what might therefore appear, by ſuperficial obſervation, to be a niggardneſs in nature, or a defect in the bounty of heaven, is, upon a cloſer inſpection, recognized to be the effect of conſummate wiſdom and of goodneſs without bounds. From the frozen tops of the higheſt mountains down to the bottom of the warmeſt vallies, every degree of heat and cold, of barrenneſs and fertility, of wetneſs and dryneſs of ſoil, Providence has adapted to the nature of particular plants, which come to perfection, where another ſpecies could not live; and theſe various plants are the food of different animals, that no creature might be deprived of nouriſhment peculiar to its kind.

Without entering on that polemical point in agriculture, the *food* of plants, (which has been long a problem, and will probably remain, to be ſolved by future ages,) we may ſafely remark, that whatever is their food, they are taught by nature to ſeek after that food, which ſuits their kind. They uniformly reject other food; and, when forced, by the unſkilfulneſs of man, to accept of food unſuitable to their conſtitution, they ſoon decay. It is therefore probable, that the food of all plants is not the ſame; but that ſome of them prefer one kind of food, and ſome another, and theſe in various degrees. At any rate, whatever their natural aliment is, or when the earth is brought by induſtry to have that aliment, *there* we uniformly ſee them making their appearance; and yet we cannot rightly tell how.

Inſtead of ſwelling this article to an immoderate ſize, I place in the Appendix, N° 2 and 4, two important papers

relative to the improvement of waſte land, one communicated by Mr Smyth of Balharry, the other by Mr Robertſon of Lude, each from his own practice.

CHAP. XII.

IMPROVEMENTS.

SECT. I. *Draining.*

THE draining of land is a ſpecies of improvement much practiſed, and much deſired where it is neceſſary, by all induſtrious farmers. Where the fields are horizontal, or where much ſuperfluous water is to be carried off, open drains are uſed. In the upland where round ſtones are at hand, rumbling drains are moſt in uſe. The former kind prevails in the Carſe of Gowrie, on the banks of the Iſla, in Monteath and in many other places: the latter on the ſlopes of hills and in general in the Highland diſtricts. When ſmall flags can be got conveniently, the farmer builds two perpendicular walls about a foot high and covers them over with flags, having one row of turf, the green ſide down, and earth above all. Others throw round ſtones above the flags and below the turf. On the eſtates of Balharry and Jordanſttown in the Stormont, the drains are all flagged in the bottom; then two ſide-walls are built and a ſecond tire of flags laid on them. At Coupar drains are made by putting down two ſtones or ſtakes by way of props, oppoſite to one another, and at the diſtance of ten or twelve feet between each ſett of props. The oppoſite props are four or ſix inches aſunder, according to the quantity of water to be diſcharged.

diſcharged. A tree is ſawn longitudinally into two; the flat ſide is laid on the props, and the whole covered over.—All theſe cloſe drains are covered with ſtraw or thin turf, or both, before the earth be thrown back, and are made of ſufficient depth to allow the plough to paſs over them with eaſe. The prices are various, from four-pence to ſix-pence the rood of ſix yards, according to their dimenſions and the convenience of materials.

Much draining is ſtill wanted in every part of this county; nor is it eaſy to ſay what is the good of land for raiſing any crop known in this country, nor what the benefit of manure can be, while the ground lies in water. As the knowledge of farming advances, there is no doubt, that draining will be alſo carried on. But if ground be incurably wet, and ſo poor, as not to defray the expence of laying it dry, to plant trees of the poplar kind ſeems to be the beſt mode of bringing it to ſome account. Any other trees will not thrive, without ſmall cuts to carry off the water.

Draining and incloſing are not only eſſential, but permanent improvements of land; and therefore are the firſt ſteps taken, when the proceſs is planned with judgment. For this reaſon the proprietor ought to execute them himſelf. If done otherways they are ſeldom effectual, unleſs the tenant be a perſon of uncommon ſpirit, and by the length of his leaſe, have a proſpect of reaping the full benefit of theſe operations. If theſe improvements are carried on, during the currency of a leaſe, a certain intereſt may be neceſſary on the ſum laid out; but when the leaſe is renewed, it is proper to add this centage to the aggregate ſum of the rent, and to charge the whole under the general denomination of rent. A great number of items on a tack are odious things to the generality of tenants; becauſe they conſider every

thing as an impoſition, or at leaſt a grievance, except what they pay for the uſe of the ſoil.

Mr Campbell of Lochdochard, who has an extenſive ſurface of ſwampy meadow; full of ſprings, in his eſtates in Glendochard and Strathfillan, told me that the beſt drains for ſuch land are made, by cutting the ſurface of each drain three feet broad, by digging down eighteen inches, with a ſlope that gives other eighteen inches at the bottom; and then by dividing the bottom into three equal ſpaces of ſix inches each. The middle ſpace is cut down perpendicularly to the depth of ſix or eight inches and well cleaned out, ſo that it has the width of ſix inches both at the bottom and top, and ſix inches of firm ground for ſhoulders on each ſide. On theſe ſhoulders or abutments ſods of eighteen inches in length are laid, with the graſſy ſide downward, conſiſting of the toughеſt and ſtiffeſt of the original ſods. Care muſt be taken to cut the ſods very nicely and to lay them very cloſely together, that no particles may get down in any openings between them. When the original earth is thrown back, the drain is finiſhed.

Others recommend, that, in place of laying the ſods horizontally upon their green ſide, they ſhould be laid down archways, putting the two firſt ſods on their edge upon the abutments of ſix inches, with their red ſide outward, and one ſod between them, put in like the key-ſtone of a bridge. When this arch is firmly clapped or trodden down, and the original earth thrown back, this drain is compleat.

In many ſituations, that might be pointed out not only in this, but in other counties, where field-ſtones are ſcarce and the expence conſiderable, of bringing ſtones from a diſtance to fill up drains, which generally happens in ſwampy plain ground, either of theſe kinds now deſcribed may be adopted;

ted; and in a clay ſoil or where the land is otherways of a ſtrong and ſtiff texture, if the drains are made carefully with green ſods, they will continue clear for a long time.

If the Board of Agriculture has paid Mr Elkington for the diſcovery of his method of draining, of which ſo much has been ſaid, and from which great advantages are reaped, a full account of it ſhould be laid before the public, in a pamphlet or otherways, that the nation at large may have the benefit of adopting it, without the trouble of ſending for that gentleman up and down the country and paying him a ſecond time.

All water muſt deſcend, when left to its own impulſe, by reaſon of its fluidity and gravity; and its deſcent is in a direct line to the center of the earth, unleſs it meet a force which turns it obliquely, or ſuch reſiſtance as makes it ſtagnant. Water on the ſurface or in the bowels of the earth is diverted from its natural courſe by ſtrata of till or rock or ſome other reſiſting body. If on the ſurface, it forms ponds; if in the earth, it continues to deſcend along the ſurface of the reſiſting body, until it be thrown out upon the ſurface, unleſs it meets in its ſubterraneous courſe, either fiſſures of rock capable to receive it, or a ſpongy ſubſtance, or moſt commonly a bed of ſand. Into any of theſe, eſpecially into the laſt, it can penetrate with eaſe and follow its natural tendency by means of gravitation. Spongy bodies are not frequent in the bowels of the earth, owing to the preſſure from above, or if they are there, they are filled with water. The fiſſures of rocks are ſeldom perpendicular and ſeldom large. They are generally oblique, in which caſe they throw out the water. But beds of ſand are frequent there. If therefore water could be conducted, either above or below the ſurface, to a ſtratum of ſand or gravel, there is no doubt

doubt of its ſinking into the earth, not to appear again, unleſs reſiſted by a ſtratum of till or rock below the ſand.—From this principle we may infer that all tilly land, and all land on rock muſt be ſpouty; which we ſee to be a fact.

SECT. II. *Paring and Burning.*

PARING and burning was formerly more practiſed in this part of the county, than it has been of late years; and in the eaſtern diſtricts, I did not learn, that it had ever been much in uſe. The beſt farmers ſay that the oleaginous parts of the ſurface, whether plants or earth are diſſipated and loſt, in the operation of burning, and that only the earthy parts remain. This cannot be denied; and is a material objection to that mode of cultivation in many caſes. *

Where there is a deep ſoil, with a cruſt of fungous moſs, tough bent, matted ruſhes, or turfy peat-earth on the ſurface, burning is unqueſtionably the beſt method of improving; but when the ſoil is thin, burning, which certainly leſſens its ſtaple, occaſions an injury equal to any advantage received by laying on the aſhes. My own opinion of burning a light ſoil has been given already, and I find, by the notes taken down upon this article, that the general voice is againſt paring and burning that kind of ſoil, whatever ſhould

* The objections to paring and burning have almoſt entirely ariſen from its being principally practiſed with a view to a ſyſtem of ſcourging crops; and where marle or lime are uſed for the ſame purpoſe, they deſerve equally to be reprobated.

Paring and burning will do more in one year towards bringing good graſs, or providing for a green crop, and a ſubſequent good rotation, than can in moſt ſituations be accompliſhed in five or ſix years with lime or marle, I mean in point of extent, becauſe as much paring and burning can be done in one year as is wiſhed. *Sir William Murray.*

ſhould be done, if the ſward was ſtrong and the ſoil of ſufficient depth.

It is a great error in burning the ſurface of land, or any vegetable ſubſtance, for the ſake of aſhes, to allow the ſods to be very dry, before they are ſet on fire. When they have juſt attained ſuch a degree of dryneſs as to burn ſlowly, they will produce the greateſt quantity of aſhes. If the kilns be fairly on fire with ſome dry materials, there is little occaſion to dry the additional ſods at all; they will dry gradually as the fire approaches them; and there is the leſs danger of flame, which in all caſes ought to be prevented. The aſhes ought to be ſpread while they are dry.

Some farmers in this county expreſſed a deſire that the Board would ſend a perſon ſkilled in paring and burning to different parts of the country, in order to point out what ſoils are beſt adapted for this ſpecies of improvement, and to inſtruct them in the way of carrying it on.

Sect. III. *Embanking.*

AT the junction of the Earn and Tay, Mr Somerville, a ſpirited farmer, has banked off the river, an iſland of twenty one acres; and has made a road two chains long, between this iſland and the main land, through a depth of twelve feet at low water. Six feet of ſleech had, in the year 1793, gathered in the bottom of the gulf or creek, where the water ſtagnates; and in a ſhort time, the iſland will be annexed to his farm by a tract of ſolid land. He has alſo banked about a mile on the ſides of both rivers, where the ſhore was low, and the land expoſed to inundations. This bank is ſix or ſeven feet high at an average, correſponding to the riſing or falling of the ſurface on which it is made, and from fourteen to thirty feet in the baſe; the whole at his

his own expence. Lord Wemyſs has, near the ſame place, made a battery of ſtone, to join another iſland to the main land.

The river Earn overflows the land not only at its mouth, but in many other places, from Comrie down to the ſea. It makes the greateſt havock from the bridge of Kinkell eaſtward, where its inundations are in ſome caſes nearly a mile broad; yet I did not obſerve that in this tract any means had been uſed to leſſen its depredations.

When I was in the Stormont in autumn in 1795, the Iſla had ſpread ſo far, that the bridge at Coupar was impaſſable. The river in a few years will force its way at one end of that bridge, unleſs it be prevented. The Teath and the Forth overflow their banks leſs than any other rivers in the county, except the former at Callander and Balquhidder, and the latter at Aberfoil.

It is an object of importance both to heritors and tenants, to endeavour to defend the ſoil and the crop from theſe deſtructive inundations; and there is little doubt, that they often loſe in a ſeaſon or two, as much as the expence would amount to. Piers of ſtone are ſometimes made; but this is liable to an action for damages, at the inſtance of the oppoſite heritor, unleſs a river be very broad; it is not in every place that ſtones are at hand; and the ſtream often recoils with double force from the oppoſite bank upon the place immediately below the pier. Sometimes large creels are made and filled with ſtones; but if the tract be long and the timber ſcarce, this bulwark would be expenſive and at beſt only temporary. Where large ſtones and of a ſufficient length can be got for the front, nothing is ſuperior to a bulwark of this kind, riſing with an angle of between forty five and thirty degrees from the plane of the horizon. Where the current

current is very forcible, the angle ought to be leſs; where it is leſs rapid, it may be greater. It may ſerve the ſame purpoſe and be much cheaper, where ſtones are ſcarce, to raiſe a bank of earth, ſomewhat higher than the water mark in the higheſt floods; which muſt be mathematically conſtructed. But the danger ariſes from the river undermining theſe banks, and rendering them of no avail. The only precaution in this caſe ſeems to be, to erect the bank at ſuch a diſtance from the brink of the river, as to make an allowance for the increaſe of the river in time of flooding. The foundation ought to be dug down, where the bank is made, conſiderably below the ſurface of the ground: if near the river in any place, it ought to be as low as its bed, eſpecially if the current be ſtrong; and the ſlope aſcending backward in the form of the glacis of a fortification. The bank ought not wholly to conſiſt of earth or gravel. Furze or juniper or heath (but no broom, nor any branches of trees, which are apt to rot) ſhould be laid carefully among the materials, always pointing to the river and ſloping downward; beginning at the bottom of the ſlope and aſcending backward to the ſummit of the bank. If the outermoſt ſtratum of the declivity were made of tough ſod, taken from ſome neighbouring bog, and the ſeams well clapt together, and the front planted with oſiers, this embankment has been known to reſiſt a very impetuous ſtream; becauſe the reſiſtance is gradual, the declination correſponding to the ſtrength of the current, the ſurface on which the preſſure is made, is more enlarged, and water is known to preſs, not according to its breadth, but according to its altitude.

Wherever embankments are deemed too arduous an undertaking, and where the hay or corns are in danger of be-

ing carried away by floods in the autumn, hurdles, (vulgarly called ſtake and rice) may be made round the links, and along the banks of rivers, ſomewhat open below, to afford an eaſy paſſage to the ſtream, and cloſe wound above, to ſtop the floating grain.—This expedient is recommended by a gentleman in this neighbourhood lately from abroad, who has treaſured up agricultural knowledge by obſerving the practice of farmers in both hemiſpheres.

SECT. IV. *Trenching.*

THE trenching of land in the open fields, where it is coarſe and full of ſtones, is not ſo expenſive as is generally ſuppoſed, if the profit ariſing from it is taken into the account. There is no other method ſo effectual to reduce the ſtubborn ſoil of waſte land to a proper mould, to pick out the ſtones, which might be troubleſome in future operations, to diſcover the ſubterraneous ſprings and lay it perfectly dry. This practice is much followed in the neighbourhood of Glaſgow, and was introduced into this diſtrict of the county of Perth by the late Thomas Buchanan Eſquire of Leney. It is at preſent practiſed in reclaiming waſte land betwixt Coupar and Perth, and in various other parts of the county. An improvement, which, upon a ſuperficial view, may appear to be the moſt expenſive at firſt, is frequently the cheapeſt in the end, becauſe it is complete at once, and needs not to be repeated. In fields of ordinary difficulty two crops will repay the expence of trenching, at the rate of four pounds the acre, which is the common price; and near a gentleman's place, a piece of untoward ground, which he is reſolved to dreſs, cannot be improved with equal ſucceſs in any other way.

A Sketch of a Machine for raiſing large Stones, with a deſcription, and directions how to uſe it.

THIS machine is uncommonly uſeful, when a field is to be cleared of large ſtones, in not only ſaving a great expence of boring and powder, in avoiding the trouble and danger of blowing, but alſo in abridging the labour of raiſing them into carts or waggons; ſince three men will, by means of the pulley and cylinder, lift a block to any neceſſary height, with more eaſe, diſpatch and ſafety, than ten or more men in the ordinary way. It has a ſtriking reſemblance to that uſed by wood-cutters in weighing their bark, called a triangle.

The three legs *a d*, *b d*, and *c d*, are beams of any hard wood, four inches thick, ſix inches broad, and about fourteen feet long. Their thinneſt ſide points inward, which gives them more ſtrength. Their feet form, on the ground, an equilateral triangle *a b c*, and their three tops at *d* are fixed together by an iron rod, which paſſes through each. The two legs *a d* and *b d* are fixed to one another by the windlaſs *k*, and by the croſs bars *o p q*. There are two pullies *e* and *f* with an iron hook of two inches in circumference to each; *g g g* may be (more than one, but rather) one iron chain, which goes round the ſtone *n*, while lying in the ground at *m*, below its greateſt diameter, or where it begins to become narrow. This chain conſiſts of rounded links, which are about three inches long, and about the thickneſs of a man's little finger. It has a hook at one end, that may be put into any link towards the other end, which will make it embrace the ſtone exactly, and be of the ſame circumference, where the ſtone touches the earth; *h g*, *h g*, *h g*, are ſhorter chains of the ſame workmanſhip, whoſe

hooks are fixed into links of the ſurrounding chain at *g*, *g*, *g*, and ſo on round the ſtone, having the correſponding link of each fixed on the hook of the lower pulley at *h*. The whole rope muſt be of the ſame thickneſs with the two great hooks, two inches in circumference.

All things being thus prepared, two men turn round the handles of the cylinder, and the waggoner aſſiſting them by applying a lever to any ſide of the ſtone that ſeems to be firmeſt, they force it aloft, and hold it at the proper height, until the driver put his carriage backward between *b* and *c*; which carriage ought to have a ſtrong frame upon four low ſtout wheels. Then the ſtone is let gently down and carried away.—A gentleman, whom I have often alluded to for his knowledge in every department of agriculture, has employed a machine of this conſtruction, with great ſucceſs, in the pariſh of Callander, for a conſiderable time, raiſing ſtones of ſeveral tons, which aſtoniſh every perſon who had never ſeen a ſimilar operation carried on.

SECT. V. *Manuring.*

WHEREVER the earth contains the greateſt quantity of putrid matter, either from animal or vegetable ſubſtances, that is the richeſt ſoil; and it is rich or poor in the proportion, in which it contains more or leſs of theſe in a ſtate of decompoſition. Hence the aſtoniſhing fertility of all new ſoil, or what is called virgin earth; which is the only circumſtance that gives probability to the accounts we receive of the produce of newly diſcovered countries, where the ſoil has ſince the creation been acquiring an accretion of vegetable food, without loſing any by being depaſtured or by cropping.

Although

Although plants cannot be claſſed under the denomination of manures, yet the tap-rooted and the legumenous tribes, by their effect in meliorating a ſoil, deſerve to be taken notice of under this article. The firſt claſs penetrate below the ſurface in queſt of nouriſhment, while they exhauſt very little of the vegetable food in the upper ſtratum. They tend to enrich the ground by their ſpreading foliage, which retains the dews, and have a fertilizing influence by being frequently hoed. Turnips, parſnips, carrots, clover, cabbages and coleworts are of this claſs. Equal to any of theſe is the potatoe, becauſe it ſwells below the earth, ſtirrs the ground and penetrates downward for its food. To the ſecond claſs belong the various kinds of pulſe, ſuch as beans, peaſe, tares, &c. Although they adhere to the ſurface of the land, eſpecially the two laſt, yet they choke weeds, retain dews, and by covering the ground, prevent the ſun from exhaling the moiſture and parching the earth.

1. The uſe of dung is ſo univerſal, and its effects ſo powerful that it is unneceſſary to dwell upon the propriety of increaſing the quantity by every poſſible mean. Beſides dung in its crude ſtate, which every farmer uſes, there are a great number of compoſt dung-hills or mixens made within the limits of this ſurvey. Some farmers mix lime and earth and dung; others mix lime and earth; and others dung and earth. Some turn them in the beginning of ſpring; and others not. But they ought all to be made nine months at leaſt, before the manure is to be laid on the land, and turned either before or after the winter's froſt, to increaſe the fermentation.

The uſe of compoſt dung-hills in general, is in proportion to the induſtry and intelligence of the tenantry. The indolent never think of them; the diligent collect all the uſeleſs trumphery

trumphery of vegetables they can command, before the ſeed upon them has ripened, mixed with quick lime, to increaſe the quantity of dung, knowing that this will increaſe their quantity of grain. It is proper, however, to take notice, that about Abernethy any ſome other places, there are ſpirited improvers, who in place of making compoſt dung-hills, lay on every manure ſeparately.

In making theſe mixens, that ſoil is preferable, and ought to be introduced upon a field, which conſiſts of a quality oppoſite to the field itſelf.

2. Lime is a manure in general uſe, where the price and carriage are in any degree moderate, or where there is fuel to burn it. If it be diſtant, the farmers endeavour to carry it in ſhells, while the water is diſſipated and the lime light. It is always an object worthy of attention to remove the ſhells as ſoon as poſſible, after the lime is drawn from the kiln; for it is known from experiment, that a ton of lime expoſed twenty-two days to the air, after calcination, is augmented in weight to thirty hundred weight, and ſome kinds of lime even to thirty-five, which is little leſs than double. This I think is the reſult of an experiment made by the learned and good Biſhop Watſon of Landaff.

Raw limeſtone, beat ſmall, makes an excellent manure, and might ſupply the place of calcined limeſtone where fuel is ſcarce. In Rannoch, a diſtrict of this county, very remote from coal, a machine was erected by the late commiſſioners of annexed eſtates, for this purpoſe, which was driven by a ſtream of water. Mr Stewart of Croſmount, who ſaw the machine, the pounded limeſtone and its effects on the land, favoured me with the following remarks. "There were two pounders, and a third was afterwards added, all from Carron, at a ſmall expence. The pounded lime was carried

carried from the machine by a ſmall run of water to three different ponds, one above the other. The upper pond contained the groſſeſt particles, and the lower pond the ſmalleſt or fineſt part of the limeſtone, which reſembled clay or marle from its ſmoothneſs." The middle pond contained what it would appear Mr Stewart thought to be properly pounded; becauſe he adds, "the run of water might have been ſtronger, which would have enabled the miln to double the quantity grinded, which would ſerve the purpoſe of manure equally well, if not better, than by being pounded ſo very ſmall. All that was pounded, before the machine was carried off by a flood, or the moſt of it, was uſed by Colonel Alexander Robertſon, uncle to the preſent Colonel Robertſon of Struan, who had a farm in the neighbourhood of the miln. The effects of it were viſible upon the ground, which were ſhown by the Colonel to different gentlemen and approved of."

It ſeems, however, that before its virtues could be fully aſcertained by repeated and varied experiments, a torrent in the brook that drove the miln, carried all the machinery away, or at leaſt deranged it ſo that it was never reſtored. There is little doubt of its beneficial effects on land; or of its effects being more powerful in one ſhape or other, than thoſe of the ſame quantity of calcined limeſtone, becauſe the virtues muſt be in proportion to the quantity of calcareous earth in each. Any given quantity of raw lime loſes one third of its weight when burnt into ſhells. Nothing is diſſipated except the water. All the calcareous earth remains. It is alſo found, that any given quantity of ſhells produces double that quantity of powdered or ſlacked lime. Therefore a quantity of raw limeſtone, a buſhel for inſtance, has double the quantity of calcareous earth which is in a buſhel

buſhel of ſlacked lime; conſequently its influence, as a manure, muſt be double.

What is commonly ſuppoſed, and I think with probability, by thoſe who uſed both kinds, without making any accurate experiments, is, that the effects of the raw lime are ſlow, but more laſting, of the calcined lime more immediate, but leſs durable. Lime in every ſtate acts as a ſtimulus, but its power to ſtimulate may be influenced by the ſtate in which it is applied. Theſe ſeemingly oppoſite qualities may therefore depend on the ſuperior attraction of quick lime, abſorbing the influence of the air more ſpeedily and more copiouſly, and thus communicating its virtues to the ſoil much faſter than the raw lime can do.

When the Board of Agriculture find themſelves at leiſure, from more preſſing buſineſs, it is highly worthy of their attention, to aſcertain with more preciſion, than ſeems hitherto have been done, the effects of raw lime as a manure; and if it be found, upon trial, to poſſeſs ſuch qualities as are alleged; there is little doubt, but they will deviſe a proper machine on the principles of a miln for fulling cloth or of that for bruiſing lintſeed, only ſubſtituting iron for timber, both in the ſtamps and trough; or in ſome ſimilar conſtruction. There is ſo much country, not only in this ſhire, but in many others throughout Scotland, which abounds in limeſtone, but is ſo ſcarce of fuel, that there is hardly a national object, relative to manure, which ought to make a ſtronger impreſſion on the mind of the Board.

Farmers, in the eaſt end of Strathearn, carry lime from the ſhore of Perth, from Forthar, and from the Lomonds. Lord Elgin's lime is ſold at the ſhore for one ſhilling and eight pence the boll; that from Sunderland at two ſhillings; and that from Bruntiſland at two ſhillings and two pence, all

wheat

wheat meaſure. The lime from Forthar coſts three ſhillings and ſix pence the boll; and that from the Lomonds three ſhillings, Linlithgow meaſure, when carried three miles beyond Abernethy; the ſhore lime coſts two ſhillings and four pence, carriage included, to the diſtance of ſix miles from Perth. The quantity of lime imported at Perth, and the annual increaſe of that quantity, may be ſeen in the table of exports and imports at that port, which is ſubjoined to this article.—Nothing can be a clearer evidence of the progreſſive improvement, and of the progreſſive proſperity of the country, than facts of this nature. They muſt carry conviction home to every mind.

The lime from Perth is carried far up through Strathearn, till it meet the lime from the ſhore and neighbourhood of Stirling. About Tullyallan and Culroſs, the farmers uſe Lord Elgin's lime, which is purchaſed at the kilns for ten pence halfpenny the boll. About Foſſaway and Muckhart, lime is found in the neighbourhood. At Stirling the lime ſells for eight ſhillings and ſix pence the chalder, peaſe meaſure, or ten ſhillings Linlithgow meaſure; and is carried into all the diſtrict of Strathallan, and the greateſt part of Monteath.

Lime is the only artifiical manure which is uſed in the Carſe of Gowrie, and is imported at the different villages along the frith of Tay. Mr Donaldſon, in his account of of this diſtrict, ſays, "that it appears from a correct ſtatement, on an average of the ſeven years immediately preceding 1794, that there have been annually imported into the Carſe 24,000 bolls of lime ſhells, each boll meaſuring four firlots, wheat meaſure, which at one ſhilling and ſix pence the boll, makes the ſum expended for this ſpecies of manure by the proprietors and tenants amount to L. 1,800 ſterling yearly; a circumſtance, which evinces in the cleareſt man-

ner, to what a height improvements in agriculture are arrived in that part of the country."

Lime is found at Callander *, and Aberfoil. That at Callander on the property of Mr Hamilton of Bardowie, which has been the greateſt and firſt means of improving this part of the country, continues ſtill to be wrought; that at Aberfoil, on the property of the Duke of Montroſe, has been interrupted of late by a great quantity of rotten rock which fell upon the vein of limeſtone. The former is a beautiful marble, having a deep blue ground, finely variegated with ſtreaks of pure white.—It is well known, that all marble is compoſed of calcareous earth, and makes lime; but all limeſtone is not marble.

A quarry of limeſtone has been lately opened on the ſide of Lochearn, on the property of the Earl of Breadalbane; and when carried by water to the eaſt end of the lake, the ſhells are ſold at two ſhillings and twopence the boll, and the raw ſtones at ſeven ſhillings the chalder: a great boon to a country, which had no acceſs to lime formerly. Its effects are already viſible over the face of the country in the vicinity of Comrie. As this quarry is inexhauſtible, croſſing below the hills to the weſt end of Loch Tay, to Glenlyon and Rannoch, and appearing above ground in many large rocks, were it not for the ſcarcity of fuel, ſuch a ſtore of limeſtone would be of great utility to all theſe countries.

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* Beſides the lime on the eſtate of Leney, a mile weſtward of Callander, another fine quarry is broke open in the Breas of Leney, belonging to Lord Perth, *idem ignotus*.

It is ſo far a *fine* quarry, that it has been given up, as not worth the expence of working, by the moſt enterpriſing, who is alſo one of the moſt opulent men in that country, who had taken it, although it coſt him no rent. This critic's facts are not better founded than his opinions.

The ſame chain extends ſouthward to Balquhidder and Strathyre; and the farmers, after breaking it to the ſize of a turkey's egg, burn it frequently with peats and timber. Mention has been made already of the incalculable advantage of conſtructing machines for pounding raw limeſtone, in theſe and ſimilar diſtricts.

In many inſtances the kilns made by country people for burning limeſtone to be uſed on their own farms, are very awkward. We ought not, however, to brand them with opprobrious epithets, nor rail at them with acrimony of language; which is ſometimes done; we ought rather to be glad that they make any kilns at all, and point out to them a better form of a kiln. The beſt model of a kiln for this purpoſe is in the ſhape of an egg, with the ſmall end downwards, and the opening above ſomewhat larger than the bottom. The beſt ſituation is in a declivity, with the mouth very little, if at all, above the ſurface on the back part. Kilns of this conſtruction, and in this ſituation, require leſs fuel and are more eaſily filled than any other.

The quantity laid on ſtiff land, by ſkilful improvers in the low country, is from forty to fifty bolls to the acre; on light land, with a gravelly ſubſoil, thirty or thirty-five bolls are accounted a ſufficient doſe. In ſome parts of the Carſe or clay land, which is not eaſily ſtimulated, they lay on eighty or ninety bolls. It is ſometimes laid on fallow, immediately before the ſeed furrow; on barley and graſs ſeeds either before or after the barley is ſown; and in ſome caſes with the preceding crop, where turnips are cultivated, to prepare the ground for barley. Lime is in ſome inſtances mixed in compoſt dung-hills, in others it is ſpread on the green ſward, before the land be broke up from graſs. One infallible maxim with regard to lime is, that the longer it is kept near

the ſurface, at leaſt within reach of the plough, until it be intimately mixed with the ſoil, and its virtues imbibed, ſo much the better. The firſt liming of land has always a more powerful effect, than it has at a future but no diſtant period, the quantity being equal.

There may be principles of vegetation in the earth, correſponding to the different ſtimulating manures; and when theſe are acted upon, and exerted by the application of a particular ſtimulus, the earth may require an interval, longer or ſhorter, according to the exertion it has made in any inſtance, to recruit the exhauſted principle of fecundity, adapted to the new ſtimulus. This is a law of nature, to which every claſs of animals is invariably ſubjected: what influence it may have on the productions of the earth may not be ſo eaſily inveſtigated.

Quick lime intended for wheat, after a fallow, or for barley and graſs ſeeds, might be ploughed in with a very ſhallow furrow, before the ſeed is ſown: for oats after ley, it ought to be laid on during the preceding autumn; and for paſture or a top-dreſſing, early in ſpring or in autumn, rather than in ſummer or in winter; becauſe if the ſummer be dry, the graſs is burnt up by the lime, and in winter its virtues are leſſened by the froſt, nor does it ſo powerfully attract the influence of the air.

There is nothing more common, and perhaps few things more difficult to be accounted for, than when lime is ſpread on ſhort heath, or other barren ground, which has a dry bottom, to ſee white clover and daiſies, riſing ſpontaneouſly and plentifully, the ſecond or third ſpring thereafter, where not a veſtige of either, nor even a blade of graſs was to be ſeen before.

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The ſeeds of ſome plants have wings, and when fully ripe, they ſpread their ſails to the wind; the ſeeds of others have long beards, which make them buoyant and raiſe them aloft in the air, in queſt of a new ſettlement: but it is vain to ſuppoſe that the heavy globular ſeeds of clover and daiſies, without beard or wings, are wafted about by the winds; it is alſo abſurd to ſay, that they are brought there in the lime, after it has been burnt; and it is equally ſo, to alledge that they are depoſited from the ſtomachs of birds, without having been digeſted, as ſtone-ſeeds ſometimes are, or that birds would pitch upon the very ſpot, where lime or other enriching manure had been ſpread, to depoſit *there* the white clover and daiſy ſeeds in ſuch quantities, and in no other place near it, nor at any former time.

Suppoſe a field to be well drained, and in conſequence of that operation to carry the richeſt and fineſt graſſes. If any one of the drains ſhall ſtop, ruſhes, ſprits and other coarſe graſs, peculiar to ſpouty land will grow apace. Why does this coarſe graſs grow only at the drain that has ceaſed to flow, where the land is overcharged with water? Why does not the ſame graſs appear in the tract of the other drains, where the water is carried off? Or if the ſeeds of theſe coarſe graſſes are ſown by birds, why are they not ſown in dry land, which birds frequent, rather than in a bog, where few of them alight? Unleſs one can give a ſatisfactory anſwer to theſe difficulties, the ſowing of clover and daiſies, of ſprits and ruſhes and of every other ſpecies of graſs, by birds muſt be given up.

Laſtly it is altogether unphiloſophical, and contrary to common ſenſe, to have recourſe to the doctrine of equivocal generation, by imagining that any thing can produce itſelf, or that the ſeed of graſſes can be produced without a cauſe.

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This doctrine is univerſally exploded. No man will hold it, who does not wiſh to be thought to have bid adieu to his underſtanding.—Many difficulties occur relative to the generation of animals as well as plants; but to thoſe my ſubject does not lead me. We are ſurrounded with myſteries on every hand; and many things both in the material and intellectual world appear inexplicable to us, owing to the ſhallowneſs of our underſtanding. The ways and the works of God are dark and intricate, and we often attempt to inveſtigate them in vain. Our moſt profound reſearches are frequently nothing better than gueſſing at the cauſes of the phenomena that appear in the courſe of providence. There is no harm in theſe conjectures, if we hold them with humility.—Perhaps the ſeeds of all plants were created at the ſame time with the earth itſelf and depoſited in the ground, to remain *there*, until they are called forth by that degree of fecundity in the ſoil and warmth in the ſun, together with the moiſture and expoſure and other circumſtances, which correſpond to their nature.*

3. *Marle.* All the different kinds of marle partake of the quality of lime, and act on the ſoil nearly in the ſame manner. Stone and clay marles are ſlower in ſtimulating the ground, becauſe they require longer time to fall into powder. Calcareous marle is ſomewhat quicker, but ſhell marle the quickeſt of all. Marle as well as lime being a ſtimulus, ought not to be repeated very often: the land will ſoon be exhauſted, unleſs it either have time to recover itſelf, by lying

* Every effort of human induſtry in the courſe of virtue receives the bleſſing of the Almighty Ruler of the Univerſe: hence barren ſpots bring forth verdure and adorn the earth—Grateful for the effect, let us adore the cauſe, to whom we owe our being and the heartfelt happineſs of obedience to his holy laws. *Mr William Fox.*

lying out, or otherways receive a ſupply of vegetable food. The danger of exhauſtion is however greater, when the land is naturally light and eaſily ſtimulated, than when it is heavy, ſluggiſh and ſtiff.

Limeſtone will effervеſce with aquafortis, but will not diſſolve in water. Marle will both effervеſce and diſſolve. The beſt marle will effervеſce moſt powerfully.

Shell marle, which of all others abounds moſt in this county, contains more oil, than any of the other kinds. In common with them, it pulverizes the ſoil, and prepares the vegetable food for being abſorbed by the roots of plants: in common with them alſo, it communicates to the ſoil the power of attracting the fertilizing influence of the air: but it ſurpaſſes them, by adding mucilaginous matter of its own to the ſoil, being the exuviæ of animals, and thereby increaſes in no ſmall degree, the quantity of vegetable food.

Shell marle is found in many parts of Perthſhire, in great quantities: in Strathearn from Auchtertyre to Gaſk; at the head of the Allan from Gleneagles to Ardoch; every where in the Stormont. In Monteath none has hitherto been diſcovered, except a little ſome years ago at Kier. In Strathearn it is ſold from eight to ten pence the boll, being eight cubical feet. The ordinary allowance for an acre is from forty to ſixty bolls. A gentleman on the Nairn eſtate betwixt Perth and Dunkeld told me, that the farmers in that diſtrict go even the length of one hundred bolls to the acre; but the moſt of the land in that country is a deep ſtrong loam. The moſt experienced improvers allow forty bolls, for a ſecond marling, after an interval of fourteen years. The interval now adopted in the Stormont is nineteen years, eſpecially on the eſtate of Balharry and the country adjacent. On all light land its effects are powerful and immediate; but

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it requires to be managed with caution. Many places of the Stormont and indeed in all Strathmore have been almoſt laid waſte, by the exceſſive application of this ſtimulating manure and over-croping the ground. At Bradiſton the ſoil loſt all the power of coheſion and became ſo light by this cauſe, that it had no ſward; the ſurface and the ſoil were blown away with the winds, in the ſame manner as duſt is raiſed from the roads; and dens were made in ſome inſtances to the depth of five or ſix feet. About Bakie, along the road from Coupar to Meigle, and in many other places, the ſame injury has been done to the ſoil, by the injudicious uſe of marle. I ſaw one field weſt of Blairgowrie, which had been ſo reduced, that after it had lyen fourteen years or more in graſs, it had ſcarcely gathered a decent ſward. Mr Smyth of Balharry, to whom I owe much of my information relative to that country, told me that the land of Fullarton had been marled every ſecond year for a ſucceſſion of ten or twelve years, which at length put the ground from carrying oats, but not from barley; which management and effect ſtill continued in 1795. This fact ſeems to indicate that oats will exhauſt marled land more than barley; or that the dung given to the barley crop corrects the exhauſting quality of the marle.

The firſt marle diſcovered in Strathearn was in the loch of Auchtertyre: and it has been applied very ſucceſsfully to the lands in that neighbourhood, for a long time, becauſe a ſucceſſion of ſcourging crops is not allowed. No ſuch conſequences have followed as theſe in the Stormont. The expence of draging it out of the loch amounts to three-pence the boll, and a ſtratum of moſs from nine to ſixteen feet, muſt be removed, before the bed of marle in one end of the lake can be wrought. Sir William Murray ſhowed me a field

field of thin gravelly moor, laid down with marle alone, every acre of which, by ſuch a dreſſing was equal to the maintenance of four ſheep. In ſome parts of the ſame moor, which had not been ploughed at all, the heath was baniſhed in three years by a top-dreſſing of marle, and ſucceeded by a fine cloſe graſs.

Shell marle is found for the moſt part in ſmall lakes or in land-locked bogs and moſſes, where there had been formerly a lake or pond, during the multiplication of the animals. The wilks, which produce the marle, live only one year and multiply prodigiouſly. They are often found to adhere to the long graſs, which grows in pools, where they breed; and when the graſs decays, it is laid in horizontal lamina on the marle bed, by the weight of the animals. Theſe lamina aſcertain the number of years, in which the marle-bed has been forming, in the ſame manner, as the rings of trees denote their age.

When the wilks* happen to generate in ſprings or other ſmall collections of water, which are in moors or other high ground, they are frequently carried down, in the wet ſeaſon, to the firſt ſtill water; but if the ſtream is not able to carry them to a pond, they are ſometimes left in the face of hills, and form beds of marle in that ſituation. In Glentilt, a property belonging to the Duke of Athol, there is marle collected in this manner, on the declivity of a hill, to the depth of thirty feet, which, at a diſtance, has the appearance of a white rock.

Theſe wilks are of a blackiſh colour and about the ſize of a pea; and are found in rills or ſprings in the months of May and June, ſticking to ſtones and graſs. Wherever the

* An Engliſh gentleman, whoſe name I have forgot, ſays that not only wilks but bivalves produce ſhell marle.

wilks are obſerved in lakes, bogs or meadows, it will be proper to bore for marle; or if they be found in ſpouty land, or in rills of water that flow into lakes or into marſhes that ſtagnate, it may be alſo proper to bore for marle in theſe lakes or ſtagnant water.

The boring rod or wimble is made of iron, in pieces of about four feet long, which ſcrew into each other. In the undermoſt or firſt piece is a kind of tube, about two and a half feet long, pointed ſharp, open on one ſide, and one of the edges raiſed higher than the other, like a gimlet; ſo that when turned round, it may fill itſelf with the ſubſtance which ſurrounds it. Into this tube, which is open at the top, is put a piece of wood, as long as the tube itſelf, and of a conical ſhape, correſponding exactly to its figure. To this piece of wood is faſtened a rope, of the ſize of one's little finger and longer than the whole rod, when all the pieces are put together. This piece of wood muſt ſtick ſo faſt as not to come out, when the rod is puſhed down into the earth or moſs, below which marle is expected to be found; but muſt not be ſo firmly faſtened, as not to be eaſily drawn out by the rope to which it is fixed.—When you wiſh to bore, put the piece wood into the tube; ſcrew the piece of the rod, which is fitted to the ſcrew, on the top of the iron in which the tube is formed; then puſh down the rod into the earth or moſs, allowing the rope to go down with the rod, without twiſting round it: and when theſe two firſt pieces of the rod are puſhed down, their full length, ſcrew on the upper piece of the rod, which ought to fit the ſcrews of all the other pieces, and muſt have a hole in the top of it, large enough to admit of a piece of timber, two inches diameter and four feet long, with which you are to turn round the rod three or four times, having previouſly

previouſly drawn up, with the rope, the piece of wood which had been put into the tube. When the tube is thus turned round, it will be filled with the ſubſtance next it; and when drawn up, will ſhow what that ſubſtance is. You can bore deeper and deeper, by ſcrewing on more pieces of the rod, below the piece into which the handle is received that turns it round; but for facility in unſcrewing, there ſhould be a hole in every piece of the rod, that will admit a piece iron, of the thickneſs of a man's thumb and eighteen inches long. It will be neceſſary to have two of theſe pieces of iron, ſo as to hold the rod ſteady with the one, while you ſcrew or unſcrew any of the pieces with the other; and this muſt always be done, in putting down and taking up, when a great length of the rod is required, as it cannot be managed in either of theſe caſes, all in one piece.

Marle has been found under almoſt every kind of ſubſtance, but the moſt common are moſs or ſoft mud or ſand; more rarely under clay or gravel. The methods taken to get out marle are draining, pitting, throwing out or pumping off the water, or dragging it into boats and emptying the load upon piers. Shell marle is white or yellowiſh and is nearly equal in value to lime, being by far more powerful than clay marle.

It is the general opinion that marle is little known in England, where it is ſometimes called ſnail-cad, becauſe the wilks, that form it, are a ſmall ſnail. There is great abundance of marle in many parts of France, where its uſe is hardly known; it is not improbable that their ſyſtem of huſbandry, which in general conſiſts of a ſucceſſion of ſcourging crops, may have brought marle into diſrepute; becauſe it is a common French proverb, *That marle is riches to the father, but ruin to the ſon.* This may be applied to every ſtimulus,

which is laid upon the ſoil, when followed up by ſcourging crops.

4. *Moſs.* Moſs, which hitherto has been little tried as a manure, has a better effect than moſt people are aware of. The firſt that is ſaid to have been uſed in this part of the country, was by Miſs Jean Graham of Duchray, who managed the eſtate, and the family-farm of Rednock-houſe, while her two brothers were engaged in defending their country in the war preceding the peace of 1763. This lady told me that ſhe had in various inſtances employed moſs as a manure with ſucceſs. Miſs Graham was among the firſt perſons, if not the very firſt, who pared and burnt moſſy ground in Monteath. Several acres, which had undergone this operation by her directions at that early period, continue to carry a cloſs ſward of green graſs at this day, without a ſingle pile of heath ariſing.

The proprietor and ſome of the tenants at Auchtertyre carry moſs to be ſpread upon their leys; and occaſionally mix it with dung as a compoſt. Sir William ſhowed me ſome hard poor ground on the tops of little hills, which had been laid over with moſs, where the graſs was as thick and verdant in the month of November, as any of the adjacent land, that had been dreſſed with marle.

The ſame proprietor has this and laſt year, burnt a great part of the moſs that is above his marle; which is eaſily performed by kilns made of ſod and flues cut out of the moſs itſelf. When theſe kilns are fairly on fire, they are hardly extinguiſhed by any rain, however heavy. Some bruſh-wood or dry peat is neceſſary to kindle them at firſt, which is mixt with the moſs, if it be wet, when laid on the kilns.

Peat aſhes are well known to be a powerful top-dreſſing.

The

The moſt porous moſs yields the leaſt quantity of aſhes; but the expence of burning is trifling.

Mr Dundas of Blair, near Culroſs, carries off the moſs, which has been floated down the Forth, and lays it in his ſtraw-yard, to form a compoſt with the dung, by the treading of cattle. It is probable that the ſaline particles, which the moſs had imbibed in its courſe, may increaſe its virtues.

On a little patch of ground in my own poſſeſſion, there were laid about five years ago, upwards of one hundred and fifty carts of foul moſs; but before laying it on, it was made up, the preceding autumn, in the form of a dung-hill, having one cart of dung to every three carts of moſs. It lay in this ſtate till the next ſpring; was finely pulverized and uſed with ſucceſs. The ſame practice is followed in different parts of this country.

Upon light land, where there is a great proportion of ſand or gravel, the moſs naturally retains the rain and the dew, which that kind of ſoil could not naturally retain; and by this ſupply of moiſture, preſerves ſuch a dry ſoil from the effects of ſevere drought. After it is ploughed in, it not only acts as a ſpunge, but forms an addition to the ſtaple of the land, no way to be diſregarded.—The bounty of providence is wonderful, not only in this, but in many other caſes. In every tract of this ſurvey, and probably in moſt other places, where the ſoil is ſandy and naturally parched, there are patches of moſs and ſome ſwamps near at hand, to invite the induſtry of man, by laying them on theſe light lands, in order to render them more retentive of the dew of heaven. Shell marle is found for the moſt part in bogs and moſſes, near ſuch ſoil, to correct its quality.

Shell ſand is diſcovered near Culroſs, which the farmers begin to uſe as a manure.

On

On the banks of the Devon, where that river frequently overflows the adjacent ground, the ſoil is compoſed of a heavy, moiſt fleech, which forms a very ſluggiſh ſpecies of land. The crop lodged from year to year, before it arrived at maturity, which made it of little value. One of the farmers in this ſituation, laid a quantity of ſand from the bed of the river, on ſuch ſoil; and now it produces excellent crops of plump grain, which ſtands until it be cut down with the ſickle.—Sand has been known to make a proper manure for moſs, upon that general principle, formerly alluded to, that ſoils of oppoſite natures form invariably the beſt mixture, as correctives of each other. The inertneſs of one is corrected by the ſtimulating qualities of another; the coldneſs of one, which abſorbs the rays of the ſun, is corrected by the warmth of another, which retains them by reflection: and in the ſame manner with regard to other qualities.

The advantages to agriculture, by increaſing the quantity of manure, ought to be carefully attended to by every man that occupies the ſoil. Many things are accounted of little value and allowed to go to waſte, which might, by proper management, increaſe the produce of the earth. Some might be uſed ſeparately, others formed into compoſts: ſoot, oil-cake, the ſcourings of ponds and ditches, urine of all kinds, night-ſoil, bones either broken down by a machine or diſſolved in quick lime, ferns, thiſtles and other weeds cut down in their full ſap, tanners rotten bark, the exuviæ of all animals. Theſe and many other ſubſtances, beſides thoſe recommended and treated of under this article would be found moſt uſeful in increaſing the fertility of the earth.

Dung ought to be uſed, before it become too putrid, which renders it effete; neither ought it to be much expo-

ſed

ſed to the ſun, to the waſhing of rain or to the blanching of wind, which never fail to diminiſh its virtues.

Sect. VI. *Weeding.*

IN almoſt every part of the county of Perth, the farmers weed their crop, when it is neceſſary. The lint is univerſally weeded, except the ground be ſo clean, that few weeds of any ſize make their appearance. In weeding their other crops, ſome of the farmers pick out thiſtles, docks and the larger weeds with a pair of wooden forceps already taken notice of, which are ſo long in the handle, that a man can work them ſtanding upright. Others pull them with the hand: and others cut them over with a ſickle in the right hand, and a forked ſtick in the left, to hold the weed firm againſt the teeth of the ſickle. But the practice of weeding their corns is not ſo carefully obſerved among the moderns, as Columilla tells us it was among the Romans. Where a regular rotation is introduced, where cleaning crops are ſown and the land fallowed either with or without a crop, which is now becoming general, weeding is leſs neceſſary.

Sect. VII. *Watering or Flooding.*

THERE is no doubt that the primary cauſes of vegetation are heat and moiſture. Egypt owes all its fertility to the overflowing of the Nile and a ſun almoſt vertical. Every place, where this ſpecies of improvement is practiſed on ſuitable ſoil, is benefited by it, in proportion as that practice is extended.

From the remains of old channels, made for conveying water, it appears that the practice of watering land, in various parts of Strathearn and Strathallan, was more frequent in

in former than in latter times. What has been ſaid in the ſection relative to the flooding of meadows, will apply to the manner of conducting water towards any field, where it is to be introduced. But arable ground or waſte land having generally a conſiderable declination, it will be often impracticable to flood them totally; the water muſt therefore be ſpread by means of ſmall parallel or horizontal canals, which are made with a plough or ſpade, by turning the furrow down hill. The one will catch the water that eſcapes from the other; and by a little attention in not allowing too much to eſcape at any one place, the whole ſurface will be equally and conſtantly watered.

Water acts more as a ſtimulus than a manure, eſpecially when the ſediment is ſcanty: and by the ignorance of farmers in over-cropping their land, the ſoil is often reduced ſo much, that for ſome years thereafter it can neither carry graſs nor corn. This circumſtance has occaſioned a prejudice againſt irrigation. Moſt men are very ingenious to throw the blame on ſomething elſe, when they are in the fault themſelves. The introduction of marle and lime has alſo contributed to bring water into diſuſe, without attending to this evident conſequence, that theſe will have the ſame effect upon ground, which is kept in conſtant tillage.

An opinion prevails among many farmers in Strathearn, that water brought upon graſs ground, which had been laid down ſome years before with lime, will deteriorate the ſoil in place of doing good. But this novel prejudice againſt water is without foundation; for one of the moſt ſkilful farmers in Monteath has often watered land, in that ſituation, with ſucceſs; and a gentleman in Strathearn of approved knowledge in agriculture has often followed the ſame practice, after the land had been laid down with marle.

In

In every valley in the highland parts of the county, there is ſuch command of water, and the operation ſo eaſy, that the extent of green ground and of the fineſt graſs on the face of theſe hills, might be increaſed to an aſtoniſhing degree: and if the Board of Agriculture or the Highland Society of Scotland were to turn their attention to this ſubject, the benefit ariſing from it to the community would be rapidly and extenſively felt. The views of both are highly laudable and meritorious, by running parallel, in promoting the good of their country: and it is the duty of every man, who is deſirous to contribute his mite to the public proſperity, not only to wiſh them perſeverance, which cannot fail to be ſucceſsful, but to ſuggeſt ſuch hints as may direct their efforts to the ſpeedieſt and moſt effectual method of accompliſhing the end they have in view. For my own part, I am convinced, from the moſt accurate obſervations and after the moſt mature reflection, that no mode of cultivation will ſooner improve the higher grounds in the highlands, than the uſe of pounded limeſtone and watering the face of the hills: and with theſe, in moſt caſes, it is very practicable. If limeſtone is not every where to be found, water is univerſal. If water cannot be made to remain or flow ſlowly upon the ſteepeſt declivities, the duſt of limeſtone can be made to remain.

Notwithſtanding that irrigation has gone much into diſuſe, it is ſtill practiſed in various places; in the vallies and on the ſides of the Seedlaw hills; on the ſide of the Grampians next the Stormont, in ſome parts of the foreſt of Iſla, and elſewhere.

If the ſoil be light and dry, with a proper fall and command of water, there is no ſpecies of manure ſo cheap or ſo plentiful, which can contribute equally with water, to enrich

the land. When the tract for conveying the water has been once made with judgment, it may remain for centuries, requiring but very little repair occaſionally, when it is to be uſed. Nature furniſhes the manure, without any farther expence, and every fall of rain brings a freſh ſupply of the fineſt particles of earth, from the upper ground to increaſe the quantity and meliorate the ſoil below. Let the farmer look at every little valley in the front of his hills, where there is a ſpring, or where water deſcends, without cutting the ſurface, in rainy weather or during the time of a thaw, and from the quality of the graſs in theſe, let him be convinced what a rich and beautiful carpet he might, by a little induſtry, ſpread along the ſides of his heath-clad hills. If ever the ſheep-maſters of this county are brought to ſee, how much it is their intereſt to have plenty of food for their ſheep, when they deſcend, on the approach of winter, from the higher and bleaker mountains, in queſt of ſhelter and of nouriſhment, it is to be hoped, that inſtead of burning the heath, which is but a temporary expedient and a conſtant labour, they ſhall once for all, introduce water and deſtroy the heath, to riſe no more. When the finer graſſes decay, by the ſeverity of winter, the coarſer kinds, which grow in moiſt ſoils, will remain for a ſupply of food; and even the ſofter graſſes, if not eaten bare, will ſhelter the ground and occaſion a fine ſpring of early graſs. Moſt kinds of graſs, which have a blanched appearance in winter, and ſeem to be entirely decayed, acquire, at the root, a certain degree of verdure in ſpring, by means of a new circulation. This circumſtance which is not generally underſtood, together with the cover it affords to the new tender graſs, gives ſheep a good bite early in the ſeaſon, and has ſome effect in preventing

venting the laxative quality of food altogether conſiſting of graſs which is wholly new.

I have diſtributed many drawings of the level, for conducting water, recommended by Sir John Sinclair, where the ground appeared to be ſuſceptible of that improvement: and the attention of the gentlemen and of the generality of the tenants, to its conſtruction and utility, gives hopes that it will be uſed.

CHAP. XIII.

Live Stock.

NEXT to the cultivation of the ground and the introduction of the moſt uſeful plants, the ſpecies of live ſtock, which is beſt adapted to the ſoil and climate, ought to be the great object of a farmer's attention.

Sect. I. *Cattle.*

THE cows in general are of a bad breed; not ſo well haired and ſhaped as the north Argyle-breed, nor giving ſo much milk as the ſouthern breeds. In ſeveral diſtricts of the county, where farming is well underſtood and plenty of clover and turnips is cultivated, the cows are fed in ſummer on cut clover, without allowing them to depaſture it. The ſuperior advantages of this practice have been already taken notice of.

In the vicinity of Perth and bridge of Earn, the farmers are introducing the Angus and Fife-breeds. In the weſt they prefer the Argyleſhire breed, becauſe theſe cows are well ſhaped, are hardy, have a fine pile, fatten ſoon, although they are not ſuch good milkers as other breeds. In

ſome diſtricts the Galloway cows or the breed from Airſhire gets the preference, becauſe they have much of the ſhape and pile of the Highland cows, and a greater quantity of milk. In Rannoch, Glenlyon, Glenlochay, Strathfillan and ſome other places, the Argyleſhire breed prevails. There is no particular diſtrict of the county, to which the Galloway cows are peculiar. They are however in great perfection at Lawers and elſewhere. The farmers in Monteath, who are deſirous of improving the breed of their cattle, introduce cows from the Glaſgow and Rutherglen markets, which are much the ſame with the Galloway cows. Theſe are in great perfection in every gentleman's dairy of the diſtrict. We have cows occaſionally from the markets at Stirling, which ſeem to have the ſame qualities and are probably of the ſame kind with the former.

Mr Graham of Balgowan has lately brought ſome cows and bulls, of different ages, from the county of Devon. The cows are ſaid to excel in the quality of their milk, and their meat to have as fine a flavour, as any beef, the highland not excepted. They are handſomely ſhaped, only that their legs ſeem to be rather long; and are all of an uniform dark-bay colour, without a ſpot or pile of other hair, and their horns finely tapered. At Scoone, the earl of Mansfield had a dairy of beautiful cows of the Lancaſhire breed; not inferior to thoſe at Balgowan in Shape, and ſuperior in ſize. They were alſo nicely marked, which ſuits ſome people's taſte, as a trait of beauty.—Almoſt all domeſticated animals, whether quadrupeds or fowls, are variegated in the colour of their pile or plumage, while the wild tribes of the ſame ſpecies, are ſo perfectly uniform, that one individual can ſcarcely be diſtinguiſhed from another.—We have the Guernſey breed of cows at Blair-drummond, whoſe cream

cream is the richeſt I ever ſaw. A ſpecies from the Eaſt Indies are now at the caſtle of Lenrick in the pariſh of Kilmadock, imported into Europe by Sir John Murray Baronet, which are thriving and promiſe to do well; but it is impoſſible and perhaps unneceſſary to trace every variety.

Where the cows are large, conſiſting moſtly of the breed from the counties of Forfar and Fife, which is the caſe in the Carſe of Gowrie, they give from twelve to ſixteen Scots pints of milk in a day, and they fatten generally to the weight of thirty or thirty-ſix ſtones. Some oxen, when fully fat, weigh one third more. The quantity of milk and the weight of beef varies almoſt in every province of the county, being in every inſtance influenced by the kind of cattle and the mode of feeding. In theſe provinces where rural economy is not properly attended to, the milch cows give no more than ſix pints, and the weight of a fat beaſt is no more than betwixt twenty and twenty-four ſtones.

The Highland Society deſerve great praiſe for defraying out of their own pockets the expence of premiums which are annually given to thoſe perſons, who keep the beſt bulls in different diſtricts, which will in time introduce a better breed of cattle into particular places; but while the benefit of that beſt bull or of the ſecond beſt bull is confined to one farm, many years may elapſe, before the amelioration of the breed can become general. Why might it not be made a condition in granting the premiums, that any farmer within a certain diſtance may have the privilege of having a breed of theſe premium'd bulls, if he choſe to bring two or three of his beſt cows to be covered by them? There might alſo be premiums for the beſt ſtallions and for the beſt rams.

In ſome places of the Stormont, the farmers ſell their turnips at the rate of five pounds or five pounds ten ſhillings the

the acre to drovers from the north, together with the uſe of their cow-houſe and a little ſtraw. Theſe drovers bring in cattle of their own to conſume the turnips and ſtraw, which they fatten in this manner for the butcher. The dung belongs to the farmer. The general practice in the Carſe of Gowrie is to purchaſe, in the months of September and October, ſuch a number of young cattle at the markets in the neighbourhood, as with the other ſtock is judged neceſſary to conſume the ſtraw, before the following May; at which period the cattle are diſpoſed of to the dealers or farmers in the adjacent counties, where they are fed for ſome months on graſs, and afterwards diſpoſed of in England or in the ſouth of Scotland.

The more the ſoil is cultivated, and a better ſyſtem of agriculture carried on, the more will the country be capable of ſupporting a larger breed of cattle, and the more deſirous will the tenantry be to improve the preſent ſtock. In the moorland parts of the county, the attention of the farmer is moſtly confined to his cattle, and in the diſtricts beſt adapted for grain, the raiſing of the moſt valuable crop is the ſureſt way of making the greateſt returns. In ſome farms, which conſiſt of an hundred acres or more of arable land, there are only a few cows to give milk to the family. In other places, farms of fifty or ſixty acres, in tillage, have ten or twelve cows, and ſometimes more.

In the midland parts of the county, where the ſoil is light and the produce of the dairy is an object of importance; where the paſture for cattle, by means of ſown graſs is abundant and rich, there is little doubt that a better breed of cattle, in reſpect of the quantity and quality of the milk, the weight of the carcaſe and the eaſe of fattening them, will become daily a matter of more attention. The farmers are already

already very ſenſible of this advantage, and ſeem to be eager for a better breed.

There is one circumſtance, relative to the introduction of all new breeds, which muſt not be paſſed over in ſilence, becauſe no farmer can neglect it without certain loſs. Every kind of paſture is fitted to raiſe animals to a particular ſize. When beaſts of a larger ſize are brought in, than the quality of the food is calculated to ſupport, theſe animals, whether cows or horſes or ſheep or any other kind, will degenerate apace, and never prove uſeful, until they come down to that ſtandard or ſize adapted to their ſituation and ſuited to their food. On the other hand, when a ſmaller breed than ordinary is brought in, they continue to increaſe in bulk, until they come up to the pitch, which is ſuited to their nouriſhment. But there is this remarkable difference betwixt theſe two progreſſions, in reſpect of profit, that in the retrograde progreſs, when animals are brought from rich paſture and a comfortable ſituation to the reverſe, they are in every inſtance worſe than the indigenous breed; whereas the animals, which are brought from worſe to better, continue to improve, till they arrive at that perfection, which the change in their ſituation is calculated to produce. Theſe cauſes may not immediately have their full effect; but in a few years they certainly and evidently ſhall. He makes, for this reaſon, a much ſafer experiment, who brings cattle from worſe to better, than he who brings them from better to worſe.—This reaſoning applies to all plants as well as animals.—Highland cattle riſe to a great ſize, not only by the keeping in South Britain, but in rich paſtures at home.

In vain will you attempt to improve a breed of animals beyond the circumſtances of the country as to climate and paſture; while at the ſame time, it is no eaſy matter to diſcern,

cern, without proper trials, how far theſe circumſtances can ſupport a better ſtock. Here is great room for the ingenious to exerciſe their judgment in improving the breeds of different animals. One ſpecies has evidently degenerated in this country, by a change in their ſituation to the worſe. The red or fereſt-deer is but a puny animal in compariſon of theſe of former times. This will be apparent to any perſon, who compares the horns of a deer that is killed at preſent to thoſe of the ſame ſpecies, which are in different places dug out of the moſſes. The cauſe is obvious.

The improvement of the ſoil ought therefore to go hand in hand with the introduction of a larger breed of cattle; and a large breed ought, for the ſame reaſon, to be introduced, in that degree, in which the ſtyle of agriculture is improved.

The moſt material objections, which farmers have againſt uſing oxen for the plough are that they are leſs expeditious in the diſpatch of work, and that they poach the ground more than horſes. The late Mr Mylne of Mylnfield in the Carſe of Gowrie, who ſpoke from experience, was of opinion, that the poaching was much the ſame in both caſes, and that oxen, when fed as well as horſes, will do the ſame labour, and with equal diſpatch. Mr MacLaggan, Lord Kinnaird's factor in the ſame diſtrict, ſtill uſes oxen, while the cultivation of his farm does not ſeem in my opinion to be behind his neighbours in any reſpect whatever.

Sect. II. *Sheep and Goats.*

GOATS are ſuch hardy creatures and their milk is ſo nutritious, that at one period they were very much reared over all the Highlands of Scotland; but ever ſince the landed proprietors began to pay attention to their woods, as an article

ticle of profit, the goats have very much decreaſed in number, becauſe they eat the ſucculent buds and otherways deſtroy woods by peeling off the bark; and ſince ſheep-ſtocks have been found more profitable than goats, the latter have almoſt diſappeared entirely in this part of the kingdom.

Sheep are the moſt profitable, the moſt uſeful and the moſt inoffenſive of all browſing animals, known in this part of the world. Upon any given extent of paſture their returns are nearly one third more than that of any other ſtock. They ſupply us with food and cloathing, and employ a great number of manufacturers, from the ſhearman who cuts off the fleece, to the merchant who ſells the cloth.

The ancient breed of ſheep, in this country, were the white faced. They were few in number, compared to the flocks at preſent; and in the Highlands were houſed in cots every night in winter and ſpring. About thirty years ago, the black-faced breed was introduced from the ſouth, and bought in either in lambs or at a year old. Their numbers have increaſed beyond all expectation, ſince that time, over the whole Highlands of Scotland. In gentlemens incloſures, we ſee different kinds, according to their fancy, or the ſuperior profit expected from one kind more than another. Mr Graham of Balgowan has on his parks, in the eſtate of Lednock, a flock of Bakewell's and Culley's breed. Mr Haldane of Gleneagles has ſeveral kinds, both Britiſh and foreign. Mr Mylne had the Northumberland breed, when I was in the Carſe of Gowrie; others the Leiceſter breed; and others had breeds different from all theſe.

In the glens there are great flocks; amounting in ſome inſtances to upwards of two thouſand ſheep. The increaſe of the numbers of ſheep has been ſo rapid and ſo great, that perſons, who attend not to the cauſe, are aſtoniſhed

that black cattle have not totally diſappeared or at leaſt decreaſed, in the ſame proportion. The fact is, whatever be the cauſe, that our markets for cattle in the autumn and ſpring are as crowded as ever.

This problematical circumſtance merits ſome conſideration, and may probably be unravelled by attending to the preſent method of managing ſheep-ſtocks. They get very little provender in the winter ſeaſon; whereas by the old ſyſtem, they were as regularly fed in the houſe, as the other animals, of which the farmer was poſſeſſed. The whole of his hay and ſtraw is by the e means reſerved for his cows and horſes; which enables him to keep nearly as many in winter as before; and if ſome of his higher fields are in graſs and his tillage leſs extenſive, he has fewer work-horſes to maintain; and the fields, which he ploughs, yield more abundant crops. He keeps alſo fewer hill-horſes, a ſmall ſpecies, of which at one time, there were vaſt herds in the highlands. His moors are better preſerved, and his ſtock more adequate to the ſize of his farm.

Theſe are not the only cauſes: the people in the highlands have been ſtocking their farms with ſheep, theſe thirty years or more. This rage for a ſheep ſtock is ſtill going on: and the cattle muſt neceſſarily travel down to market, whoſe place is annually occupied by ſheep. If we ſuppoſe ſixty or one hundred farms to be every year changed to the ſheep ſyſtem; the cattle from theſe will help to ſupport the numbers at market. This propenſity to ſtock with ſheep muſt be gratified; but when fully gratified, it muſt have an end: for beef muſt be had at any price; and when the time comes, that the tables are to be turned againſt the ſheep ſyſtem, in favour of black cattle; they who diſcern the approaching change

change and are prepared for it by breeding cows, will reap the fruits of their diſcernment.

In accounting for the numbers of black cattle at preſent brought to ſale, we ought by no means to forget the improvement occaſioned by the ſheep themſelves. They enrich the quality and enlarge the quantity of graſs within their walk, more than any other ſpecies of animals. They never deteriorate the ſoil; they render it always more and more productive: and wherever their numbers are increaſed upon a certain extent of land, they help to ſupport the increaſe of their own numbers, by producing an increaſe of food. The ground is not only made green, and the heath extirpated, by the enriching quality of their manure, but the fineſt graſſes ſpring up ſpontaneouſly, where it had formerly been ſcanty and coarſe: and when this powerful top-dreſſing of our whole hills with ſheep dung and urine has been completed, there is little doubt that, in a few generations, the Grampians will be as verdant as the Ochills, and that the Ochills had once as forbidding an aſpect as the Grampians.

Twenty-ſeven pariſhes of this county may be conſidered as in a great meaſure occupied by a ſheep ſtock, beſides the flocks on the Seedlaw hills, which ſtretch eaſtward from the hill of Kinnoul to the confines of Angus-ſhire. Five of theſe pariſhes belong to the Ochills, the reſt are adjacent to the Grampians or within their boſom. By a computation of Mr Haldane of Gleneagles, who had paid particular attention to this ſubject, there are 50,000 ſheep in the whole Ochills. Three fifths of the Ochills are in the county of Perth; which may be eſtimated at 30,000 ſheep, or 6,000 to a pariſh at an average. But many of the pariſhes belonging to the Grampians are by far more extenſive than

thoſe of the Ochills, (ſome of them as extenſive as the whole Ochills together,) we may therefore compute each of them at the average of 8,000, which will amount to 176,000. It gives me pain that I have omitted to take down, in my notes, ſome criterion, by which a calculation might be made of the ſheep on that part of the Seedlaw hills in this county. Let them be ſuppoſed 16,000, and if I am in a miſtake, the candid at leaſt will forgive a miſtake, that is involuntary. The whole ſheep in Perthſhire may in round numbers be calculated to amount to 222,000.—Although it would be unpardonable to paſs over a ſubject in ſilence, which includes ſo much of the floating property of the county, yet a full inveſtigation of it is left, without reluctance, in better hands—in thoſe of the Society for the improvement of Britiſh wool.

Mr Haldane ſays that the ſheep-maſters in the Ochills rear more of their own lambs than formerly. They keep no other graſs for their flocks in winter, but the ſcanty Gleanings, which remain of their ſummer paſture; by which means many of their ſheep periſh in ſevere ſeaſons. They have the practice of ſmearing their ſheep. Since the breeding became general, the ſale of full grown mutton is neceſſarily leſs. Good wedders, eating their fifth graſs, ſold in the year 1793 at eighteen ſhillings and weighed from fifty to ſixty pounds the carcaſe. The increaſing demand has induced the farmers to keep fewer cows and horſes and more ſheep. The wool ſells from ten ſhillings to twelve ſhillings and ſix pence, and the ſmeared wool from five ſhillings to ſix ſhillings, the ſtone of ſixteen pound weight. The ſheep are generally waſhed in ſome clear ſtream or pool, before they are ſhorn. The ſame gentleman adds, that he has within theſe few years, brought to that place ſixteen of the

fineſt

fineſt rams, Spaniſh, Cheviot, South-down, Ryland and other breeds, whoſe wool ſells at twenty ſhillings, inſtead of ten, the current price of the wool from the common breed: and although he has had ten ſcore of country ewes covered gratis by them, in order to meliorate the breed, yet a fear, leſt they ſhould not thrive in that climate and management, deters the ſtore-maſters from making a fair trial. See his Memorial, Appendix, N° 5.

While ſo much of the yearly income of the gentlemen of this county depends on ſheep, every thing ought to be done, that is poſſible, to render them a ſtock, ſtill more valuable. We have as good reaſon for improving the preſent breed, as our countrymen ſome years ago had for improving the breed, which was in the country at that period; and as their views carried them no farther than to increaſe the carcaſe, why may not we try to increaſe the quality of the wool?

This object can only be attained, either by *changing* the preſent breed entirely or by *improving* it: And as it may be improved by introducing rams, whoſe wool is finer, while their ſize is equal to the ſheep we have; this ſeems to be the ſafeſt and the cheapeſt experiment; and there can be no objection, but one, againſt its ſucceſs.

If the rams are from a warmer climate, there is a danger, leſt they may not agree with ours: for man alone, of all the creatures that inhabit this globe, can endure every diverſity of climate, and has a conſtitution that can accommodate itſelf to every latitude, where animal life can exiſt. Every other ſpecies has a climate peculiar to themſelves.

The nearer the temperature of that climate, from which the rams are brought, is to that of this country, the higher is the probability of their ſucceeding. The climate of Spain is ſo warm, that the conſtitution of Spaniſh

ſheep

ſheep may not, for a tract of years, be naturalized to the climate of Scotland: nor have we yet arrived at the attention beſtowed on the royal flocks of Spain, having one reſidence and one climate for ſheep in ſummer and another in winter, and clean graſs at both ſeaſons. We ſurely might have, and ought to have, changes of graſs; and we might improve the climate, by means which are alſo in our power.*

A queſtion has been ſtarted, whether the qualities of ſheep, depend on the breed or the paſture or the climate.

Without entering formally into the diſcuſſion of this point, what ſeems to be neareſt the truth is, that the qualities of animals are affected by all theſe cauſes; by ſome of them more than by others; and that ſome of theſe are effects of one another. There is no doubt that in ordinary caſes, fine graſs makes the fatteſt ſheep; coarſe graſs the hardieſt, and dry paſture the fineſt woolled: and there is as little doubt that the climate and other local circumſtances determines the quality of the paſture. In all ſituations your ſucceſs is greater, when you ſecond nature, than when you violate her laws.

Tu nihil invitâ dices *facieſve* Minervâ. HOR.

A breed, that makes the leaſt change from the circumſtances, in which it had been formerly placed, has a far better chance of thriving, than a breed, which makes a great or

* As it may be doubted by many readers, whether the climate can be improved, it would have been proper here to explain by what means. *Anonymous.*

Anſ. Although I do not think myſelf bound to anſwer the remarks or queſtions of an anonymous writer; yet it is mentioned in this ſame article, that planting improves the climate, and that beſides the ſhelter of plantations, cots or ſhades might be erected for the protection of ſheep in ſtormy weather.

or violent change. If theſe circumſtances are attended to, if the neceſſities of the animal are ſupplied, if his warmth and his food be nearly the ſame as before, his conſtitution will ſoon be accommodated to his new reſidence. But if you do nothing for him, to make him as comfortable as he was formerly, depend upon it, he will not thrive. Meliorate your accommodation, and nature will mould the conſtitution of the animal to your wiſh.

There is one part of the economy of nature, in favour of introducing into this country, a finer-woolled breed of ſheep. —All animals in a cold climate are clothed with a finer fur than thoſe nearer the equator. Wool is the fur of this ſpecies; and we are not at liberty to ſuppoſe, that nature intended ſheep to be an exception from that general law. A few trials may perhaps fail, owing to a variety of accidents, but perſeverance muſt finally ſucceed. The change ought however to be gradual. It ought not to be extreme; it ought to be cautiouſly gone into, by croſſing the indigenous breed with other rams; and above all it ought to be made, after providing for the ſheep introduced, the conveniencies, as nearly as poſſible, which they had in their native country. This proviſion depends very much, on rendering the country warmer in winter, by planting the waſtes in ſheep walks, and by ſupplying them with winter food, which they may eat comfortably and plentifully, under the covert of that ſhelter.

In the report of Strathearn and Monteath ſent to the Board in 1793, there was a full ſtatement of three actual ſheep farms, given to me by perſons of veracity, from their own knowledge, aſcertaining the profit upon each, and ſhowing the comparative gain of a *breeding* ſtock, which conſiſts

fifts of ewes and lambs, of a *wedder* ſtock in a ſtormy ſituation, and of *ewes ſeven years old* in a gentleman's parks, which are changed every year. See CHAP. IV. SECT. VI.

Sheep are delicate animals, ſubject to a variety of diſeaſes and other caſualties. In wet ſoils, ſome are carried off by the *rot*, which is a conſumption attended with a dropſy, and hitherto incurable. Others are attacked by the external *hydrocephalus*, which is a collection of water in the head betwixt the dura and the pia mater, and in theſe creatures always accompanied with a vertigo. They are alſo afflicted with a *trembling* or weakneſs in their limbs, for which there has hitherto been no cure. A gentleman, who is converſant in the diſeaſes of beaſts, told me, that a little warm milk with ſome Jeſuit bark would cure the trembling. In other caſes they are ſeized with *blindneſs*, which ſome perſons cure by opening the vein below the canthus or inner angle of the eye, called the angular vein, then by holding the creature's head in an inverted poſition, to make ſome drops of the blood fall into the eye, which operate two ways in effecting a cure of the ophthalmia; firſt by moderating the increaſed action of the veſſels of that part, which is the proximate cauſe of the inflammation; and ſecondly the blood, being admitted into the eye of the animal, will act, by reaſon of its mildneſs and its warmth, as an emollient, which alſo contributes towards a cure. After this operation, the white ſpecks on the eye are removed and the ſight completely reſtored. Others pound a little glaſs, that is blown into the eye with a quill open at both ends, which by its friction wears off theſe ſpecks or ſcales.

But the *braxy*, as it is called, which ſeems to be of the nature of a *gaſtritis* is not only the moſt fatal of all the diſeaſes

caſes of ſheep, but has hitherto baffled all the ſkill and art of man*.

Some farms are more liable to this diſeaſe in ſheep than others; and it was altogether unknown in the Highlands, until they began to introduce a new breed and to leave their ſheep, at all ſeaſons, in the fields. A change of graſs, eſpecially to clean graſs, or clover foggage, in the latter end of autumn, has often been tried ſucceſsfully. The only remedy indeed ſeems to be to try to prevent a diſeaſe, which after infection, has in all inſtances, been found hitherto incurable. The firſt and great point is to inveſtigate the cauſe of any diſorder, incident to man or beaſt; without which it is impoſſible to make any application with a proſpect of ſucceſs.

The braxy is moſt fatal within the region of the hoar froſts, while it makes leſs havock and is ſcarcely felt, in ſituations which are more elevated and more remote from the tracts of rivers, marſhes, or large bodies of freſh water. As an antidote againſt this diſtemper, the ſheep are ſometimes chaſed with dogs, and not allowed to remain long at once, without being diſturbed, at the ſeaſon in which danger is apprehended; for whenever a ſheep ſtops, after having been annoyed, he paſſes water; and as the bladder is generally burſt of ſuch ſheep as die of the braxy, a part at leaſt of the complaint may be a ſtoppage in the urinary paſſage.

It is well known, that ſheep drink very little, that they are very fond of ſalt, which is an antiſceptic, and that they are of a dry conſtitution; all which may be a part of the economy of nature, with reſpect to theſe creatures. When

 they

* Good keeping in the autumn is a moſt certain preventative. *Mr Bailey of Chillingham. Anſ.* That is recommended in this article, but it is not always effectual. Nay the fatteſt are moſt frequently cut off by the braxy.

they are forced therefore to eat the hoar froſt, which is only water in a congealed ſtate, ſuch a chillneſs may be produced by this froſt, and ſuch a quantity of water may be ſuddenly lodged in the ſtomach, as may occaſion a ſuſpenſion of the *excretories*, particularly the urinary ones, in ſo much that the quantity of liquid may prove fatal; eſpecially when the ſphinter of the bladder is ſo contracted and acquires ſuch a rigidity by the cold, as not to be capable of the neceſſary relaxation.

The hoar froſt of winter is nothing elſe but the dew of ſummer. The dew is moſtly the aſcending exhalations at ſunſet, and partly the perſpiration of plants, after the ſun is gone down. Theſe exhalations, in the beginning of winter, when the influence of the ſun is weak, are condenſed into drawling clouds of white fog, which ſail along the vallies in the evenings; and during the ſucceeding night, this drizzling vapour of congealed dew falls by its own gravity to the earth, and compoſes the powdering particles, which we ſee on the graſs and trees. Their want of fluidity prevents them from running together into one maſs, and preſerves on the graſs the very ſhape and ſize in which they fell; whereas the fluid particles of the ſummer's dew eaſily unite, after coming into contact, and conſtitute, by their fluidity ſuch globules, as their mutual attraction is able to produce.

It is a fact that lambs are more frequently attacked by this diſtemper, than full grown ſheep: and as this ſubject is of much importance, it may be of uſe to inquire into the cauſe. They feed on the ſame paſture, have the ſame care of the ſhepherd, ſuſtain the ſame viciſſitudes of weather and have every other thing in common with the reſt of the flock. The delicacy of lambs, or the inferiority of their ſtrength cannot account for this matter. Inferiority of ſtrength does

not

not always imply inferiority of conſtitution; for the young of many ſpecies of animals are able to endure as great hardſhips, and ſometimes greater, than their dams. May we not venture to ſuppoſe that the inſtinct of animals is, in ſome caſes, aſſiſted by experience: and that, without habit and experience, as a variety of facts ſhow, it is not in every inſtance, the infallible guide which we imagine it to be. Lambs, which never ſaw hoar froſt in their lives, before the beginning of their firſt winter, have no experience of its effects upon their health; nor has their conſtitution acquired that tone, which might make it in ſome degree harmleſs. We ſee cows, in the ſame manner, which are not accuſtomed to browſe among wood, whenever they are brought to a woodland farm, or feed on certain graſſes, of which they had not been accuſtomed to eat, become often diſeaſed and ſometimes killed; while the cows, in the ſame herd, which have been accuſtomed to this food, ſuffer no inconvenience. Cows, accuſtomed to red clover, are ſeldom hurt by it, which is ſurely a leſſon of experience or the effect of habit: And notwithſtanding the virulent poiſon to cattle, in yew leaves, (which are ſaid to be fatal, only when cut off and found lying on the ground), perhaps it might be poſſible to bring cattle, by cuſtom, to eat them in a certain degree, without danger. I have the beſt authority for ſaying that an iſland in Loch-lomond, where yew-trees abound, is frequently depaſtured with ſafety by cows. Have not ſome of our moſt ſovereign drugs, ſome ingredients in them that are poiſonous? And is not the human conſtitution by being accuſtomed to opium and other vegetable and mineral ſubſtances, brought to take them, not only with ſafety, but with benefit, in ſuch quantities, as without the aid of habit, would occaſion immediate death.

In bleak and ſtormy ſituations, where there is alternate froſt and thaw, in quick ſucceſſion; where the bottom is wet, and the exhalations plentiful which conſtitute the hoar froſt; where the paſture is poor and ſcanty, being only the rejected gleanings of the ſummer food; and where the natural ſtate of the ground affords no ſhelter, *there* ought ſhelter to be provided by the induſtry of man, either by erecting ſhades or cots for the ſheep, or by making plantations in convenient places, to which they may reſort in the hour of danger, when we ſee them deſcend from the mountains, previous to a ſtorm: and if clean graſs were ſaved, or other food provided for them, many of their diſeaſes would be prevented; and by more ample returns they would fully repay the whole expence. Let it never be forgotten on this ſubject, that the *braxy* was *unknown*, and other diſeaſes leſs frequent, in the Highlands of Scotland, while the ſheep continued to be in cots over-night, during the ſeaſon in which they now periſh. It ſeems therefore not improbable, that until we ſubſtitute ſomething in place of theſe; our ſheep ſhall be liable to their preſent caſualties. It is alſo probable, that the ſuperior quality of the ancient Scottiſh wool, which is ſo much celebrated, and of whoſe fineneſs there are ſuch ample proofs, was in a great meaſure owing, not perhaps to the breed, at its firſt introduction, but to the warmth occaſioned by theſe cots: and it is alſo probable that by uſing the neceſſary precautions, a new breed, or at leaſt another croſſing the breed we have, may be managed ſo as to thrive and do well.

This ſubject ſhall be concluded, by ſome remarks on the management of ſheep ſtocks in the Grampians, to which this ſurvey refers. The manner in which they are treated in the Ochills, has been taken notice of already. In the more

more inland parts of the county, the ewes are allowed to remain for the moſt part in the low paſtures in the vallies, where they have plenty of ſhelter and food, until the lambs are taken off, towards the latter end of July. At this time they are removed to the mountains, and the low grounds are ſaved for winter food. About the beginning of October, the ſtore-maſters ſmear their lambs; and if the weather be favourable, they continue the work, without intermiſſion, till all the ſheep they intend, be ſmeared. In ſome places they ſmear only the weaker ſheep; in other places the whole. The compoſition now in uſe is tar and butter. Some take ten Scots pints of tar to a ſtone of butter; others only five pints of tar to that weight; and others in the various proportions between theſe extremes. This quantity ſufficeth for laying fifty five or ſixty ſheep, at the rate of three or fourpence each, according as there is more or leſs tar in the mixture. Formerly ſhepherds uſed tobacco-juice and ſoap, and in ſome caſes chamber-ley; but theſe are laid aſide as leſs efficacious. One man ſmears twenty or twenty four in a day, leaving about an inch betwixt every ſhed of the wool.

The benefit expected from this practice is that it makes the ſheep hardier and warmer, that it cleans them from vermin and cutaneous diſtempers, and that it prevents their loſing the wool. They contend farther, that the wool pays very nearly the whole expence, the ſame number of fleeces of ſmeared and white wool bringing an equal ſum in the market, becauſe what the ſmeared wool wants in quality, it has in weight; and laſtly it is urged, that the more butter there is in the compoſition, the grain of the wool is the ſofter and more ſilky; that by the practice of ſmearing, the young

young ſheep are raiſed in the bone, are preferred in the market and fetch a better price.

Notwithſtanding all theſe arguments in favour of ſmearing, others condemn the practice totally. There is little doubt that it forms a cruſt about the animal's body and contributes to defend it from the cold; and thus may be proper in a ſtormy ſituation, while it is unneceſſary where there is plenty of ſhelter.

Lambs ſold in the 1793 at four or five ſhillings; in the 1796 their price roſe two ſhillings a head. Wedders two years old were then bought for ten ſhillings and ſix pence, theſe of three years for fourteen ſhillings; in the ſpace of three years, they coſt about three ſhillings more to the buyer. Butcher meat of all kinds has riſen in the ſame proportion, being between twenty and twenty-five per cent higher in 1796 than it was three years before: ſo fluctuating are the prices of almoſt every commodity, eſpecially of the articles of life, and ſo eaſily affected by a variety of circumſtances which are often unforeſeen. A war always occaſions a riſe in the price of meat: for although the ſame or perhaps a greater number of people are to be maintained in the time of peace; yet their food is not of the ſame kind; which creates a difference immenſely great, and always in proportion to the number of men removed from their common diet, to the manner of living in the army and navy. Plans are propoſed for bringing down the prices in the London market and elſewhere. There may be foreſtalling and jobbing, but theſe are only partial cauſes and can only have a temporary effect. While the great cauſe exiſts, the neceſſary effect muſt be felt, not locally but univerſally.

The graſs-meal of a ſheep, as the lands are now let, is valued at two or three ſhillings. It is a general rule in letting

ting lands for ſheep walks, to eſtimate the rent by the value of the probable number of lambs, according to the prices at the time; by which eſtimation the ſhepherd has the wool for his trouble, beſides the difference betwixt the value of the old ſheep he ſells off, and the lambs which he adds annually to his ſtock.

When ſnow is falling or blown by a ſtorm, the ſhepherds drive their flocks, without intermiſſion, round the top of a hill in a circle, to keep them from lowring and being ſmothered. The practice in ſome countries is to erect circular folds on the tops of low hills for this purpoſe. When the heath has been all covered, they ſometimes harrow the ſnow, to bring up the heath; in which caſe, the harrows ought to have long teeth and theſe few in number. Others throw hay or unthraſhed corn in handfuls upon the ſnow to feed them: But after all, a proviſion, ſuited to the various neceſſities of theſe uſeful animals in the winter ſeaſon, and adapted to the climate of north Britain is ſtill very much wanting.

Mr Marſhall ſays on this ſubject, "that cultivating plots of furze, broom, juniper, &c. by ſod burning and rippling the ſurface, or by other more eligible means, could not fail of proving beneficial upon the wintering grounds of a ſheep-farm. By means of thoſe as a reſource in the deepeſt ſnow, when the herbage of the braes were buried too deep and too evenly, to be uncovered by the ſcraping of the ſheep; by keeping the moſt expoſed parts of the braes in full herbage, for leſs general coverings of ſnow; and by reſerves of rape, for the ſeaſon of lambing; even ewe-flocks might be ſupported through the winter with ſome degree of certainty, without dry fodder; and without being left to the uncer-

tainty

tainty of the ſeaſons, and the mercy of the winds and weather, as they are at preſent."

Sect. III. *Horſes.*

IN a tract of country ſo widely extended as the county of Perth, where the ſurface is ſo much diverſified, the qualities and ſituation of the ſoil ſo different, and the circumſtances, habits and opinions of the inhabitants ſo diſcordant, the breed of their horſes, and indeed of all their live ſtock, may be expected in different diſtricts to be unſimilar to one another. The only point almoſt of reſemblance between the highland and lowland horſe is, that they are of the ſame ſpecies.

Mr Marſhall ſays, "that the true highland horſe is ſomewhat below the middle ſtature, about twelve or thirteen hands high; the back generally hollow and the ſides flat, but moſtly wide at the buttocks; the cheſt deep, the boſom wide and the legs generally good; the prevailing colour grey, changing early to a white. The highland horſes travel with ſafety and perſeverance; and for the highland roads, whether they lead over rugged or rotten ſurfaces, a better breed it would, perhaps, be difficult to introduce; but they are light for two horſe ploughs. This added to the great objection which modern ſheep-farmers have to horſes on the hills (where great numbers of them were formerly bred) has checked the breeding of this uſeful ſpecies of horſe."

"Horſes have ever been the beaſts of draught in the highland diſtricts; where oxen have never been worked, in the ordinary practice of farmers. Formerly, four horſes a-breaſt was the plough team of the highlands, and is ſtill in uſe; though nearly ſuperſeded by that of two horſes with reins. Hence the propriety of having introduced the lowland breed

of

of horſes or a croſs between theſe and the old breed. The modern plough team has been in uſe in Breadalbane and ſome other provinces, for the ſpace of twelve or fifteen years."

In the Carſe of Gowrie and other lowland diſtricts oxen were employed to draw the plough, till about twenty years ago; and the horſes were only employed to harrow in the ſeed, to carry out the dung and bring home the corns to the ſtack-yard. In the ſection relative to cattle notice has been taken of the objections, which modern farmers make to employing oxen in the plough as formerly. Mr Donaldſon ſays "that when oxen were diſcharged from the plough, it became neceſſary to purchaſe larger horſes than were then bred in the country; and the markets of Glaſgow, Falkirk, Stirling and Perth were reſorted to for that purpoſe; which practice ſtill continues, though not to ſo great an extent as formerly; the very high price of horſes having induced the farmers to rear their own ſtock: and they appear ſo ſenſible of the advantages of this mode of management, that there is little doubt of its becoming general. A pair of plough horſes, which ten years ago could have been purchaſed for thirty pounds, would in the year 1794 coſt fifty."

Any thing known to me about the treatment or diſeaſes of horſes, beſides what is generally known, is very immaterial; but there is ſubjoined in the Appendix, N° 8. a Letter from Mr James Wright, Farrier in Crieff, on the ſubject of Glanders in horſes, to which the reader is referred.

SECT. IV. *Hogs.*

MORE ſwine are reared in Athol, Strathardle, Glenilla and Glenſhee, than in all the other diſtricts of the county taken together. In theſe places the farmers rear huts for their ſwine in convenient parts of their moors, during the ſeaſon

that the corns are on the ground: and beſides their own conſumpt they bring down herds of thouſands at a time, to be diſpoſed of in the fall, at the markets of Kinroſſie and Coupar. The farmers, the millers and the diſtillers for many miles, between Glamis and Perth, and between Dunkeld and the Seedlaw hills, ſupply themſelves at theſe markets. From the ſame quarter, Strathbrawn, Glenalmond, Glenqueich, Strathtay, Breadalbane and many other diſtricts are provided with hogs to be fattened for pork and bacon, beyond what they rear for themſelves. The breed which is moſt frequent in theſe hilly countries, as being the moſt hardy, is what is called the Scots ſow; having long briſtles, a long ſnout, long legs, the belly leſs pendulous, the back raiſed and the ears leſs flouching than in the other breeds: but notwithſtanding their uncouth appearance, they fatten well, and are fitted for an expoſed ſituation by ſuſtaining more hardſhips than any other kind of hog known in this country. Where ſwine are reared in the low country, the Chineſe breed is either croſſed with the Scotch, or preſerved pure. In ſome places, there is a larger breed than either of theſe, which Mr Dalgearns at Meigle told me weighed twenty ſtones. The diſtillers over all the county rear and fatten ſwine, which are bought up at all ages by the inhabitants in their neighbourhood.

Not many years ago, the Highlanders in general had a diſguſt at this kind of food, without being able to give any reaſon for it; but their diſlike to pork has greatly worn off; in ſo much that in a ſhort time this loathing at ſwine's fleſh will be accounted a ſingularity even among the Highlanders.

Mr Donaldſon reports "that in the Carſe of Gowrie there are about two thouſand ſwine reared annually. They are principally fed on clover in ſummer, in winter on potatoes and

and what corn they can pick up in the ſtraw-yard. Pork and bacon conſtitute a greater proportion of the food of the poorer inhabitants in that diſtrict, than in any other part of Scotland; and there is ſcarcely a manufacturer, tradeſman or labourer, who does not feed one or two pigs every year for the uſe of his family. The remainder meets a ready ſale in the markets of Perth and Dundee. Young pigs ſell for five or ſix ſhillings, at ſix weeks old; and pork at four ſhillings, or four ſhillings and ſix pence the Dutch ſtone." The prices are nearly the ſame over all the county of Perth.

SECT. V. *Rabbits.*

THE Duke of Athol has a warren between Dowally and Dunkeld, to which he pays ſome attention. It ſeems to be well ſtocked, for I ſaw them friſking about in great numbers in the autumn of 1795, on a fine bank, where the ſoil was ſandy, along the eaſt ſide of the Tay. There are rabbits at Marly, Mr Farquharſon of Invercauld's ſeat in the Stormont, and at Glendoig in the Carſe of Gowrie. Lord Methven has a warren on his eſtate, near Perth. There are alſo wild rabbits in the vicinity of Callander and in various other parts of the county; but the ſoil is in general unfit for them, as we have no downs.

SECT. VI. *Deer and Roes.*

THE red-deer, one of the ſpecies of the Cervus, is not ſo numerous in this county as formerly, yet we have ſuch remains of them as to deſerve being mentioned. The principal foreſt of Perthſhire is in Athol, in the heart of the Grampians, and on the confines of the ſhires of Inverneſs and Aberdeen. The Duke allots many thouſands of acres to his deer, is a great ſportſman himſelf, and often reſides

in the foreſt for ſeveral days. This foreſt was famous even in ancient times, when they were ſo frequent, that every chieftian had a foreſt of his own. In the year 1530, James the fifth, Margaret the queen mother and the Pope's ambaſſador, together with their attendants, had a temporary palace of wood erected for them by the Earl of Athol, on the north ſide of Benglo, at a place called Lochainn, diſtant twenty miles from the inhabited country, in the receſſes of this foreſt, where they remained three days. Lord Perth has deer in his foreſt of Glenertnay. The foreſt of Mamlorn has been converted into a ſheep-walk, about twenty years ago. There had been a foreſt in Benmore, Glenfinlaſs and Benvenue; all in the county of Perth.

While the deer were permitted to inhabit the vallies, and and the country was under wood, the natives hunted them, by ſurrounding them with men, or by making large incloſures of ſuch a height as the deer could not overleap, fenced with ſtakes and entwined with bruſh wood. Vaſt multitudes of men were collected on hunting days, who forming a ring around the deer, drove them into theſe incloſures, which were open on one ſide. From ſome eminence, which overlooked the incloſure, the principal perſonages and others, who did not chooſe to engage in the chace, were ſpectators of the whole diverſion. Theſe incloſures were called in the language of the country *elerig* which is derived from another word that ſignifies *conteſt* or ſtrife. One of the farms in Glenlochay of Breadalbane is called *Cragan an elerig*, a ſmall rock which over-hangs a beautiful field reſembling the arena of an amphitheatre, probably the firſt that was cleared of wood in that diſtrict, and admirably adapted for this purpoſe, by the natural ſituation of the adjacent ground. There are elerigs in various parts of the county.

The

The ſtag or male deer ſheds his horns in ſpring either earlier or later, in proportion to his age; the oldeſt always firſt. About Lammas their horns are fully grown, which are ſolid, cylindrical and ramified, with ſharp brow antlers. During their growth, they have extreme ſenſibility, which decreaſes as they advance to their full length. The hinds have no horns. The horns of the fawns begin to appear, when they are about ſix months old. In the rutting ſeaſon, from the middle of September to the end of October, the ſtags are wildly furious, deſpiſing danger and ready to attack every creature that annoys them.

The roe-buck and doe are in many parts of the county, almoſt in every diſtrict, which is not diveſted of wood; and although no ſanctuary is allotted them, like the deer, they live nearer to the habitations of men; but always in the neighbourhood of extenſive and ſolitary woods, to which they may flee in the hour of danger. The deer are gregarious animals, and aſſociate in herds, one being always appointed to keep watch, while the reſt are aſleep. The roes travel in ſingle families, ſeldom more than four together, the ſire, the dam and two kids. At the rutting ſeaſon, which is about a month later than with the deer, the kids are driven off in queſt of a new ſettlement and a new connection; the old pair continue conſtant in their affection from year to year, unlike the faithleſs hart, which bellows mad with promiſcuous love. The buck's horns are like the hart's, ſolid, cylindrical and ſhaded annually, but much ſmaller in ſize, and having two points at the top. The ſagacity with which the females of both kinds hide their young can only be equalled by that, with which the young keep cloſe to their form, until the dam return to raiſe them.

The

The mooſe deer, it is probable, once exiſted in Scotland, but the ſpecies is now extinct. This probability is founded on the large horns found in moſſes and marle pits; which far exceed any horns now carried by the ſtags of this country: Yet the argument drawn from the ſuperior ſize of horns is not concluſive. The deer, like other cattle, riſe in the bone by good keeping; and the breed degenerates when the paſture is poor. How different is the lowland cow from one reared in the mountains. When the deer enjoyed the extenſive range of the moſt fertile vallies, and were fed undiſturbed, by the moſt luxuriant graſs, they muſt have been larger, both horn and hoof, than at preſent, while baniſhed to the receſſes of the higheſt mountains, and compelled to live on ſuch coarſe fare, as they can find on the mountain's brow. The horns of the mooſe deer are palmated, like thoſe of the fallow deer, only larger; which is a ſurer characteriſtic of the ſpecies, than the ſize alone.

The only fallow-deer in the whole county are at Blair Athol and Taymouth. Although the faſhion, and nothing but the faſhion, has allotted this ſpecies of cattle to the moſt wealthy of the nobility alone, yet other proprietors in Perthſhire might be pointed out, whoſe fortune entitles them to have a park of fallow-deer. Nor do I know any ſpecies of tame animals, that are more elegant in their appearance, if they be well ſelected, or better ſuited for occupying an extenſive lawn, which ſtretches round the caſtle of a great man.

SECT. VII. *Poultry.*

GEESE, turkeys and ducks are reared in great numbers and in great perfection in almoſt every diſtrict of Perthſhire. You ſee fine flocks about the houſes of gentlemen and the higher

higher claſs of farmers. The late Mrs Robertſon of Ardblair had the greateſt ſhow of turkies I ſaw in the Stormont. The common dung-hill fowls are at every door from the hen-houſe of the lord of the manor down to the meaneſt cottage. The utility, the method of rearing, the nutritious quality and delicacy of the food, which poultry affords, are ſo well underſtood, that it is unneceſſary to give a detail of either.

In many places a certain number of common fowls is paid to the landlord as a part of his rent; upon large eſtates in the Highlands and in the beſt cultivated parts of the low country, this practice is aboliſhed; and in general, it is going into diſuetude over all the county.

Sect. VIII. *Pigeons.*

IN the Highlands dove-cots are rare, but in the lower parts of Monteath, of Strathearn, in the Carſe of Gowrie, about Coupar and Perth, many pigeon-houſes are to be ſeen. When ſet down with taſte, and in a proper ſituation in a gentleman's pleaſure ground, they form fine viſtos from particular points of view, in his park or from his dwelling houſe. Contiguity with the other houſes, in the ſituation of a dove-cot, ought to be no object. They travel far for their food, and can find out the barn-door, although it be diſtant from their home.

The manure of pigeons is well known to be very powerful, and their fleſh highly eſteemed as very palatable: but the farmers univerſally complain of the devaſtations committed on the growing corn, every where around them, not only by what they eat, but by what they tread down. Their uſefulneſs is thereby leſſened ſo much, that they are prejudicial to the country at large; and as a grievance both

both to neighbouring proprietors and to the tenantry on the eſtates to which they belong, it is to be hoped, that every legal meaſure will be employed to reſtrict their numbers.

An abuſe of the law, which authorizes certain proprietors to erect dove-cots, has met with a ſeaſonable check, by a late deciſion of the court of ſeſſion, in an action relative to a dove-cot on the eſtate of Carberry-hill; and the eaſt Lothian farmers deſerve great credit for the ſpirit manifeſted in this inſtance, in defending their property and privileges againſt the miſapplication of a law, which in its beſt acceptation is a hard ſtatute.

Let any perſon make an experiment to aſcertain the voracity of theſe creatures, and he will find that in two or three days a pigeon will conſume grain equal to its own value. What havoc muſt this rapacious animal make in months and years? When the poor are at times pinched with hunger, when all ranks in the ſtate do occaſionally, as in the ſeaſon 1796, retrench their expence in bread, it is a ſerious reflection, that grain, equal to the maintainance of 3,000 perſons is, according to calculation, devoured by pigeons in the county of Mid Lothian alone*. What an enormous miſapplication of the food of man in all the eighty five counties of Great Britain! Upon the ſuppoſition that ſome counties may have fewer pigeons than Mid Lothian, others may have more; yet allowing the one half at an average to every county in the iſland the conſumpt of pigeons is equal to the food of 120,000 of the human ſpecies.

Sect. IX. *Bees.*

IN the ſheltered parts of the hilly country, bees are an object of great attention and profit.—The ſaccharine juice on

* See Survey of Mid Lothian.

on the flowers of heath produces honey of an amber colour, of the ſweeteſt flavour and of the richeſt taſte. It is not uncommon to ſee twenty four hives in one garden, north of the Stormont, towards the eaſt end of this county. In Athol, in the weſt end of Strathearn, on the ſouth ſide of the Ochills, and along the courſes of the Teath and Forth from the ſtill water almoſt to their ſources, bees are induſtriouſly propagated and their honey makes a conſiderable article of commerce.

It is well known that the greater part of flowers emitt the ſubſtance of which bees are ſo fond, and that the farina is kneaded by them into wax for their cells.

The leaves of many trees, eſpecially the plane and the oak are richly laden with honey-dew, which is now plainly underſtood, not to fall from the ſkies, as has been generally ſuppoſed, but to iſſue from the pores of the leaves themſelves: and ſeeing that this liquid is invariably found on the upper ſide of every leaf, it is probably extracted in the courſe of circulation, by the influence of the ſun. Betwixt the inner rind and the body of every tree, there is a juice, during the ſeaſon in which it grows; which juice is more or leſs ſweet according to the nature of different plants, and in the courſe of its circulation, extending to the branches and to the leaves, conſtitutes the honey-dew.

The economy, the government, the propagation, the amazing inſtinct of bees, and the virtues of honey as a pectoral, being foreign to my plan, it is not my province to deſcribe. I muſt reluctantly check any propenſity of launching into the flowry regions of natural hiſtory, however delightful to myſelf or pleaſant to the reader. My buſineſs is to detail matters of fact in order to direct farmers in making

experiments and in following the example of the moſt intelligent improvers.

Honey was long eſteemed as a medicine and performed many extraordinary cures; although it has been of late baniſhed by the faculty from their diſpenſatory.

Attentive bee-maſters can give their honey almoſt any flavour and any colour, from a bright amber to a pale yellow, by the ſelection of the food of their bees. Mr Paterſon of Caſtle Huntly ſows Minionette for his bees, which gives the honey a moſt delicate flavour. Roſemary does the ſame. The honey of beans is pale; the honey of heath brown. Their flavour is alſo different.

How valuable this little inſect, which conſumes not one handful of human food in a whole county, while it labours inceſſantly to promote our health by its honey, and our chearfulneſs by its wax! How wiſely ordained, to prepare for us, what we could not have gathered or prepared for ourſelves! How different in its utility from theſe creatures of the feathered and creeping tribes, ſuch as pigeons and dogs, which prevent the increaſe of population by conſuming the food of thouſands.

CHAP. XIV.

Rural Economy.

IN the rural economy of this county, the Highland provinces did, time immemorial, follow a practice, which was not peculiar to them alone; but in the paſtoral ſtate of all countries and during one period of their hiſtory, was univerſal among all nations on the face of the earth. When the whole property of the huſbandman conſiſted in cattle: they neceſſarily

neceſſarily occupied all his care. In winter he choſe the moſt comfortable ſpot of his poſſeſſion for his own reſidence and that of his ſtock; but in the ſummer months he emigrated from place to place with his flocks and herds, traverſing alternately, in queſt of new graſs, every ſtation, where he had a right of paſturage.

The ſmall patches of arable ground were ſoon ploughed, according to the rude huſbandry formerly practiſed in the Highlands of Scotland; and the labours of the ſpring were ſoon finiſhed. From that ſeaſon until the approach of harveſt, the *winter-town*, as it was called, was only viſited occaſionally by the men to collect fuel, to weed and take care of the crop; while the women, the children and the ſhepherds reſided conſtantly for three or four months behind the mountains, in the remoter vallies, and changed their reſidence more or leſs frequently, according to the extent of hill-graſs annexed to the reſpective farms. The women ſpun wool to clothe their families againſt the approach of winter, and manufactured their milk into butter and cheeſe. A truſty ſhepherd was always ſent before, to preſerve the graſs; that the cattle might have a full bite upon their arrival; and the huſbandmen regularly repaired the huts a few days before the emigration took place to a new ſettlement.

This was the ſeaſon of feſtivity and of plenty to man and beaſt. The amuſements, the food, the innocence, the unaffected ſimplicity of manners peculiar to the paſtoral life, have furniſhed the ancient poets with the ideas of the golden age. Fiſhing and hunting were the favourite ſports of the more athletic; and all the toils of the day were ſoon drowned in the ſweeteſt ſlumbers, invited by the fragrance of a bed of heath. I have ſeen in theſe temporary ſettle-

ments, groups of children, friſking about in a ſingle frock of home made flannel, well fed on the produce of the dairy, with health and manlineſs in every countenance. Their juvenile diverſions and their games were of a martial nature; and their little ſkirmiſhes had a tendency to form the heart to heroic courage and to inſpire the ſoul with ardor for the more ſerious exploits of a field of battle.

Theſe were the nurſeries of the intrepid levies which never turned their backs to the enemies of their country in the hour of danger. Theſe repelled the moſt formidable invaſions, ſpurned at a foreign yoke, and preſerved to Caledonia, the *envied diſtinction* of never having been conquered. Theſe would never bow the neck even to the haughty Romans, who laid all the reſt of Britain in chains.

The green ground formed by the manure of the cattle, in theſe annual peregrinations, frequently carried ſuch luxuriant graſs, that it might have been cut with a ſcythe. The huts in which they lived were in proportion to the affluence and rank of the different poſſeſſors: ſome indeed mean enough, but ſome others conſiſting of two or three apartments, beſides a proper place for the milk.

They were led thus to attend their cattle in theſe remote ſituations, not only by a deſire of ſupplying them with a continual ſucceſſion of freſh paſture, but alſo to prevent their ſtraying, or being annoyed with foxes and eagles and other beaſts of prey.

Perſons, who are entire ſtrangers to the Highlands of Scotland, who have taken no pains to reflect on the ſtate of the country and the circumſtances of the inhabitants, are apt, under the impreſſion of modern ideas of improvement or from other cauſes, to ſtigmatize the people with opprobious epithets and to ſneer at cuſtoms, which aroſe unavoidably

voidably from the circumſtances of the times. Unmerited abuſe is poured forth upon a people, with an acrimony of ſtyle, which betrays the illiberal prejudices of thoſe that uſe it, and their total ignorance of the hiſtory of other nations, which muſt all have adopted the ſame practice, while in the ſame ſtate of ſociety, however much they may now be poliſhed and refined.

The practice of going to theſe *Shealings*, as they were called, ſtill remains in ſome parts of the Highlands; and the inhabitants of two or three contiguous farms, or of one farm, according as the grazing is more or leſs extenſive, may be ſeen even at this day, living in huts in ſequeſtered vallies, attending their cattle, during the ſummer months. Theſe remains of the ancient cuſtom are however few, ſince the introduction of ſheep ſtocks on a large ſcale into the Highlands of Scotland. Wherever the beaſts of prey are extirpated or kept in check, the ſheep are allowed to roam at large night and day through the mountains, without danger or annoyance; whereas formerly they were even in the ſummer confined every night in folds, under the immediate eye of the ſhepherd and his vigilant dog. Where the ſhealings were diſtant from the homeſtead or winter-town, (as in ſome caſes they were removed twelve or even twenty miles,) intelligent proprietors join two or three ſhealings together, and let them as a grazing to a ſhepherd, who attends his flock, by reſiding all the year round on the ſpot, in a ſubſtantial houſe of good maſon-work, which in many inſtances is covered with blue ſlate. The higheſt ſhealing in this county, and probably the higheſt inhabited land in Britain, at Dalanſpiddal, on the great road from Perth to Fort Auguſtus, is of this deſcription.

The people readily conform to their ſituation. The ſame ſagacity

ſagacity, which dictated to the highlanders the neceſſity of attending their cattle from valley to valley, in theſe rude times, now directs them in general to a very different conduct. Since the culture of potatoes and of flax became ſo common, and various other improvements have been introduced among them, which require the perſevering labour of the induſtrious, the farmers find employment for themſelves and their families at home, during the ſeaſon which they had been accuſtomed to ſpend among the hills. They are changing from the paſtoral to the agricultural life; which all nations muſt do, that ſhall ever become farmers. And it is to be hoped, that the period is not diſtant, when the proprietors of highland eſtates, who have public ſpirit, will eſtabliſh villages in proper ſituations in the very heart of the Grampians, and eſtabliſh woollen manufactures: which would meliorate their own properties, and preſerve the population of the country. It muſt however be acknowledged, that the Highlands are better adapted for graſs than for grain, and that the paſtoral life muſt prevail among the inhabitants.

Here is ſcope for exerciſing the genius, the enterprize and intelligence of the poſſeſſors of large eſtates, to plant *manufactures* on a liberal eſtabliſhment in promiſing ſituations, to encourage *agriculture*, where the ſoil is favourable for raiſing crops, and to allot the reſt of the country for rearing *cattle*. This extenſive tract of the iſland never will be in the moſt productive ſtate, either to the landlord or the community, until theſe three modes of occupying the land ſhall be conjoined and engrafted on each other, ſelecting the particular ſpots which are favourable for each. Judgment and ſound ſenſe, in the management of an extenſive property in the Highlands, is manifeſted, not by running headlong into any one ſyſtem, on a whole eſtate, which a plauſible theoriſt, who

who is endowed with fluency of language and an engaging manner, but yet is utterly ignorant of the country, of the climate, of the genius and habits and circumſtances of the people, may endeavour by his addreſs to put into the head of a great proprietor. In diſtricts or in particular farms, calculated for raiſing corn, the arable ſyſtem ought to be adopted and encouraged: It would be prepoſterous and cruel to throw them into graſs. In diſtricts or farms, which nature never intended for grain, the paſtoral ſyſtem ought to be preferred, the ſpecies of ſtock ſuited to the ſoil ought to be ſtudied, and a good breed introduced. In other ſpots villages ought to be eſtabliſhed on a liberal plan.

The manufacturer, the artificer, the farmer, the labourer, the grazier, mutually ſupport one another and miniſter reciprocally to one another's neceſſities. Every hand ſhall be employed, every want ſupplied, every mouth fed; and induſtry, the parent of contentment and plenty, wave her golden ſceptre over all the land. Whoever wiſhes to behold the increaſe of the public good ſhall ſee with joy the ſmile of proſperity gladden the face of his country: and the gentlemen of property ſhall feel not only the profit, but the ſatisfaction of being the immediate cauſe of all this happineſs.

The ſhealings, that we have been ſpeaking of, were for the moſt part ſet down in favoured ſituations, at the head of a ſmall lake, on the banks of a river or at the confluence of brooks, where the benignity of nature had provided ſhelter, had made the ſurface green and the graſs rich; but when the inhabitants were obliged to eſtabliſh ſhealings on ſpots, that were naturally covered with heath, they became as green as a meadow, to the extent of ſeveral acres around the huts, by the manure of the cattle which lay there at night. I have ſeen ſhealings have ſuch a tract of green ground

ground by theſe means, that they were afterwards converted into regular farms. From this circumſtance, the name of *Newton* on the confines of the low country, and the name of *Ari* in the highlands, took their riſe, without any perſon being able to trace the period, in many inſtances, at which they were occupied as ſhealings; that period is ſo remote. This ſhows what the proprietors of the highlands may do, by perſeverance, to extirpate the heath, by means of water and the droping ſoil of cattle, eſpecially of ſheep, and to cover their bleak and black hills with a verdant clothing of green paſture.

Sect. I. *Labour.*

THE price of labour has become double in this county, within theſe twenty-five years; ſome ſay within fifteen. The augmentation of that price depends chiefly on three cauſes; the increaſe of wealth, whether real, by commerce, or fictitious, by paper currency; the demand for labour, by the progreſs of improvements; and the eſtabliſhment of manufactures on a large ſcale. The firſt leſſens the value of money: The ſecond creates more work, which always enhances the price of labour to the employer: and the third diverts labour from its former channel. The pulſe with regard to the increaſe or decreaſe of the price of labour may be felt, by attending to one circumſtance: when the employer ſolicits, which may happen, either by the labourers becoming fewer or by the employers becoming more numerous, the wages muſt riſe; the oppoſite cauſe produces their decreaſe. Competition operates againſt the ſide, on which it takes place: whether it be the employer or the employed.

The complaint occaſioned by the increaſe of the price of labour is in a great meaſure imaginary. He that performs the

the work, pays for every thing he needs either to himſelf or his family, in proportion to the augmentation of his wages: and he, that pays the labourer ſells every thing he has to diſpoſe of, dearer in proportion to what the labourer coſts him. Theſe matters generally find their own level.

Wherever manufactures flouriſh, the price of labour muſt riſe; and when the earnings of the labouring claſs of mankind are augmented, their luxury will increaſe and keep pace with their wages. If manufactures ſhould receive a check, by the market being overſtocked, or the buyer being unable or unwilling to purchaſe, or by failures among the manufacturers at home, or by commerce being crippled, this luxury, which reſts on ſuch an unſtable foundation, cannot be gratified; which is the cauſe of all the tumults in manufacturing towns.

By the great demand for labourers from this county to the towns and villages, which almoſt without number are ſituated on the three greateſt rivers in Scotland, of which two are in the county and the third near it, the price of every kind of labour has increaſed and is ſtill increaſing with rapid ſtrides.

A man ſervant, who is maſter of all the operations in farming, receives in the corn-country, between eight and twelve pounds, for twelve months. In the grazing diſtricts, more remote from the ſeat of manufactures, their wages, and the price of all kinds of labour are about one fourth lower.

In many caſes the ſervants are maintained in the farmer's family; but the practiſe of giving them ſix and a half bolls of meal, together with a houſe, a garden and a cow's graſs, free of rent, and ſome fuel, is daily becoming more general. Theſe farmers, who keep any married ſervants, have them all on this eſtabliſhment of livery meal.

Maid ſervants live all in their maſter's family, and are engaged for betwixt three and four pounds, and in ſome caſes five pounds of yearly wages, according to their expertneſs, and the nature of their work.

Common labourers earn between one ſhilling and one ſhilling and three pence a-day; and if able bodied and handy, they demand one ſhilling and ſix pence, without victuals. The various denominations of artificers charge according to the nicety of their art.

The hours of labour from the vernal to the autumnal equinox are from ſix to ſix, allowing an hour for breakfaſt and another for dinner; and during the other half year, from the dawn of day till the light fails at night, with an allowance of one hour for breakfaſt. Houſehold ſervants are not ſo exact, with reſpect to hours: in the long days, they continue to work after ſix at night; and in the ſhort days, they get out of bed, before day light, where there is much grain to thraſh. But in many of the large farms, thraſhing machines have been erected: and they are ſuch a great ſaving, by the abridgement of labour, that more of them are ſet up every year, in different parts of the county.

The reapers in harveſt are hired, either by the day, or by the ſeaſon, or by the acre. When they are hired by the day, their wages depend on the ſituation of the weather, on the ripeneſs of the crop and on the numbers, who offer their ſervices. At an average they earn as other labourers, allowing a deduction for their maintainance. In ſome caſes reapers work for a penny or one penny half-penny the hour, without victuals. When ſhearers are hired during the harveſt or reaping ſeaſon, the men generally engage for about thirty ſhillings: the women for about twenty: but every year their wages are riſing. It is only in the grain countries

and

and upon extenſive farms, that reapers get theſe wages. In the hilly countries the wages are leſs. In a few inſtances, both the corns and the hay are cut down by the acre; the former at ſix ſhillings and the latter at three.

Mr Donaldſon is ſo accurate with reſpect to the practice of carrying on the ſpring and harveſt work in the Carſe of Gowrie, that I ſhall inſert what he ſays on that ſubject, in his own words. "Though this diſtrict is perhaps as cloſely inhabited and as well peopled as any other of the ſame extent in Scotland, where no large manufacturing towns are ſituated, and though the great body of the people are employed in huſbandry, yet it is certain that the price of labour has, in the courſe of the laſt thirteen years, riſen to nearly double what it was before that period; nor could the extra-works, ſuch as turnpike-roads, planting, incloſing, draining, &c. be carried on but by the means of ſtrangers, of which a conſiderable number come here every ſpring from Inverneſs-ſhire and other northern counties, each of whom returns to his own country about Martinmas with eight or ten pounds in his pocket. There is no doubt but the young people of both ſexes, in this diſtrict, are induced to go into the manufacturing towns of Perth and Dundee, in conſequence of the high wages they receive; and therefore, though it is evident that the vicinity of theſe towns is advantageous to this diſtrict in point of ready markets, yet it is alſo evident, that the ſame cauſe has tended to raiſe the price of labour very conſiderably."

"The ploughmen get out of bed in winter by the dawn of day and are employed in the ſtable till nine o'clock, in feeding and cleaning, each his own pair of horſes; after breakfaſt, the ploughs or carts are in employment for the remainder of the day, reſerving only as much light as may

ſuffice for repeating the operation of feeding and cleaning the horſes. When the more buſy ſeaſon of the ſpring ſets in, the plough is more diligently plied, being under yoke from nine to ten hours, with a ſhort interval of an hour, about nine in the morning, and a ſimilar reſt about two o'clock. In the barley ſeed-time, and during the ſummer and harveſt months, the ploughmen get out of bed by four in the morning; they are in the ſtable by five o'clock, and unyoking about ten, are employed in cutting graſs, and taking care of the horſes until two o'clock, when they again get under the yoke until ſeven at night."

"The food of reapers conſiſts of bread and ſmall beer for breakfaſt and dinner; and for ſupper pottage of oat-meal, ſalt and water, with an Engliſh pint of ſweet milk or double that quantity of butter milk."

"The farmer ſends a quantity of meal to the bake-houſe, which is returned at the rate of twelve loaves from each eight pounds of meal, which affords breakfaſt for twelve reapers, with the addition of two Engliſh pints to each; and for dinner three pints are allowed to the ſame quantity of bread."

"When the farm ſervants are employed in carting the corn to the ſtack-yard (for here they are never employed in reaping) they are maintained along with the reapers, and their allowance of meal proportionally deducted. Eſtimating the meal at one ſhilling per peck, with one half-penny for baking, the beer at three pence, for eight pints Engliſh, with one half-penny for milk, the expence of maintaining a reaper, for one day, amounts to ſix pence three farthings."

"All the economy regarding the maintainance of ſervants has been more particularly detailed, becauſe it is obvious, that where a number of them are employed, all murmuring and

and diſcontent on account of diet, is avoided, of which the farmers in other countries have ſuch reaſon to complain, as the caprice of a ſingle individual, reſpecting the quality of his food, often breeds a ferment in the family; and the modes of diet, in the families of more opulent farmers are by this means obtruded on their poorer neighbours, and extravagance in the maintainance of this claſs is from year to year increaſed. It is alſo obvious, that while both parties, in this country are better ſatisfied, the expence upon the whole, all circumſtances taken into the account, muſt be very conſiderably leſs."

SECT. II. *Proviſions.*

THE price of meat of various kinds is much upon a parity in all the diſtricts of Perthſhire, with this difference only, that the nearer to towns, theſe articles ſell dearer, and in the more inland parts of the county, they are cheaper. In the highlands every man rears, on his own farm, what butcher meat his family requires; and the cottagers, labourers and tradeſmen of theſe diſtricts, who do not rear cattle, ſeldom make uſe of a fleſh diet, except in the winter ſeaſon. In the town and villages of the low country, many will purchaſe, who do not rear. This conſtitutes the exiſtence of all markets, both for butcher meat and every other article. Wherever the demand is greater than the home-produce can ſupply, that demand muſt be ſupplied from other places, and the price of the commodity riſes in proportion to the eagerneſs of the demand.

The average prices of beef, mutton, veal and lamb, for ſeveral years paſt, are from three pence to four pence, and ſometimes five pence, the lb. of Dutch weight, according to the quality or ſcarcity at different ſeaſons. In the year 1796 indeed, the price of every article of life was higher, owing to an

an apprehenſion of ſcarcity; and meat of all kinds was two pence the lb. dearer than uſual. Cattle of all kinds fell better during war than they do in the time of peace, becauſe of the enormous quantity of beef neceſſary for victualling the Royal Navy. Our Armies are ſupplied generally with proviſions, by Commiſſaries who attend them in the countries, that are the ſcene of action: the navy for the moſt part from Britain and Ireland.

The price of butter is from ten ſhillings and ſix pence to twelve ſhillings, and ſome years thirteen ſhillings and four pence the ſtone. In the year 1796 it coſt fifteen ſhillings. The cheeſe is generally ſold for five or ſix ſhillings and ſometimes higher according to circumſtances. Both are ſold by tron weight, having twenty-two ounces to the lb.

The average prices of grain are, of wheat twenty-one ſhillings the boll; of peaſe twelve ſhillings; both ſold by the ſame buſhel. The price of oat-meal fifteen or ſixteen ſhillings, the boll, weighing eight ſtones Dutch; of barley ſixteen ſhillings, and of oats twelve ſhillings, by the Linlithgow meaſure. In Monteath theſe grains fetch one or two ſhillings more by the boll, owing to the demand from the manufacturing and crowded towns, along the Clyde, and the ſhortneſs of the carriage thither; beſides that the Stirling furlot, which is the ſtandard in the Stewartry of Monteath is three lippies in the boll larger than the Perth meaſure, which prevails in the other diſtricts of this county. This large furlot was introduced into Monteath, when the court reſided at Stirling, upon the forfeiture of the Duke of Albany and the annexation of his lands to the crown, at which period this Stewartry was bound to ſupply the King's houſe hold in grain. Meal is ſold by the ſame weight over all the county.

Mr Donaldſon ſays that the grain ſold, from the Carſe of Gowrie

Gowrie alone, to corn merchants who export it to the frith of Forth, Glaſgow or the London market, may be eſtimated at 10,000 bolls of wheat, 10,000 of barley, and 2,000 of peaſe and beans; and the remainder, beyond the conſumpt of the inhabitants, which is more conſiderable, is diſpoſed of in the towns of Perth and Dundee.

In the Highlands, meal uſed to be dear and butcher meat cheap, for the very reaſon that the laſt is generally dearer and the firſt cheaper in the lowlands. But during the year 1796 and the one preceding, the tables were entirely turned. Grain was indeed dearer than uſual in the Highlands, but not near ſo dear as in the diſtricts towards the eaſt coaſt. Oats and barley were conſequently poured down from the Highlands of Perthſhire in great quantities towards thoſe provinces of the county that are called grain-countries, and brought a higher price, beſides the expence of a long inland carriage. This is a phænomenon altogether new in this country, neither mentioned in hiſtory, nor handed down by tradition, nor expected to be ſeen by any man alive. Whether the cauſe of it be the vaſt cultivation of potatoes in the inland diſtricts of the Highlands of Scotland, by the advice of the Board of Agriculture and the admonitions and example of their miniſters, for whom the people have the higheſt veneration, or to ſmuggling of grain from the low country by illicit exportation, carried on by ſpeculators on the ſea coaſt, I take not upon me to determine. It may be owing partly to the influence of both theſe cauſes, and to the foreſtalling of barley by the great diſtillers.

The reſtriction impoſed upon diſtilling ſpirits from grain in the year 1796 had the happieſt effects, not only in every part of this county, but over all the kingdom. The change wrought on the morals of the lower claſſes of people was e-

very

very where apparent and falutary. The additional fupply of human food was great, and in place of idlenefs and riot, of intemperance and difeafe, more work was done, better health was enjoyed, and illegal combinations for treafonable purpofes were not heard of. This wife and humane meafure of government was not however followed out with the promptitude it ought. There was a fault in the execution fomewhere. Full four months elapfed in fome provinces, in not a few, five months were fuffered to pafs over, from the promulgation of the law, before a fingle fmuggler was cited before the juftices of the peace, to learn their fate and feel the weight of the penalty due to their practices*. During this period of illicit diftillation, the grain was confumed in this part of the iſland, beyond any example of former times. The fmugglers accounted this feafon to be their harveft, whether it was a harveft to others I fhall not fay. The ftills were feized occafionally and the fpirits carried off. But what injury was it to a fmuggler, who underftood this trade, and had a number of ftills at hand, to lofe a ſtill made of white iron, in the courfe of a few weeks. His profits after all were immenfe, becaufe he paid no duty and fold his fpirits at three times their former price.

In this and all other northern latitudes, the drinking of ardent fpirits may perhaps be neceffary to correct the effects of the climate and in fome degree natural to the human conſtitution. Perhaps the prefent ſtate of the rents of arable farms may require that the tenantry ſhould be fupported and grain kept up by allowing diſtillation on a large ſcale; perhaps the habit already contracted is fo inveterate, that unleſs ſpirits are diſtilled at home, correſponding to the conſumpt, it

* The length of this ſhameleſs delay may eaſily be diſcovered by comparing the promulgation of the law, with the date of the firſt exciſe-court in each diſtrict of the county.

much of our money would be ſent abroad to purchaſe that article.

It is not in the line of my ſtudy, nor do I pretend to underſtand matters of exciſe, but to a plain man it would appear, that if there was one ſtill of a ſpecified ſize in every pariſh (allowing the towns a number of ſtills in proportion to their pariſhes) and ſuch a duty exacted as put it out of the power of the diſtiller to ſell his ſpirits under twelve or fifteen ſhillings the gallon, in place of four or five ſhillings, as formerly; the farmer would have more advantage, by receiving his ſhare of the profits ariſing from fifteen ſhillings for the barley that produced one gallon of ſpirits, than he could have from his ſhare of the profits of fifteen ſhillings, when it required thrice the quantity of ſpirits and thrice the quantity of barley to produce that ſum. I add farther that two thirds of the grain diſtilled according to the preſent practice, would go towards maintaining the lieges. What an incalculable ſupply of human food! The preſent* reformation in the manners, in the induſtry and in the peaceableneſs of the people, which gives ſo much joy to every good man, would not be temporary, like a gleam of ſunſhine between two thunder ſtorms; it would be permanent, and become, in time, habitual and highly conducive to the national proſperity. The diſtillers would complain loudly, if the duty upon diſtillation were to be raiſed higher. They complain of it at the preſent rate: But their complaints are not more loud, than they are abſurd and groundleſs. Every perſon knows, and they know, as well as others, that the conſumer ultimately pays the duty upon all commodities ſubject to ſumptuary laws.

Mr Marſhall ſays on the ſubject of proviſions, "that a

* This was written in the year 1796.

vegetable diet, with milk and its productions, prevails throughout the Highlands. Animal food is rarely taſted by the lower order of tenantry*. Oat meal is the great ſupport and ſtrength of the Highlander, and is probably the moſt ſubſtantial of vegetable foods. Bear, big or four rowed barley, nevertheleſs enters largely into their diet; eſpecially in bread; peaſe too are eaten in a ſimilar ſhape, namely in thin flaccid cakes, called bannocks, the ordinary bread even of the gentry or lairds†. Of late, potatoes have become a principal food of the common people, eſpecially in winter; and are conſidered as the greateſt bleſſing, that modern times have beſtowed on the country; in having it is probable, more than once, ſaved it from the miſeries of famine &c‡. Meal is every year, I believe, brought into it, and ſome years in conſiderable quantities."

Every circumſtance, which affects the price of grain is cloſely connected with the ſubject of proviſions; I ſhall therefore,

* The tenants and even the pooreſt cottagers, where I am acquainted have animal food, in winter and ſpring, and ſome in autumn. A cottager buys from two to ſix old ewes, to eat with his potatoes. The tenant has ſeveral from his own flock; better tenants kill a fatted cow for ſalt beef, beſides ſome mutton. *The Rev. Duncan M'Ara Miniſter at Fortingal.*

† Barley bread is the ordinary bread of high and low, ſometimes cakes; little peaſe are ſown; perſons of conſiderable property have always flour bread. *The Rev. Mr M'Ara of Fortingal.*

‡ A year of ſcarcity is but rare, ſince potatoes were cultivated in ſuch quantities. Except the year 1782, when there was a general dearth, I remember none for twenty years backward. Scarce any meal at all is brought from the low country. This diſtrict *(Breadalbane* and *Fortingal)* according to my beſt information, ſent upwards of two thouſand pounds worth of grain, laſt year to the ports of Perth, Stirling and Strathearn. I fancy they will raiſe ſufficient for their conſumpt. *The Rev. Mr M'Ara of Fortingal.*

therefore, without entering at any length upon the conſideration of the corn-laws, ſtate an obſervation or two, which have occured to me, and appear to have ſome weight.

Under the heavy and increaſing expence of an arable ſyſtem, and ſubjected as we are to the diſadvantages of a rainy climate, it muſt be of importance to foſter the prejudice, which the Scotch farmer has in favour of that ſyſtem; becauſe, if he is once driven from it, and taſte the ſweets of a grazing one, he will hardly be perſuaded to plough more than is neceſſary for the accommodation of his own family. He well knows, that although grain can be brought from poorer countries, in reſpect of money, than his own, to compete with his production in that article, that cattle and ſheep cannot: and that ſince potatoes are ſo univerſally raiſed, butcher meat and this root muſt ſoon regulate the price of grain. For this reaſon it might probably be a wiſe meaſure in the legiſlature, to contrive the corn-law ſo as not to ſhut or open the ports partially or even generally, upon the ſimple data of one high or low price, but rather that the pulſe of the market ſhould be felt, by a gradual opening or ſhutting of the ports; That the price at which the ports ſhould be opened at all, ſhould be a moderate one; that then foreign grain ſhould be admitted under a duty, which juſt enabled the importer to ſell it at the market price; that this price ſhould be aſcertained monthly, and the import-duty decreaſed, as the home-market price was raiſed.

To encourage the farmers to ſow as much every year, as was likely to produce a quantity of grain ſufficient for the conſumpt of the country even in a bad ſeaſon, a premium on exportation ſhould take place, when the price of grain fell very low, which low price ſhould alſo be aſcertained by

act of parliament; and the premium on export ought to be increaſed, as the home price fell lower.

Theſe regulations, it is preſumed, would render the prices of grain leſs fluctuating, at leaſt never verging to extremes: and have alſo the ſame effect upon wages; giving the farmer in various reſpects a more diſtinct view of the returns, which he might expect, from operations, that neceſſarily demand both a length of time and a great advance of money. In a political point of view, it would be extremely ſalutary, to keep grain nearly at an equal price, becauſe ſuch a meaſure would prevent irritation in the public mind, and remove the frequent cauſe of tumult and outrage; and the keeping wages yearly at the ſame rate, would prevent diſſipation and idleneſs, which are the conſequence of grain being too cheap, and of many diſtreſſing difficulties to the labouring and manufacturing part of mankind, when it happens to be too dear.

Sect. III. *Fuel.*

SINCE the roads have been improved, pit-coal has been carried far into the interior parts of the country, from the coal-works, which abound in the county of Stirling, and from ſome that are in this county, in both of which the coals are ſold by meaſure, and alſo from the ports of Perth and Dundee, where they are ſold by weight, 40 ſtones coſting generally three ſhillings and ſix pence, and ſometimes more. The gentlemen and the ſuperior claſs of farmers uſe coal moſtly for fuel to their families, even at the diſtance of thirty miles of land carriage. When moſs is convenient, which happens even in ſome places of the low country, the middle ranks uſe peats, or coals occaſionally, either mixed or ſeparate: and the poor ſeldom any thing elſe except peats.

But

But in ſome diſtricts, ſuch as the Carſe of Gowrie, where moſs is very diſtant, both poor and rich muſt depend on coal.

It was formerly taken notice of, that in all the vallies of the Grampians, eſpecially where they open to the low country, there are many oak-woods, and that the proprietors of theſe woods cut them in lots at a certain age. This peeled copſe-wood makes excellent fuel, to the diſtricts, in the neighbourhood. The valuable timber is diſpoſed of otherways.

Mr Marſhall ſays relative to the fuel of the Highlands, "that it is not the actual coſt of fuel, which is a grievance; as in no other part of Great Britain perhaps, is fuel ſo cheap. It is the uncertainty of procuring it, and the mode in which it is at preſent procured (as interfering with the works of huſbandry, in the moſt eſſential ſeaſon) which call for the attention of proprietors: nor is it the accommodation of the tenants alone, but the future ſtate, and perhaps the exiſtence of the ſource of Highland fuel, which demands attention.

"At preſent every man, whether farmer, crafter, cotter or villager, manufactures and fetches home his own peats. Each little diſtrict has its own moſs, or peat-bog; and each individual his ſeparate pit; thus over-running the entire moſs, and waſting perhaps more than is brought away. The moſſes generally lie at three to five or ſix miles from the habitations, and at a great elevation above them, up which each family has to climb repeatedly, to caſt or cut out and to ſit or dry their peats; and down which they are brought, always in ſmall parcels; every man bringing down his own; through which means the country becomes burdened with an unneceſſary number of horſes.

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"The remedy appears, to me, to be certain and eaſy. Leaſe off the moſſes to *Peat-makers*, and eſtabliſh manufactories of peats as of bricks and tiles." So far Mr Marſhal; and it were devoutly to be wiſhed, that this ſcheme were practicable: but the dry ſeaſon of ſome ſummers is in that country ſo ſhort and uncertain, that every houſe-holder thinks he has little enough opportunity of providing peats for his own family; and it happens frequently that he is taken ſhort, before that end can be attained. What would then become of thoſe families, which truſted to the peat-market. They muſt periſh. I ſubjoin in a note, the remark of a gentleman, who knows the Highlands of Perthſhire as perfectly as any man alive*.

A remedy that may and ought to be adopted over all the Highlands of Scotland, to prevent the diſtreſs occaſioned by a ſcarcity of fuel, after a rainy ſummer, is the practice of many provident farmers in the county of Aberdeen, and of ſome perſons in this county, *to have peats ſufficient for the conſumpt of two years lying beſide them at the end of every dry ſummer.*

* The remedy appears to be worſe than the diſeaſe. This plan ſeems to be impracticable. Owing to the high elevation of the moſſes, they are commonly froſted till about the 8th or 10th of June, and while in this ſtate, it is impoſſible to caſt them. They muſt be caſt, however, by the 20th or the latter end of June, otherways, there will be no drought to dry the peats. They muſt be brought home in July, for if the Auguſt rains come on, they are commonly loſt for that ſeaſon.—Beſides, where would undertakers find hands for cutting and drying peats for a whole diſtrict. Fewer hands than are employed, *in the proper ſeaſon*, by the preſent mode, could not poſſibly perform the labour; and would not theſe hands turn out very high priced, if engaged by undertakers? The roads are alſo deſtroyed by the autumnal rains, and become frequently impaſſable from the mountains, after that ſeaſon. *The Rev. Mr Marara of Fortingal.*

ſummer. By this precaution the inhabitants of any diſtrict cannot be diſappointed of fuel almoſt in a whole century: and the labour is uniformly the ſame, except in the firſt year that a double quantity of peats is provided.

It is very practicable and would prevent the exhauſtion of moſs, that the mode of cutting peats were regulated; that an overſeer were appointed to every diſtrict, who would take care, that the moſs was conſumed in ſuch a manner that the water went freely off, and no ſtagnant pools were left, which frequently endanger the lives of cattle, and that every perſon were confined to his proper place, inſtead of leaving the inhabitants at liberty to dig pits at random, wherever their fancy might lead them.

CHAP. XV.

POLITICAL ECONOMY, AS CONNECTED WITH OR AFFECTING AGRICULTURE.

THE internal improvements in any country never come ſingle. One improvement ſuggeſts another, and is frequently the cauſe of that which follows. The genius and induſtry of a people requires to be rouſed; but by whatever mean they are ſtimulated, their enterprize never ſtops at one object. Security in the enjoyment of property naturally leads to the deſire of wealth. This deſire of wealth leads to the practice of induſtry; affluence begets the deſire of accommodation, and this introduces a taſte for the fine arts. The progreſs of agriculture and of commerce promotes intercourſe between nations and between different provinces in the ſame nation, and paves the way for the improvement of roads.

Sect. I. *Roads.*

THE ſtate of the roads in various parts of the county depends on various cauſes. Wherever the gentlemen are active, materials conveniently found, and the tenantry rouſed to a juſt ſenſe of the importance of good roads, to facilitate the conveyance of their grain and other commodities to market, and to bring home lime and coals, the roads are tolerably good and daily becoming better.

The firſt thing that opened the eyes of this country to diſcern the benefit of proper roads was the wiſe plan of government in carrying on the military roads, about half a century ago; one of theſe from Stirling to Fort William, by Callander and Tyndrum, another northward through the heart of Scotland, from the ſame place to Inverneſs and Fort George, another in a direct line acroſe the country from Fort George to Fort William, and a fourth, which is a diagonal line, diverging from the Inverneſs road to Fort Auguſtus, and taking its departure at Dalwhinnie, in Badenoch, through the wildeſt and moſt ſtormy mountains in Scotland.

The two principal lines of theſe roads hold the direction of this county, the weſtern one for 60 miles, and the northern to near one hundred.

Mr Donaldſon ſays "that before the year 1785, the public and parochial roads in the Carſe of Gowrie were in a moſt wretched condition. About that time the roads, all over the country, had fallen into ſuch a ſtate of diſrepair, as convinced every perſon concerned in this branch of police, that under the act of parliament 1669, which authoriſed the Commiſſioners of Supply to call out the inhabitants to work ſix days each year, together with their horſes and carts, it

was

was impoſſible to make the roads in any degree tolerable. It was therefore agreed, at a county meeting, to apply to Parliament for a particular road act; and accordingly, the bill was very ſoon after paſſed, by which the county was divided into diſtricts, and powers were granted to the Commiſſioners of Supply in each diſtrict, to convert the ancient ſtatute labour, at the rate of twelve ſhillings for each ſixty acres of arable land. The gentlemen entruſted with the execution of this act of parliament, in that part of the county of Perth, after a very attentive diſcharge of their duty for ſome years, found that in ſuch a deep clay ſoil it was impoſſible to make the public roads, leading from Perth towards Dundee, and to the harbours of Polgavie and Errol, without a much greater ſum than could be aſſeſſed under this laſt mentioned act of parliament.

"The gentlemen of the Carſe of Gowrie diſtrict being at laſt perfectly ſatisfied, that without procuring a turnpike bill, all their exertions to make good roads would be in vain; they repreſented, at the county meetings, the neceſſity of making another application to parliament, and in a ſhort time a turnpike act was procured, in which, theſe and other particular roads in the county were included.

"This bill was no ſooner paſſed, than the proprietors of this diſtrict argeed to open a ſubſcription for beginning this very important improvement. Accordingly a ſubſcription of upwards of 3000l. was very ſoon filled up, and the work begun; and ſome time ago entirely completed, much to the credit of the proprietors, and not leſs to the eaſe and comfort of the inhabitants.

"The great road leading through this county, from Perth towards Dundee, and the branches leading to the harbours of Polgavie, Errol, and Inchyra, meaſure twenty four miles;

and when finiſhed, with all the neceſſary bridges, and including the purchaſe of ſome land, where it was neceſſary to form ſome new lines of road, coſt 13,000l. or 541l. 13s. 4d. each mile.

"Since the turnpike roads were finiſhed, the Commiſſioners of Supply of this diſtrict have paid particular attention to the croſs-roads, and there is little doubt but the whole of the roads, in this corner, will ſoon be equal to any in Scotland.

"In order to evince the importance of this improvement in an agricultural view, it ſhould be obſerved, that it was very common to ſend the grain to be ſhipped at Polgavie and Errol on horſeback, and three or four firlots of barley was the ordinary load; and that now it is not extraordinary to ſee ten bolls of barley carried on a cart drawn by two horſes.

"It may juſt be neceſſary to add, that a road from Longforgan, by Polgavie to Errol, and from thence to the turnpike-road near the church of St Madoes, would be the means of opening a communication from that part of the diſtrict, called the Low Carſe, to the towns of Perth and Dundee; and from the preſent active ſpirit of the Truſtees, which is aided by the principal farmers, who are now convinced of the great advantage of good roads, there is no doubt but this very important object will ſoon be attained; as it ſeems to be the opinion of both proprietors and tenants, that application ſhould be made to Parliament for leave to borrow money for executing this work, upon the ſecurity of the ſums annually collected, in lieu of the ſtatute labour, from the tenants who reſide in the neighbourhood of that line of road.

"A few years ago there were no toll roads in the county of Perth; at preſent there are many; ſome of them completely

pletely finiſhed, and others in great forwardneſs. Beſides the road betwixt Perth and Dundee, of which Mr Donaldſon has given the detail, there is another between Perth and Coupar of Angus, another from Crieff to Perth, and that between the latter place and Dunkeld. The road from Kinroſs to Perth, by the bridge of Earn, is partly in this county, and at preſent is undergoing very judicious improvements. The road from Stirling to Crieff is well advanced; and the direction is greatly improved, when compared to that adopted by the military engineers, at its firſt formation. The road from Perth to the Stormont, by the bridge over the Iſla, at its junction with the Tay, is begun with ſpirit; and that which was mentioned in my Report in the year 1793, to have been projected from Stirling to Culroſs, is carried the length of Clackmannan; which is not completed, until it proceed eaſtward through the Culroſs diſtrict of Perthſhire and join the Fife roads.

New toll-roads, from Stirling to Callander and from Stirling to the Port of Monteath, are in agitation; and Captain Wilſon has been employed to point out the beſt direction.

It is not improbable, that there will ſoon be a toll-road between Crieff and Comrie; between the latter and the bridge of Ardoch, which would be of unſpeakable advantage to the weſt end of Strathearn; and between Blackford and Dunfermline, which would facilitate the acceſs of the central diſtricts in Strathearn and of the northern Glens to the neareſt coal. And if a turnpike were carried from Perth by Auchterarder to join the bridge of Ardoch road, ſomewhere near the houſe of Sir William Stirling, the lower parts of this county would be well ſerved, and the acceſs eaſy, in all directions.

The preſent Earl of Breadalbane has ſome years ago made a new road, ſixteen miles long, on the ſouth ſide of Loch-tay; the former road made by his predeceſſor having been on the north; which enables travellers to enjoy different views of that charming lake and of the diverſified ſcenery around its wooded banks. The Dukes of Athol have been at much expence with the road from Dunkeld to Blair. The former direction was frequently changed, to avoid pulls, and where the hills were ſmall they have been cut through, and their face covered with green ſod, which has a fine effect. Where the appearance of the country was expoſed or naked, plantations were made at the Duke's expence, on land which was not his own property.

By a little attention, all the looſe ſtones might be thrown off a road, and all the large ſtones that ſhoot up through the gravel, might be picked out. The rain water that falls upon the road itſelf, or that which oozes down from a hanging bank ought to be thrown off by a drain to the lower ſide, and not left to collect into a rill in the middle or upper ſide of a road, which will ſoon waſh away the gravel, where the declivity is long.

Improvements upon roads are frequently an alteration of the line; and in ſome inſtances, the direction is changed two or three times, at one place; every new direction a little better than the former: and ſeveral changes are made, before the beſt poſſible line be adopted. This ſhifting is occaſioned either by the humour or ignorance of the engineers, and is itſelf the cauſe of much unneceſſary expence to the public, and of much labour thrown away. Were the managers of roads impartially to chooſe, in the firſt inſtance, the beſt direction, which is generally evident, or to employ a ſkilful engineer, who had no bias, to chooſe

it

it for them, all future labour beſtowed on that road would be uſefully applied.

It is almoſt impoſſible, and perhaps unneceſſary to give a detail of the croſs or by-roads in this county, and to aſcertain the degree, in which they are more or leſs uſeful, more or leſs in repair, better or worſe conducted. There ſeems in general to be too many roads; which puts it out of the power of the Commiſſioners of Supply to pay the neceſſary attention to them all. Wherever a country is thinly inhabited, the roads muſt be in bad order, becauſe the labour is great and the labourers are few. This is the caſe in many parts of the Highlands, with reſpect to the croſs roads, which paſs over the hills and form the communication from one valley to another. Nevertheleſs, when the great roads in the lower diſtricts of the county are provided for by the tolls, and the great military roads, which penetrate into the Highlands, are properly cared for by the inſpectors appointed by government, (which of late has been done with more fidelity than formerly,) the aſſeſſment, ariſing from the ſtatute labour, will be more effectual in meliorating the condition of the remainder of the roads in every province.

The effect of the ſtatute labour, whether it be commuted in money, or exacted in kind, has always been, now is, and probably ſhall continue to be, leſs productive than it might, owing to various cauſes. Some of theſe ſhall be pointed out; and yet there is no ſanguine hope, that theſe cauſes ſhall be removed or the voice of an individual liſtened to. The contagion is ſo general, the malady ſo deeply rooted, and the paſſions and intereſts of ſo many conſpire to perpetuate the evil, that it ſeems to be almoſt incurable. There is ſuch a number of grieves, inſpectors and overſeers appointed in every little diſtrict, and every one of theſe muſt

have

have a ſalary, that a conſiderable proportion of the public money is diverted from the purpoſe, for which it was, by the law, intended. Unleſs they be uncommonly upright, there is great room for defalcation: and unleſs they be uncommonly unbiaſſed, there is ſcope to relax in the demand of labour with reſpect to ſome of the workmen, and to be too rigorous in exacting the labour of others. Without ſaying that theſe overſeers are not always choſen according to their experience or knowledge in road-making; without ſaying that they neglect their buſineſs, or that their numbers are more than neceſſary; without ſaying that it is impoſſible for the Commiſſioners of Supply, in auditing their accounts, to know, whether the money which is raiſed, can be fairly accounted for, unleſs every individual in the diſtrict is called before them, to learn who has paid money and who has performed labour; the thing itſelf is an error.

Might not gentlemen with more eaſe and more effect, contract with an improved road-maker at a particular price by the mile, and on certain conditions, according to the circumſtances of the road, in order to bring it at once to the ſtate, which correſponded to the local ſituation of the inhabitants and to the importance of the road, and by a ſecond contract, at ſo much the mile annually, to keep it afterwards in repair. This contractor would ſeize the firſt opportunity of repairing a bad ſtep, the moment it began to fail, without allowing it to become dangerous or impaſſable, which would create more expence to him. He would work briſkly for his own emolument, and would employ labourers to aſſiſt him, who wrought like himſelf. The whole country would be inſpectors, whether the work was executed according to contract, and the gentlemen would only have the trouble of judging whether theſe remarks were well or ill founded,

by

by looking into their own agreement. This mode of applying the ſtatute labour would remove all the languor and the backwardneſs, with which country people commonly perform theſe ſervices, in perſon; would leave them at liberty to proſecute the buſineſs of improving their ground, or of working at their trade; would at once ſave to the public all theſe multifarious ſalaries, bring every farthing of the road money to its proper uſe, and prevent all the teaſing applications, employed in ſoliciting for theſe little poſts, which are never ſought for, but with a view of influence or emolument, or both;—poſts, which an induſtrious man is better not to have, by being left at full liberty to beſtow all his time and attention upon his proper buſineſs.

If this method ſhould not be approved of, there is another, which a freeholder of Fife-ſhire told me it was in contemplation to adopt in that county: That the commiſſioners of ſupply, as public bodies in ſeparate counties, or in different diſtricts of the larger counties, ſhould borrow money, upon the credit of the ſtatute money, amounting to ſuch a a ſum, that the money collected annually from the diſtrict would be equal to ten per cent. of the capital borrowed: The money thus raiſed to be forthwith laid out in putting the roads in proper order: One half of the ſtatute money, or leſs, according to the intereſt ſtipulated with the lenders, to be applied yearly towards paying the intereſt of the ſum borrowed, and the remainder of the ſtatute money, appointed partly as a ſinking fund to cancell the debt, and partly applied to keep the roads in order, according to the diſcretion of the borrowers. An act of parliament may perhaps be requiſite in order to carry this laſt plan into effect.

Many advantages reſult from either of theſe, beyond the preſent mode of exacting the legal ſervices on the public roads:

roads; but they are ſo evident, that it is unneceſſary to point them out: nor do I ſee any objection againſt either, except what holds equally or more ſtrongly, againſt every method of conducting the buſineſs of the ſtatute labour.

Before wheel carriages were ſo much in uſe as at preſent, little attention was paid to roads, and little diſcernment diſcovered in their direction, both in this county and elſewhere. One idea ſtruck all the engineers, even thoſe employed in conducting the military roads, in North Britain, on which it muſt have been intended to convey ordnance and other heavy carriages: "That a ſtreight line is always the ſhorteſt direction between two points, and therefore the moſt eligible line for a road." But this opinion is not well founded. In ſome caſes both the premiſſes and concluſion are falſe; and in many caſes the premiſſes may be granted, and the concluſion denied. A ſtreight line is indeed the ſhorteſt beween two points on a plane; but over a conical hill, it is longer than a circuitous line; and over a hill which forms a hemiſphere, it is exactly of the ſame length with a line round the half of the baſe: Even although a ſtreight line were the ſhorteſt, the ſteepneſs of the aſcent makes it often the leaſt eligible for a road. Many other circumſtances, beſides the diſtance, ought to be taken into conſideration; the convenience of materials, the time and labour required in travelling, eſpecially with heavy carriages, the avoiding rocky or ſoft ground, and a variety of other obſtructions, which may increaſe the firſt expence of a road, and render it inconvenient or endanger its ſufficiency, after it is made.

Mr Marſhall ſays, with much propriety, that the public roads in the Highlands of the county of Perth, conſidering the nature of the country, are remarkably level; beyond compariſon more ſo than thoſe of Devonſhire, and other diſtricts, whoſe

whoſe hills are much lower. The Highland roads ſeldom mount or climb the hills. The Creator has providentially, in moſt caſes, rent the general ridge of hill, which ſtretches along the ſides of the ſtraths or greater vallies, by ſmaller vallies at right angles to the great ones, ſo as to give an eaſy paſſage to the high way acroſs the hill from one ſtrath or glen to another. He adds, that another obſervation, equally applicable to the roads of the Highlands and thoſe of Scotland at large, is, that they are much more eaſily kept in repair, than the high ways of England, where long teams are in uſe; becauſe in the former, ſeldom more than one horſe is ſeen in a carriage of burden; the load of courſe is proportionably light.

SECT. II. *Canals and Embankments.*

THERE are no navigable canals in the county of Perth. Some brooks, which ran ſlowly with a winding courſe and overflowed the adjacent ground, have been ſtreighted; but no veſſels ply upon them for the purpoſes of commerce.

Upon the right hand, travelling from Blairgowrie to Coupar, you ſee a moraſs, with an eminence in the middle, which was once a lake with an iſland. Into this iſland, in times of danger, the inhabitants depoſited their moſt valuable effects, to ſecure them from plunder; which being therefore called the *Store-mount*, the people of the country ſuppoſe to have given its preſent name to that province. This lake has been long ago drained down to its preſent ſtate.

Between the pariſhes of Callander and Balquhidder, there was a ſpirited undertaking begun ſome years ago, and is ſtill proſecuted occaſionally, by which eight or ten feet may be drained off Loch Lubnaig, a lake four miles in length and

near one broad, which was at firſt underſtood to be carried on at the joint expence of the proprietors, whoſe lands were to reap the benefit, but is now carried on at the ſole expence of Mr Buchanan of Strathyre. If this work is completed, upwards of fifty acres of rich land will be gained, on the ſides and at the weſt end of the lake, to the different heritors. The river above will by theſe means have a better fall for ſeveral miles; and by clearing a few fords, the proprietors in that tract will be enabled to drain the ſwamps, which disfigure and injure their eſtates, and to free their land from the back-water, when Loch-lubnaig is overcharged in the rainy ſeaſon; and although they are ſhy at preſent, in following out the undertaking of cutting at the lower end of the lake, yet when they ſhall ſee how much their property is benefited by the cut, there is a probability at leaſt, that they will be diſpoſed to contribute, in proportion to the benefit they receive. One heritor at leaſt in Balquhidder, who has the property on both ſides of the river Balavag, between the eaſt end of Loch-veoil and Bailfuil, may deem it his intereſt, to give that river a ſtraight courſe, to deepen the fords and to raiſe embankments on the ſides, as far as his property extends in that place. This operation would reclaim a haugh of two miles long and one broad, conſiſting moſtly of fine land, which at preſent is overflowed once for every month in the year.

Lochard might alſo be drained in ſome degree, at the ſmall expence of blowing a few yards of rock; by which means much land would be gained by the noble proprietor. Several feet of water might be let off the loch of Monteath, and many acres converted into dry ground, if a convenient ſtream could be found elſewhere for the mills, which are driven

driven by the water of Goodie, that iſſues from the lake. Land might be recovered from Loch-achray at a ſmall expence.

Previous to the year 1735, the Carſe of Gowrie was diſfigured by many large pools of water. The only lake now remaining is the Qua, which may cover thirty acres of rich clay land, highly ſuſceptible of cultivation, beſides a conſiderable extent around it, which is ſo much on a level with its ſurface, as to be injured by every flood. Since the year 1760, very conſiderable ſums have been expended in enlarging the courſes of the different ſtreams, which flow through the plain of the Carſe. But on all theſe ſtreams there are mills for grinding grain, ſituated near the ſhore of the Frith, which prevent a complete draining from being effected; becauſe in every flood the water is repelled in its courſe, and overflows its banks; where, in a country ſo level, very conſiderable damage is always done to the adjoining fields, particularly in ſeed time and harveſt. At the period when theſe mills were erected, and when the roads were in a manner impaſſable, they were no doubt juſtly conſidered, as a great improvement. But now, when there is one or more, on every one of thoſe ſtreams, at the bottom of the hills, and ſome one or other of them ſituated within three miles of every farm in the Carſe, theſe other mills are no longer neceſſary, provided the proprietors, whoſe land is injured by the ſtagnant water would recompence the proprietors of the mills in the Carſe, for having them demoliſhed.

In the courſe of this report, notice has been taken of ſeveral embankments, made in different parts of the county: but much more ought to be done; and as an inducement,

every one knows, that it is the beſt of the land, which is liable to be overflown.

The haughs of the Iſla from Ruthven bank to the mouth of that river, a diſtance of ten miles, are expoſed to inundations, which are great and deſtructive. In the glens lying north of the Stormont, floods do great havoc among the hay and other crops. In Athol, at Bun-rannoch, in Glen-lyon, Glen-dochart, and Glen-lochay, torrents from the mountains ſwell the rivers ſo ſuddenly, that they ſpread far and wide, in many places, beyond their banks, and frequently ſweep off almoſt the whole labours of the year. The Tay and the Earn, the Devon, the Allan, and almoſt every river, within low banks, which takes its courſe through flat land, brings deſolation on the fineſt fields, which ly on its ſides. But the rivers, which flow from lakes do not ſwell ſo ſuddenly near to theſe lakes; and their damage is leſs, in proportion to the extent of the lakes that ſupply them; becauſe the lakes ſerve as reſervoirs to hold the torrents from the mountains, and diſcharge them gradually.

In Athol there are many embankments formed on the ſides of the Garry,* the moſt rapid river in the county of Perth, which conſiſt generally of ſtones, laid together not in a regular curve, but nearly ſimilar to one ſide of a Gothic arch. Theſe embankments have the appearance of a ſtrong ſloping cauſeway, with every ſtone laid on edge, riſing from the bed of the river, in an angle of forty-five degrees or leſs. In ſome places, the ſtones are laid in wooden frames, which run laterally and tranſverſely, like the types of a printer in his frame: But however promiſing the appearance of theſe frames,

* *The flight of a dart*, according to the rev. Mr M'Lagan *of Blair*.

frames, and however much they may facilitate the work in the firſt conſtruction, they will prove finally injurious to the ſufficiency of the embankment, when the wood rots, by leaving open gaps and giving room to the ſtream to work its way in below the ſtones. This inconvenience can only be remedied, by filling up the interſtices with other ſtones, whenever the wood begins to fail; which it muſt ſoon do, by being alternately wet and dry.

The north ſide of the Frith of Tay is embanked, all the way from Errol to the bay of Invergowrie, a tract of ſeveral miles. This building conſiſts of ſtone; and the old part of it is made nearly perpendicular. The heritors who have lately raiſed that part of it, which ſecures their property, have given their's a greater ſlope. Jettees or piers are occaſionally made on the outſide, to throw off the current and defend the embankment. Reeds are planted in the boſom of theſe jettees, which are very much ſought after for thatch, and ſell at the rate of twenty-five ſhillings for every hundred bunches, each being an ell (37 inches) in circumference.

On the bank of the Iſla below Meigle, at a place called Hallyards, an embankment has been made, half a mile long, with an elevation leſs than 45 degrees, by reaſon of the rapidity of the river. The baſe is twelve feet broad, and is ſet down about eighteen inches below the bed of the river. The height is ſeven feet of perpendicular altitude. The front towards the river has the appearance of a ſloping cauſeway. This bulwark coſt about L. 300, and was erected at the joint expence of Mr Kinloch of Gourdie, and Mr Murray of Simprim.

Where the Ericht diſembogues itſelf into the Iſla, there are ſome embankments, on a ſmaller ſcale, partly compoſed

of

of ſtone, partly of earth, and partly of the branches of trees mixed with earth Embankments have alſo been raiſed in Glenifla, at Killin, and in the neighbourhood of Callander: but this ſubject having neceſſarily occurred under the article of improvements, I refer to what has been ſaid in that Section.

Sect. III. *Fairs.*

IN every town and village of this county, fairs are eſtabliſhed, for the convenience of the inhabitants, in diſpoſing of the commodities, which they wiſh to ſell, and in purchaſing what they ſtand in need of. Six or eight are held at Perth, moſtly for horſes and cattle; the May fair is allotted for milch cows. Coupar has nearly as many, for the ſame purpoſes. Alyth has four cattle markets and two for ſheep. Blairgowrie and Meigle have each two cattle markets. Kinroſſie has three for cattle and ſwine. In different parts of Athol there are various fairs for diſpoſing of linen and woollen yarn and other commodities. In Breadalbane, Strathearn and Monteath, all the villages have their fairs, for wool, yarn, butter, cheeſe, meal, grain, horſes, cattle, ſheep, lambs, engaging ſervants, and reapers for cutting down the crop, &c. &c.

The moſt famous marts in the whole county are at Doune in the fall and in the beginning of winter for the ſale of black cattle. At theſe fairs vaſt multitudes of cows and bullocks, both fat and lean, are collected from every county in the north and weſt of Scotland, to be diſpoſed of to the Engliſh drovers, to Scotch graziers and diſtillers in the ſouthern counties, who buy them, for eating up the clover foggage, for being ſtall-fed with turnips and conſuming the offal

offal of the diſtilleries. Such as are ſent to England are kept for another ſeaſon; they riſe greatly in the bone, and make moſt delicate beef on the rich paſtures of that country. At Callander, beſides other fairs, there is a great cattle market upon the 15th of May, which is compoſed of beaſts that had been wintered in gentlemen's incloſures, and in the farmers ſtraw-yards in the neighbourhood, and alſo of leaner cattle from various provinces of the weſt and north Highlands. Theſe are diſpoſed of to Engliſh and ſouth country drovers, for graſs-beef, after being fattened, the ſame ſeaſon, in gentlemen's parks and other luxurious paſtures. But catalogues of the moſt remarkable fairs of this county being inſerted in the Edinburgh Almanacks, it is unneceſſary to give a longer detail.

SECT. IV. *Weekly Markets.*

EVERY town, and almoſt every village has its weekly market, for ſupplying the inhabitants with the various articles, which their families may require. Perth has a market every Friday; Coupar and Methven on Thurſday; Meigle and Blairgowrie on Wedneſday. The other towns obſerve the reſpective days moſt ſuitable to themſelves and the neighbourhood, of which it would be tedious and unintereſting to give a particular liſt. Longforgan, the property of Mr Paterſon of Caſtle Huntly, he ſays, was erected into a burgh of barony, in the year 1672, by a charter of Charles the ſecond, in favour of Patrick Earl of Kinghorn, with the uſual privileges, beſides that of holding two fairs in the year, and a weekly market upon every Tueſday. That property was at this period erected into a lordſhip, by the name of Lyon. The ancient name of Huntly is reſtored by the preſent

preſent proprietor, in honour of the family of Gray, with whom he is connected by marriage.

Sect. V. *Commerce.*

THIS is not a commercial county in compariſon with many others. Yet our extenſive paſtures, in the vallies and mountains of the Grampians, ſend down immenſe droves of black cattle for ſale, in the ſpring and fall of every year. The flocks on theſe, on the Ochill and Seedlaw hills, ſend lambs in ſummer and ſheep in autumn, in numbers almoſt beyond calculation, for a ſupply to the ſouthern counties in butcher meat, particularly to the manufacturing towns along the Forth and the Clyde. And ſince the ſheep ſyſtem has been adopted on a progreſſive ſcale, their numbers are annually increaſing.

Linen and woollen yarn brings a great return in ſpecie from the manufacturers of checked goods, carpet manufacturers, and others; beſides what linen and woollen ſtuffs are wove in the country and exported for ſale.

Great quantities of grain are exported from Strathearn, from that diſtrict of Strathmore included in this county, from Monteath, from the vicinity of Tullyallan and Culroſs, and from the Carſe of Gowrie.

Kincardine, in the pariſh of Tullyallan, and Culroſs, are the only towns ſituated on the Forth, belonging to this county, which can be ſaid to have any trade. To the port of Kincardine belong ſeventy-ſix veſſels, which at an average, are computed between eighty-five and ninety tons. In ſummer, theſe are employed in carrying coals to London and the cities on the ſhore of the Baltic; and return laden with corn and wood to Leith and Sea-lock, near Carron. In winter, they carry coals to Dundee, Perth, Montroſe, and the

the towns on the north coaſt of Scotland. There are commonly three or four veſſels on the ſtocks at one time. At Culroſs and Torryburn together, there are only eight or ten veſſels, which are employed in the ſame trade.

In place of leading the reader through a long maze, relative to the trade of every particular village included in this county, I ſhall conclude this article with an account of the exports and imports recorded at Perth, the principal emporium in this ſhire, which may furniſh a probable rule in forming a judgment of the growing commerce of our other trading towns: and I do this the more readily, firſt, becauſe the authenticity of the ſtatement may be relied on, having been communicated by the collector and comptroller of the cuſtoms at that port, with a readineſs which does them honour, and extracted from the books of their office by Mr Will, one of their confidential clerks; ſecondly, becauſe theſe tables will ſhow the progreſſive proſperity of the country, in which every man ought to rejoice.

Rev. Sir,

I communicated your requeſt to the collector and comptroller of this port, who after conſidering the purport thereof, agreed that I might avail myſelf of the books in this office, ſo far as to enable me to give you ſome ſatisfactory information to lay before the Board of Agriculture, reſpecting the ſtate of the town and county of Perth; and having taken pains to collect what I thought moſt material for that purpoſe, I beg leave to lay them before you, as follows:—

The importation of lime, at this port and the precincts thereof, is of ſuch magnitude, and ſo beneficial to the agriculture of the county, that I preſume it will be acceptable

to give a comparative ſtatement of that article for three years in the laſt ten, which is as follows:

	Lime.
	Chalders.
Landed in the year 1784, - - -	2330
——— 1789, - - -	4940
——— 1794, - - -	8042

It is worthy of remark, that the quantity imported in the year 1794, is more than three times that in the year 1784. The application of lime to the ſoil of this county, is no doubt a great improvement, and according as the quantity increaſes, ſo may we expect to find a proportionable increaſe in the articles produced. This cannot be fully exhibited in any account which I can give, as a greater part of the ground may be laid down in paſturage, turnips, &c. in one year than another; and even the increaſe of corn produced, will not correctly appear, as an advance in population requires a greater conſumption at home. Notwithſtanding of this, an account of the quantity of corn ſhipped at this port and the precincts thereof, for the three years above mentioned, is ſubmitted as deſerving notice.

	Wheat.	Barley.	Malt.	Oats.	Peaſe & Beans.
	Qrs.	*Qrs.*	*Qrs.*	*Qrs.*	*Qrs.*
Shipt in the year 1784,	7,303	7,508	5305		300
——— 1789,	9,005	16,802	4438	877½	1,320
——— 1794,	2,493	35,392	6,635	1,941	1,504

The demand for corn in England and other places, as well as the high price given for that article ſince the harveſt of 1794, has encouraged the dealers therein to ſend off as much

much as the country could ſpare; and there being no importation of foreign corn during the laſt twelve months, it is thought that an account of the corn and grain ſhipt from the 10th October 1794 to the 10th October 1795, will diſcover the greateſt quantity that can be ſpared from this port and its precincts, in any one year, until the ground has undergone an additional improvement, and therefore, the ſame is here ſtated.

Shipt from 10th October 1794, to 10th October 1795.						
Wheat.	Wheat Flour.	Barley.	Malt.	Oats.	Oat Meal.	Peaſe & Beans.
Qrs.	*Cwt.*	*Qrs.*	*Qrs.*	*Qrs.*	*Bolls.*	*Qrs.*
12,043½	7,785	36,047	9,371½	14,638½	2,135	3,065½

As to the trade and manufactures of this town, I preſume, you have derived from other ſources more ample information than can be had from this office. It will, however, give ſome idea of the trade, to peruſe the following account of the number of cargoes ſhipped and landed here, to and from Britiſh and foreign ports, during the three years I have pitched upon for the other accounts.

	From ports in Great Britain.	From Foreign Parts.
	Number.	*Number.*
Cargoes inwards, in the year 1784,	761	55
——— 1789,	942	28
——— 1794,	1093	42

	For Ports in Great Britain.	For Foreign Parts.
	Number.	*Number.*
Cargoes outwards, in the year 1784,	254	
——— 1789,	330	
——— 1794,	497	5

The manufactures of this place are chiefly thoſe of flax, cotton, and leather; I have therefore ſubjoined an account of the quantity of linens, cotton, and leather-ſhoes which have been cleared in this office, during the years 1784, 1789, and 1794.

Cleared out in Three Years.						
	Linens Brown and White.	Cottons Plain and Printed.	Shawls and Handkerchiefs.	Diapers.	Muſlins.	Leather-Shoes and Boots.
Years.	*Yards.*	*Yards.*	*Dozens.*	*Yards.*	*Yards.*	*Doz. Pairs.*
1784	1,515,570	200				1,381
1789	2,740,800	120,954	2,726		500	1,809
1794	3,086,580	683,432	7,436	88,749	1,330	3,313

Theſe are ſubmitted for your information. I am,

Very reſpectfully,

Rev. Sir,

Your moſt obedient ſervant,

ALEX. WILL.

Cuſtom-houſe, Perth,
30th Oct. 1795.

The ſalmon fiſhing upon the Tay and its branches has become an object of great importance, and the quantity carried

ried from thence to London and other markets is worthy of being included in a report of this county; therefore I ſhall inſert Mr Richardſon's letter on that ſubject, a gentleman, who has brought that buſineſs to a perfection formerly unknown in Scotland, who reaps the fruits of his induſtry and attention, and ſeems to be worthy of it all.

Pitfour 21ſt, October, 1795.

SIR,

I now beg leave to trouble you in conſequence of what paſſed when I had the pleaſure of ſeeing you here.

The valuable part of the ſalmon fiſhing on the Tay is from the influx of the Iſla, down to Newburgh on the ſouth, and Errol on the north ſide of the river: the yearly rent of the fiſhings on this ſpace is at preſent ſeven thouſand pounds or within a hundred pounds of that ſum. The principal heritor is Lord Gray, who as proprietor of the eſtate of Kinfauns draws of yearly rent for his fiſhings two thouſand five hundred and ſixty pounds.

Above the Iſla on the courſe of the Tay up to Loch Tay, and upon the Tumble which joins the Tay at Logierait there are ſcattered fiſhings belonging to different proprietors, the rents of which I am ignorant of, but ſuppoſe them two hundred to three hundred pounds. It is to be obſerved that the rents paid do not bear proportion to the quantity of fiſh caught; for on a number of ſmall fiſhings, more fiſh are taken in proportion to the rent than in fiſhings of greater conſequence. The expence of fiſhing muſt be paid before any thing can go for rent: after which the benefit of the catch is ſuppoſed to accrue to the proprietors.

All the above mentioned fiſhings lie in the county of Perth,

Perth, except a ſmall part of Mr Hay of Mugdrum's, the whole of whoſe rent is 195l.

From Newburgh on the ſouth, and Errol on the north ſide of the Tay, down to Dundee, the fiſhings are inconſiderable, not above 100l. of yearly rent.

From Dundee to the mouth of the river, including both ſides, the rents amount to about three hundred and fifty to four hundred pounds.

Formerly the greater part of the ſalmon was ſalted and ſent to foreign markets. Within theſe forty or fifty years, the produce has been ſent to London pickled, that is boiled and preſerved in vinegar, and packed up in ſmall wooden veſſels called kits. During that period, part was alſo ſent raw to London, put up with ſtraw in boxes.

A few years ago, a mode was recommended of preſerving ſalmon raw in ice, in which ſtate almoſt all that are caught in this river, preceding and during the month of May, are ſent to London. The application of this diſcovery, in this county, is owing to Mr Dempſter of Dunnichen; and the benefit of it, not only to the fiſhery on the Tay, but to the ſalmon trade in general, is very great.

In the mode of fiſhing, nothing has of late been diſcovered. Some alterations indeed have been made in conſtruction of nets, and in adapting them to the ſtate of the river, according to its ſize, and at different ſituations: As, where it is ſhallow and the current rapid, a net is uſed different from that where it is deep and runs ſlow. Improvements of this kind are chiefly owing to the ingenuity and attention of the fiſhermen, in conſtructing and applying nets proper for the ſtations, and varying them according to the riſing and falling of the river. As the fiſhery became more

ABSTRACT ACCOUNT of all the LINEN CLOTH Cleared; viz. from 1ſt Nov. 1775 to 1ſt

Year	Places where ſtamped.	Brown Linen.	White Linen.	T... S...	
1776.	Alyth,	270,088	11,548½		Price per Yard at a medium 11¼d.
	Crieff,	4,287	36,023½		
	Dunkeld,	25,005	29,293½		
	Inchture,	186,278	4,080½		
	Methven,	41,444	50,643		
	Ochterarder,	1,416	77,213		
	Perth,	224,466	567,744		
	Spittalfield,	52,205	26,685		
		805,189	803,231		
1784.	Alyth,	185,651½	22,591½		Price per Yard at a medium 1s. ¼d.
	Crieff,	1,032½	8,997½		
	Dunkeld,	23,028	22,507		
	Inchture,	234,501	996		
	Ochterarder,	2,842½	24,956½		
	Perth,	526,381	502,793½		
	Spittalfield,	59,996	47,267		
		1,033,432½	630,109	½	
1794.	Alyth and Meigle,	136,895			Price per Yard at a medium 10½d.
	Blairgowrie,	100,330	83,208¾		
	Crieff,	19,048	3,402		
	Dunkeld,	116,691½			
	Inchture and Errol,	196,121	50,916		
	Methven,	118,861			
	Ochterarder,	58,487	47½		
	Perth,	786,528¼	731,957		
	Spittalfield,	111,731	3,333		
		1,644,692¾	872,864¼	1	

more valuable, greater attention and diligence may be ſuppoſed to have been beſtowed.

It is a well founded opinion, that the number of ſalmon on the Tay has for many years paſt been on the decreaſe. Not that the produce of each ſucceeding year is much leſs than the former. The numbers of ſalmon caught varies very much in different ſeaſons. But it may be aſſerted that taking an average of the laſt nineteen years, the quantity will be found far ſhort of the preceding nineteen. To account for this may be difficult; but the chief and obvious reaſon appears to be *deſtroying ſalmon in forbidden time, eſpecially before they ſpawn.* Whether it is that the laws made long ago are inadequate to the purpoſe, or that there is want of vigour and attention in the application of them, it would be preſumptuous in me to ſay.

I am reſpectfully,

SIR,

Your moſt obedient,

Humble ſervant.

JOHN RICHARDSON.

There are fiſhings on the Forth at Doune and at Callander, on the lower Earn, at both ends of Lochtay and in ſome other places; but theſe being ſo much inferior to thoſe alluded to in Mr Richardſon's letter, do not ſeem to merit a particular diſcuſſion.

SECT. VI. *Manufactures.*

THE linen manufacture has been long eſtabliſhed in this part of Britain. Manufactories of leather have been alſo carried on extenſively. While theſe branches continue to be followed with perſeverance, induſtry and ſucceſs, the inhabitants in particular places have turned their attention, of late years,

years, to other manufactures, which are at preſent ſo much in vogue and are a ſource of ſuch immenſe profit. Mills for ſpinning cotton by machinery have been erected at Cromwel-Park and at Stanley, the former on the Almond, the latter on the Tay, and at Deanſtown on the Teath. Printfields for ſtaining cotton cloth have been eſtabliſhed at Cromwel-haugh, Huntingtower, Stormont-field and Tulloch. Paper-mills have been built at Crieff, at Auchterarder, at Bridge of Almond and at Woodend the property of Lord Methven, and alſo at Ruthven the property of the Duke of Athol, at Bridge of Allan and other places. This Ruthven near Perth is ſuppoſed to have been the ſeat of the earl of Gowrie and the ſcene of the Raid of Ruthven, ſo famous in the hiſtory of Scotland, when James the ſixth was made priſoner in 1582 by a party of his nobility. Mills for extracting oil from lint and rape-ſeed have been erected at Dunblane, Auchterarder, Huntingtower, Pitcairn and Balgarſhoe-water; and a mill for ſpinning flax by machinery at Stanley. Extenſive bleachfields are laid down at Luncarty*, at Huntingtower and Stormont-field. There are other two at Lawton†, one of which is carried on by Mr Wright the proprietor, where upwards 200,000 yards of cloth are whitened annually, and another poſſeſſed by a tenant of that gentleman at Balgarſhoe. Fields of the ſame kind are at Kier and at Crieff.

The

* So much ſignalized for a total defeat of the Danes by Kenneth III. and the riſe of the family of Errol, who were ennobled for their proweſs in the action.

† So denominated, becauſe the uſurper Macbeath uſed to come to this place, from his ſtrong hold on Dunſinnan hill, to hold courts of Juſtice.

The flouriſhing ſtate of the linen and other manufactures in this county may be ſeen more clearly from the following extract, than from any account of the number of the mills and bleachfields.

Every reader muſt be highly gratified to obſerve in the table tranſmitted from Mr Arbuthnot Secretary to the truſtees for fiſheries and manufactures, which is inſerted after page 170, the ſame evidence of the growing proſperity of the country, which is exhibited by the account of exports and imports, taken from the cuſtom-houſe books at Perth detailed under the former article. In the year 1776 the value of ſtamped cloth amounted to L. 82,544 : 8 : 10. in 1784 it exceeded that ſum by L. 27,273 : 19 : 10½. In the year 1794 it exceeded the value in 1776 by L. 41,765 : 4 : 6.

Various other branches of manufacture are carried on with ſpirit, which it is difficult to condeſcend upon with any degree of accuracy: to particularize their extent minutely, is impoſſible. At Alyth, ſail-cloth and oſnaburgs are wrought. In ſome of the villages of the Carſe of Gowrie, the inhabitants manufacture oſnaburgs, and a coarſe kind of linen which is afterwards made into buckram and hat-linings. Kincardine has two tambour-ſchools*; Culroſs one; at each

* The eſtabliſhment of manufactures indicates the increaſe of induſtry and the growth of riches: they are nevertheleſs accompanied with certain diſadvantages. A ſedentary life enervates the conſtitution. Crowded habitations, without a free circulation of air, produce pulmonary complaints and languor in the ſecretions. A conſtant intercourſe of a variety of characters, the profane, the lewd, the artful, the diſhoneſt, the detracting, the lying, all blended into one maſs, has a tendency to introduce a depravity of manners, againſt which no vigilance can guard, and a torrent of vice which no firmneſs can ſtem. Theſe evils are deeply to be deplored, where the two ſexes work under

of which about fifty girls are employed. Many looms are in theſe towns, engaged in the cotton manufacture, and ſome weaving napery for the warehouſes at Dunfermline. At Crieff leather is tanned, a tambour-ſchool on a ſmall ſcale, and a linen manufacture, at the expenſe of a company in Glaſgow. Coarſe woollens and cottons are woven at Dunblane; and at Callander the weaving of cotton goods and a tambour-ſchool have been lately introduced. At Thornhill, leather to a conſiderable amount is tanned and curried. In almoſt every village throughout the county, the inhabitants bend their attention to ſome ſpecies of manufacture, ſuited to their genius or correſponding to their local ſituation. The prevailing manufactures of the county-town are mentioned in the letter from the cuſtom-houſe of Perth inſerted in the preceding Section.

In every little village, however ſmall, there are artiſts of various denominations, who in the preſent ſtate of ſociety, when arts are divided into proper claſſes, are daily employed, miniſtering to the accomodation of the country around them. Theſe tradeſmen, in the earlier ſtages of ſociety were not equally neceſſary, when every farmer and every other man, in the lower ranks of life, was his own carpenter, his own taylor, his own ſhoemaker, and his own artificer almoſt in every thing. This diviſion of handicrafts will become more diſtinct every day, and every man will conſequently become more expert in his own profeſſion. Hence one great cauſe of the eſtabliſhment and enlargement of villages.

Among

der the ſame roof, or what is worſe, in the ſame room; and when young children are employed, before their conſtitution has acquired any degree of vigour, their minds any impreſſions of religion, or their conſcience any abhorrence of vice. Add to this, that when money is eaſily and plentifully earned, it is generally ſpent without prudence.

Among all the manufactures above-mentioned none has occurred, that is devoted to the ſpinning of wool *, and only one upon a large ſcale for the ſpinning of flax. I hope the former, which has become of late years one of the ſtaple commodities of this country will engage the attention of wealthy companies, and that the latter will continue to increaſe. Companies of profeſſional manufacturers have perhaps declined to engage in theſe branches, becauſe plenty of woollen and of linen yarn is manufactured to their hand by the country people from the raw material, and made ready for the loom. There is no county perhaps in Britain, where more wool and lint are ſpun, than in Perthſhire. The women are very induſtrious. In wet weather and dry, their labour is unremitted. They are equally buſy both ſummer and winter. The vaſt quantity of linen yarn wove into cloth and ſtamped for ſale, mentioned in the table inſerted under the Section on Flax; the vaſt quantity of linen cloth uſed for home wear; the vaſt quantity of linen yarn ſold unwrought to yarn merchants, who carry it to the manufacturers of the great towns; the quantity of woollen yarn ſent from hence to the carpet manufacturers of Stirling, Edinburgh, and Glaſgow, beſides what is wove at home and worn daily by all the ordinary ranks of ſociety, ſhow the induſtry of the women in the cleareſt point of view, and point it out, to be above all praiſe. In the courſe of my Survey, I ſaw a lady of quality ſpinning worſted for ſtockings to her huſband, the yarn of which might vie with the ſpecimens preſerved in the repoſitories of the Highland Society at Edinburgh, ſpun by the Counteſs of Sutherland and Lady Sinclair. Another lady of ſome thouſands a-year in my own neighbourhood was lately cut-

* One is begun at Callander ſince this Report went to the preſs.

ting half a dozen of ſhirts of very fine linen, for each of her three ſons, all ſpun with her own hands. During my Tour in 1795, a gentleman was wearing a coat of ſuperfine cloth, made of his own wool.

Sect. VII. *Poor.*

AFTER what hath been ſaid about the maintainance of the poor in the Section relating to poor's rates, very little is neceſſary to be added here. The funds therein mentioned are for the moſt part adequate to the ſupport of the poor, together with their own induſtry, which the females amongſt them ſeldom ceaſe to ply, as long as they are able. But where it happens, that a pariſh is ſo extenſive, and perhaps ſo thinly peopled, which is the caſe in ſome of the moorland countries, that the more diſtant pariſhioners come not regularly to Church, or where it happens, that many of the pariſhioners are not of the perſuaſion of the eſtabliſhed Church*, the charity collected at the church doors is ſo ſmall, that there is either a neceſſity for having recourſe to the aſſeſſment ordained by law, or to allow the poor to beg, who are able to travel. In this caſe, they are relieved, by charity at the doors of the inhabitants. They receive wool, clothes and grain, as well as meal or food.

Many attempts have been made by the gentlemen, who have the charge of the police, to ſuppreſs begging; but all their efforts have hitherto proved ineffectual; becauſe their plans were not generally adopted, and becauſe the country-people of Scotland are ſo charitable from principle and from

* There appears to be a defect in the Law or in the adminiſtration of it; that while diſſenters withhold their charity from the parochial funds, they are not burdened with the poor of their own perſuaſion.

from habit, that they will not be reſtrained from ſerving the poor at their houſes. So long as they eſteem it a Chriſtian duty, binding upon them by the higheſt authority, to give alms, they will perſevere in this practice: and ſo long as beggars are ſerved, beggars will go, in the face of every regulation to ſuppreſs begging.

The country has often ſuffered ſeverely for their benevolence in this reſpect; and their charity is often miſapplied and abuſed. Shoals of tinkers, gypſies, pick-pockets, vagrants and ſturdy beggars pour forth upon the inland provinces from the great towns, who frequently extort too much alms from the weak and the timid; who are alſo guilty of theft and many other evil practices.

The magiſtrates of theſe towns imagine perhaps that they are doing *mighty* ſervice to their country, when they baniſh their evil-doers from their liberties or from the county, where there town is ſituated. But no poſition can be more falſe, no reaſoning can be more abſurd, and no conduct can be leſs patriotic or more ſelfiſh. Why ſend the perſon, whom the wickedneſs of your town or county has corrupted, to corrupt, to pilfer and ſorn upon your neighbours? This is poor police indeed.

The eſtabliſhment of bridewells is dictated by ſound policy and true patriotiſm. Happy ſhall be that age, in reſpect of this part of their police, when a bridewell ſhall be built in every county and in every great town, where their own vagrants ſhall be confined and compelled to work for their maintainance by hard labour, inſtead of having them ſent forth as a peſtilence to the community, to fleece and annoy other counties and towns; and when the charity of the country ſhall be beſtowed only on ſuch objects as need and deſerve their bounty.

In

In order to give an accurate detail of the number of poor in this county, of the mode adopted for maintaining them in the ſeveral pariſhes and of the funds appropriated for that purpoſe, I have conſulted ſuch of the parochial accounts as have been publiſhed; but in ſome of theſe, the number is not mentioned, in others there is no notice taken of the amount of the collections at the Church doors, and in others we are not informed, what lying ſtock they have, what donations they have received, nor the produce of the dues for lending the pall, nor the value of the fines for petty treſpaſſes, which are allotted for the ſupport of the poor.

Many benevolent ſocieties have been eſtabliſhed in different villages and diſtricts of the county, which have been productive of much good. If the heritors of every pariſh, eſpecially ſuch as have not their reſidence within the pariſhes where they have lands, and therefore have no opportunity of contributing weekly for the ſupport of the poor on theſe diſtant parts of their eſtates, and ſuch heritors as are of a different perſuaſion from the eſtabliſhed church; if theſe, were ſo humane, as to give a little ſum, although it were no more than the legal aſſeſſment of one year upon their property in the pariſh, to be a fund, for ſetting ſuch a ſociety on foot, there is little fear, that the inhabitants would decline to eſtabliſh a ſociety of this kind in every pariſh in Scotland. The labouring claſſes of mankind enter into theſe ſocieties with alacrity. They put a ſmall pittance quarterly or annually into the fund, from which they are entitled to the ſtipulated ſupport, when unable to earn their bread, by reaſon of ſickneſs or in the decline of life.

SECT. VIII. *Population.*

WITH regard to population, the general ſtatement of the moſt intelligent perſons in the county, is, that upon the whole it has increaſed conſiderably. Where the farms are enlarged, and the country incloſed, there is no doubt that the population has decreaſed in particular diſtricts or farms*; but wherever married ſervants are kept on arable farms, and theſe farms are of a moderate ſize, there is very little, if any, decreaſe.

Beſides

* Why decreaſed? If a farm is enlarged, it ſhould be as well or better managed, than when in ſmall farms, or the end is not anſwered. In all the enlarged farms I know, there are more people employed, than when they were ſmaller, and more produce raiſed, except when turned to grazing, which is no loſs to the public, becauſe fat meat is to be had, and if too much, ſome of the grazing farms will be turned to cultivation. Things will always find their own level.

Mr Bailey of Chillingham.

Anſ. A large farm may be miſmanaged, for want of capital, of induſtry or knowledge, as well as a little farm, and then the end is really not anſwered; and the loſs to the public is greater.—There may be more people employed on large farms, where this gentleman is acquainted; but it is a fact, that fewer people are employed on large farms elſewhere; in ſome caſes one family in place of four, in others two families in place of eight. I could point out in this county where one family occupies land poſſeſſed ſome years ago by ten families. It is to me a problem that requires proof, that the beef or mutton *reared* and *fed* on 10 or 20 acres of arable land will feed as many mouths for a term of years, as the grain which theſe acres will produce annually: Facts, not aſſertions, can determine this point.

Mr Samuel Fieldhouſe has a note on this paſſage. It is greatly too long, otherways I would have inſerted it with pleaſure. He elucidates and confirms my doctrine, That very ſmall farms, eſpecially in *runrig*, are

Beſides public works, which have been lately eſtabliſhed, there are in this county, upwards of ſeventy towns and villages, of which many have increaſed, within theſe few years to an amazing degree, not only in the number of inhabitants, but in the neatneſs and taſte of the buildings. Some are entirely new. Several perſons ſtill alive remember Callander*, when it conſiſted of four families, the miniſter's, the ſchoolmaſter's and ſome others, amounting in all to about 20 ſouls. There are now at leaſt 1000, and the number is rapidly increaſing. Comrie†, Crieff, Muthil, Methven,

are unfriendly to improvement, and that very large farms are inimical to population; and mentions farms of *fifty* acres as a good medium. Perhaps a farm of one hundred acres would not injure the population, where married ſervants are employed. But it is a fact, that beyond that, they leſſen the population: and it is alſo a fact that all the cattle produced from any farm of arable ground in 20 or 30 years kept in graſs, cannot ſupport as many people as the ſame farm would do by a regular ſyſtem of croping.

* Callander was much bigger before the Rebellion in 1745, than is mentioned by the writer. *Ignotus.*

Anſ. I refer not to the Rebellion in 1745, but to a period within the remembrance of perſons now alive, which is more remote.

† The village of Comrie was originally an old Kirk-town, (*i. e.* the place where the pariſh church ſtood,) ſituated upon the north ſide of the river Earn, within five miles of Lochearn. It conſiſted of a few cottages poſſeſſed by eight or ten families, but within the laſt ſixteen years has encreaſed ſo rapidly as to contain at preſent about 700 inhabitants, many of whom are wealthy and thriving; and in conſequence of perpetual grants (feus) of different portions of land from Mr Drummond the proprietor, have expended ſeveral hundred pounds in buildings and improvements upon their reſpective properties. The village is now extending upon a regular plan along the ſouth ſide of the river.

The

ven, Blairgowrie, Coupar, Longforgan, are in the ſame predicament, beſides others.

Allowing therefore that there may be a decreaſe of population on ſome of the farms, the increaſed population of the towns and villages does a great deal more than overbalance that decreaſe. The produce of the ſoil is more abundant, and land is improved, which yielded little or nothing before; and wherever you produce more food, you will collect more people. No man will venture to aſſert that a farm of fifty acres in the hands of four tenants, who have each a horſe in the plough and their ground mixed in alternate ridges (provincially *runrig*,) will produce the quantity of ſubſiſtence, which on the ſame farm can be raiſed, in the hands of one man, who has both money and induſtry to cultivate the ground with judgment. With reſpect to population, where is the difference, whether the other three farmers

where it comprehends a tract of about 40 acres, and is beginning to ſtretch out along the moor of Dalginroſs, formerly a barren plain containing upwards of 100 acres of poor gravel covered with ſhort heath; upon part of which, in Auguſt 1797, I had the pleaſure to ſee, the ſecond crop of clover more than a foot high. As a natural conſequence of this progreſs, the intrinſic value both of the ground feued and of the ground in the immediate vicinity let in tack by ſmall allotments to the villagers has increaſed in value, and about 100 acres of waſte land have been brought into a ſtate of good cultivation. Such are the invaluable advantages of judicious induſtry and ſteady exertion.

The ſame induſtry is diſplayed at the Roſs, a new village, adjacent to Comrie, lately ſet off by Mr Drummond of Strageth. This gentleman gives feus of four acres, in ſome caſes, to his villagers, beſides ſome acres more in leaſe, which renders the people very comfortable. The houſes are ſubſtantially built and covered with blue ſlate.

Moſt of the villages in this county are feus in perpetuity. Others are long leaſes; which ſaves the expence of charters and ſeizins.

live on the farm or in an adjoining village? but with reſpect to induſtry, the difference is great: On the farm, they were three fourths of the year idle and in want; in the village they become ſkilful artiſts, and are able to rear their families without penury, to educate them decently, and to breed them to ſome uſeful employment.

The population is not only increaſed and the land rendered more productive, by the eſtabliſhment of well-regulated villages; but labourers are at hand in the time of need, and artificers of various denominations, all ready to be employed in miniſtering to the different wants of the neighbourhood. Villages alſo afford a ready market for whatever the farmer has to ſell, and ſupply him with dung to improve his poſſeſſion.

In writing the Agricultural Report of the ſouthern diſtricts of this county about two years ago, I referred to the Statiſtical Account of the different pariſhes as the moſt authentic evidence, which could be had, of the ſtate of population: and having examined that publication with ſome care, relative to this ſubject, the following table is drawn up, which lays the population of the county before the reader, with all the accuracy the thing can admit of. The population of the pariſhes, of which no account has hitherto been publiſhed, is eſtimated at an average of the reſt of the county; which is probably not far from the truth.

STATISTICAL

STATISTICAL TABLE OF PERTHSHIRE.

Names of Parishes.	*Population in 1755.*	*Population in 1795.*	*Names of Parishes.*	*Population in 1755.*	*Population in 1795.*
Aberdalgie, - -	320	522	Kenmore, - - -	3065	3463
Abernethy, - -	1420	1415	Killin, - - - -	1968	2360
Aberfoil, - - -	895	790	Kilspindie, - - -	828	718
Alyth, - - - -	2680	2723	Kincardine, - -	1250	2068
Arngosk, - - -	736	554	Kinfauns, - - -	639	628
Auchtergaven, -	1677	1784	Kinloch, - - -	331	372
Auchterarder, -	1194	1670	Kinoul, - - -	1163	1465
Balquhidder, - -	1592	1300	Kippen, - - -	1799	1777
Blackford, - - -	1681	1360	Lecropt, - - -	577	420
Blair Athol, - -	3257	3120	Lethendy, - - -	346	367
Blairgowrie, - -	1596	1651	Logie, - - - -	1985	1500
Callander, - - -	1750	2100	Logierait, - - -	2487	2200
Caputh, - - -	2048	2045	Meigle, - - - -	1000	1148
Cargil, - - - -	1897	1720	Methven, - - -	1790	1786
Cluny, - - - - -	905	1037	Monydie, - -	1492	1320
Comrie, - - -	2546	3000	Monzie, - - -	1192	1136
Coupar Angus, -	1491	2076	Monivaird, - -	1460	1025
Crieff, - - - -	1414	2640	Moulin, - - -	2109	1749
Culrofs, - - -	1695	1442	Muckart, - - -	535	526
Dron, - - - -	598	450	Muthil, - - - -	2902	2948
Dull, - - - -	4897	4676	Perth, - - - -	9019	19,871
Dunbarny, - - -	764	1250	Port Monteath, -	1865	1765
Dunblane, - -	2728	2750	Rattray, - - -	751	500
Little Dunkeld, -	2919	2705	Redgorton, - -	1074	2123
Errol, - - - -	2229	2685	Rhynd, - - - -	498	495
Forgandenny, -	1295	978	St Madoes, - - -	189	300
Fortingal, - - -	3859	3914	Scone, - - - -	888	1442
Foulis Wester, -	1706	1224	Tibbermuir, - -	988	1280
Gask, - - - -		486	Trinity Gask, -	913	795
Glendevon, - -	220	240	Tullyallan, - -	1321	2430
Inchture, - - -	893	1000	Weem, - - - -	1295	1364
Sum,	52,902	55,307	Sum,	47,719	61,451

By the returns made to Sir John Sinclair from the miniſters of the ſixty-two pariſhes mentioned in the table, the population of theſe pariſhes in 1795 and perhaps for two or three years before that period, according to the time the returns were made, amounted to 116785. But there are fourteen pariſhes unaccounted for, viz. Kilmadock, Kincla-

ven, Kinnaird, Kirkmichael, Langforgan, Maderty, St Martin's, Bendochy, Colace, Dunkeld, Dunning, Forteviot, Foffway, and Fouls Eaſter. Four of theſe have conſiderable market towns, and others are populous landward pariſhes. Therefore their preſent population and increaſe may be above the average of the reſt of the county. Taking however the average of this number for theſe fourteen pariſhes, their population may be ſtated at 26365.—The whole population of the county is 143,123. The increaſe on ſixty-two in the laſt 40 years is 16137; and allowing the average of this increaſe to the fourteen unaccounted for, the total *increaſe* of the population of Perthſhire from the year 1755 to 1790—5, is 19781.

CHAP. XVI.

Obstacles to Improvement.

THE obſtacles to improvement are many. Some of them may with eaſe be removed; others with more difficulty. Some ariſe from the ſituation of the land; others from the habits of the tenantry; and not a few may be aſcribed to the proprietors themſelves.

1. *Townſhips.* A number of plough-gates in one village, or ſeveral tenants about one plough, having their land mixed with one another, is a great bar to the improvement of any country. Theſe townſhips are removed in counties, where improvements have for ſome time been eſtabliſhed, and where cultivation has made ſome progreſs. In many diſtricts of this county, there is no ſuch thing to be ſeen. In ſome diſtricts they ſtill remain; and the blame is to be aſcribed to the landlord. Wherever a ſtranger ſees four or

ſix

ſix or eight ploughs of land, poſſeſſed perhaps by double that number of tenants, and perhaps a cottager or two annexed to each plough, all huddled together in one village, he inſtantly judges that the proprietor is deſtitute of underſtanding to diſcern his own intereſt or that of his people; and that the people are deſtitute of energy, ſtrangers to induſtry and to the comforts of life.

However neceſſary theſe hamlets were, for the mutual aid of the inhabitants, in rude ages and unſettled times, when the ſafety of a man's perſon, the protection of his property and the defence of his family, depended more on the affection and prompt aſſiſtance of his neighbours, than on the arm of the civil magiſtrate; yet in the happy days in which we live, ſuch cluſters of houſes are no longer neceſſary. Every man ſits ſecurely under his own roof; and none dares to make him afraid.

2. *Runrig.* This is a ſpecies of the former evil upon a ſmaller ſcale; and it was foſtered by the feudal ideas. In theſe times, He that could muſter the greateſt number of retainers, generally made to himſelf the greateſt eſtate. But in our times, nothing can be more abſurd, than to ſee two or three, or perhaps four men, yoking their horſes together in one plough, and having their ridges alternately in the ſame field, with a bank of unploughed land between them, by way of boundary. Theſe diminutive poſſeſſions were carried to ſuch a length, that in ſome parts of Scotland, beyond this county, the term *a horſes' foot* * of land is not wholly laid aſide. The land is like a piece of ſtriped cloth, with banks full of weeds and ridges of corn, in conſtant ſucceſſion, from one end of a field to the other. Under ſuch

* The ſixteenth part of a plough-gate.

ſuch management, all theſe people muſt have concurred in one opinion with regard to the time and manner of ploughing every field, the kind of grain to be ſown, and the ſeaſon and weather fit for ſowing, and whether they and their horſes were to be employed or idle. Even ſo late as thirty or forty years ago, this practice prevailed, not only over the greater part of the county of Perth, but with very few exceptions over all Scotland. Since that period, it has been gradually going into diſuetude; and the benefit of laying it aſide entirely is ſo apparent, that any remains of runrig, which are ſtill to be ſeen, muſt ſoon diſappear, except where the landlord is as much a Goth as his tenants.

Conſidering the various avocations, which theſe tenants muſt have, and the frequent jaring animoſities, which will neceſſarily ariſe in a cloſe neighbourhood, where oppoſite intereſts are conſtantly interfering, it is impoſſible to expect, that under this ſyſtem, any ſpecies of improvement can go on. Townſhips and runrig are ſuch obſtacles to improvement, and bolt the door ſo firmly againſt all cultivation, that it cannot have the leaſt entrance; and they hold the people in the chains of idleneſs and poverty, wherever they prevail.

Were every farmer to have his land ſet off by itſelf, let it be great or ſmall; and were his ground incloſed; he might improve, if he is inclined to be induſtrious, without being fettered by his neighbour's humour or ignorance or indolence: and if he is not inclined to work, his farm ſtands out a ſpectacle to the whole country, an evidence of his ſloth; in ſo much, that if the admonitions of his landlord, the example of his neighbours, his own intereſt and a regard for his family, have no effect in rouſing him to be induſtrious,

duſtrious, he marks himſelf, as it were with his own hand, as a fit perſon to be ſet a drift, at the end of his leaſe.

3. *Boundaries of eſtates.* In ſome inſtances the boundaries betwixt coterminous proprietors are not ſtreighted, even in the arable land: In many caſes theſe are not ſettled at all or aſcertained in the moors.

Uncertainty with regard to the limits of farms or eſtates is a conſtant ſource of altercation among tenants, and frequently the cauſe of expenſive litigation between gentlemen. The damages, awarded by the law for treſpaſſes, being daily exacted are like oil poured on the fire of diſcord, which keeps it continually blazing in a flame. In every ſituation of this kind, it is evident that both proprietors and tenants muſt ſuffer in their intereſt and in their peace; and that the land can neither be incloſed or improved.

4. *Servitudes.* Any thing demanded under the name of rent, except money, or perhaps part of the produce of the farm, is an obſtacle to improvement. If the landlord's houſe be diſtant from fuel, and the carriages of his own horſes unable to ſupply him in that neceſſary domeſtic article, it hardly can be expected that the carriage of fuel by tenants is altogether to be laid aſide. But the ploughing or harrowing of land, the mowing of hay, the cutting down of corn, or any other ſervices, which divert the ſtrength of a farm from its own labour, are of the worſt conſequence to agriculture. The ſpirits of the people are ſunk, and their vigour enervated by theſe bondages. If they have any ſenſibility, or if they look around them in the world, they feel the weight of the burden; and it gives an edge to their reſentment, that they cannot conveniently ſhake it off. They perceive that they are ſlaves and cannot better their condition; which is the loweſt depreſſion of human nature.

Wherever

Wherever the country is improved, very few ſervitudes are impoſed, and nothing exacted, except a money rent. The farmer feels himſelf independent, in poſſeſſion of his leaſe, when his rent is paid; which ſoothes his cares and gives a ſpring to all the active powers of his mind.—The payment of grain to the landlord may be of uſe to keep the prices moderate, and to prevent exportation at improper times, when landlords are well diſpoſed towards the public good; yet the payment of grain, which at one time was very prevalent, occaſions endleſs diſputes betwixt parties, where uninterrupted harmony is equally the intereſt of both, and haraſſes the landlord with all the drugery of a meal-monger, and of a corn-merchant.

5. *Thirlage.* Thirlage is a grievous bondage; and its pernicious influence on the improvement of the country is ſeverely felt, in every place where it prevails. At ſome mills, the multure is five lippies out of every ſixteen pecks of grain, which is nearly a thirteenth part of the whole; at other mills, it is ſix lippies out of ſeventeen pecks, which is a twelfth part of the reſtricted grain; and at one mill it is the tenth part.—This ſervitude was no doubt introduced originally, as a compenſation for building and upholding a mill, and for paying the wages of a miller: and we can ſuppoſe a ſtage of ſociety, in which the culture of the land was ſo wretched, that the price was no more than enough; but theſe circumſtances no longer exiſt, and it is to be hoped, ſhall never again return in this country. At every mill, the preſent amount of the thirlage is by far more than an adequate value for the labour, to which it is ſuppoſed to be the price. It is an odious tax, becauſe it is in every ſenſe a tax upon *induſtry*. The ſloven in all caſes pays leſs than the impro-

improver *. It is therefore not only unwiſe, but unjuſt. Its principle is wrong; its aſpect is oppreſſive and cruel; and the manner and degree, in which it is often exacted, are no better. It is diametrically contrary to the genius of the Britiſh conſtitution, and hoſtile to the proſperity of the country at large. Since the firſt copy of this report, publiſhed in 1794, has been in the hands of the public, the zeal that has appeared in different counties to ſhake off the yoke of thirlage is very laudable, and every man, who deſires to ſee the improvement and the proſperity of the country continuing to be progreſſive, muſt wiſh them perſeverance and ſucceſs.

Inſtances are not wanting in this county, in which proprietors lay out their lands in graſs, to eſcape a heavy multure, which they are unwilling their tenants ſhould be ſubjected to pay; and ſkilful farmers are obliged to depart from the rotation, which their good ſenſe dictates to them, in order to avoid this heavy tax on certain grains; and there are alſo inſtances, in which multure is paid for grain, without having the benefit of a mill to grind it.

Where the mill and the lands bound to it, belonged to one proprietor, thirlage has in many places been long ago aboliſhed; which, of itſelf, is a proof that it was accounted a grievance. The greateſt difficulty ariſes, where the mill belongs to one proprietor and the ſucken † to another; as in the caſes mentioned; which makes the interference of the legiſlature neceſſary.

But one will ſay, are the proprietors of mills to loſe the rent of their mills? By no means. Let the value of the

* How applicable this to the payment of tithes in England.
Mr William Dann of Gillingham.

† The diſtrict bound to a mill.

multure be aſcertained according to the average of three or five years of the produce of the aſtricted lands, by proper arbiters: Let this value or price be levied from the whole ſucken, either annually; or at once, at ſo many years purchaſe, as the legiſlature ſhall deem reaſonable. This is the rule adopted with regard to the purchaſe of tiends (tythes) in Scotland. Every land-holder may buy up the tiends affecting his eſtate at a ſpecific price from the titular, who now holds them, which the titular is bound by law to accept of.

If the farmers in the neighbourhood chooſe afterwards to reſort to the ſame mill; let ſuch a compenſation in grain or in money be given to the miller for his trouble, as may be agreed on. And ſince the origin of multure was an allowance for keeping the mill in good order; even after the multure is bought up and thirlage aboliſhed, the proprietor of a mill ought to be bound to keep it ſtill in good order, becauſe the thirlage having been only commuted, the price for his doing ſo has been paid to him. This obligation makes the bargain fair on both ſides; without which the ſucken receives not full value for the money, to be paid to the proprietors of mills.

In order to get employment, the miller will, under this new regulation, think it his intereſt to treat his cuſtomers with diſcretion, and to perform their work readily, ſkilfully, and honeſtly; whereas by the preſent rule, his humour rather than a ſenſe of duty regulates his conduct. He does not conſider himſelf to be the *ſervant*, but the maſter of his cuſtomers, well knowing that the yoke of thraldom is wreathed by the exiſting law ſo firmly about their necks, that they dare not paſs his door.

6. Shortneſs

6. *Shortneſs of Leaſes.* The ſhortneſs of leaſes, in ſome caſes, and in others, there being no leaſes at all, ſinks the ſpirit and ties up the hands of the huſbandman from improving his farm. No man will labour willingly, for any length of time, to promote the emolument of another perſon, in whom he has no intereſt. If a farm be capable of no improvement, there is ſurely the leſs hurt ariſing from an uncertain tenure; but farms in this predicament are very rare; and ſcarcely can any place be pointed out, to which nature has been ſo unkind, that nothing can be done to meliorate its condition.

The ſame term of years may not ſuit the leaſes in every country. In graſs farms, no doubt, there is leaſt to be done; but where there is command of water from the hills, and land on the ſurface of theſe hills which may and ought to be made green; where there is bruſh-wood to be grubbed out; where meadows are to be cleared of ſuperfluous water; where the land is open, and no incloſures made between the hill and the green paſture; where ſtones are to be blown and little patches of arable land to be divided into ſmall cloſes, What tenant, in his ſenſes, will be at the expence of theſe improvements, without a leaſe, or even on a leaſe of nine years? Were he ſo fooliſh as to lay out his money upon theſe conditions, he knows that he would, in every ſtep of his progreſs, be acting againſt his own intereſt; for, very probably, by the time that theſe improvements were finiſhed, his leaſe is expired; another man makes intereſt with the proprietor, ſteps in before him, wiſhing to reap the fruit of his improvements, and gets him turned out of his farm. The leaſt evil that could befall ſuch a man, would be, to pay more rent for the very improvements which he had made, at his own expence, with-

out being reimburſed: By which means he is both the price and the purchaſe out of pocket.

If all this may befall an induſtrious man, on a graſs farm, how much more ſo on a poſſeſſion which is arable. There an uncertain tenure cuts the very ſinues of induſtry. In grain-farms, not only are ſurface-improvements neceſſary, as in the former caſe, but the body of the ſoil muſt be meliorated before it can be rendered productive. On ſuch farms I have uniformly found the leaſes to be longer; but even ſome of theſe are too ſhort, to encourage an induſtrious man, who has much to do, to exert himſelf in improving his farm, with any probability of drawing back his money before the end of his leaſe.

The propriety of impoſing a progreſſive rent has been ſuggeſted, in treating of rents, page 77; and this riſe ought to be regulated by the probable ſtate of the ground, on a fair eſtimate of its melioration, and by the price of the commodities on the ſale of which the payment of the rent depends, at the ſeveral periods, in which the riſe of rent is to take place; leaving it in the option of the tenant at every period or breach to relinquiſh or abide by his poſſeſſion, as he finds this eſtimate correſponding to, or falling below the ſituation of the times. When breaches of a leaſe are adopted, the option is generally on the other ſide; which is the next thing to no leaſe at all, and operates immediatly againſt the farm and ultimately againſt the proprietor.

A wiſe and humane landlord ſuits the duration of his leaſes to the ſtate of his *lands* and to the *induſtry* of the tenantry: Allowing the induſtrious man a reaſonable time to indemnify himſelf, for the expence of his own improvements, before the expiration of his contract. Perhaps he ought to make diſtinctions amongſt his tenants,—not a diſtinction ariſing from

from the flattery or fawning or other low arts which individuals amongſt them may employ as engines to work upon his vanity, nor a diſtinction made by influence they may bring upon him, from perſons who poſſeſs his ear, in order to ſhake his ſteadineſs; but a diſtinction regulated uniformly by the induſtry and integrity and the other qualities, which diſtinguiſh a good farmer and mark his character as meriting the countenance of his landlord, and the eſteem of the public.

Were the farmers on an eſtate, who thus diſtinguiſh themſelves from the common herd of tenants, to be rewarded with leaſes of an endurance, double to the common term of years adopted for the generality of the property, this would be ſuch a powerful ſtimulus to their neighbours as would excite them to emulation, and be productive of the beſt conſequences to themſelves, to the proprietors, and to the community. This ſyſtem requires acute diſcernment, profound prudence, and inflexible impartiality, to enſure ſucceſs; but where theſe are united, and are aided by perſeverance, they will infallibly produce the deſired effect. Every method ought to be tried to rouſe the farmers to activity: but without encouragement, they will not, they cannot be rouſed. Without encouragement languor ſeizes their minds, their ſpirit is fled, and deadneſs enervates their active powers.

In many diſtricts of this county the farmers deſerve to be encouraged; and in ſome inſtances of almoſt every diſtrict, certain individuals aſpire to diſtinguiſh themſelves. Why ought not this boon be held out to animate their exertions? They ought to be cheriſhed, for their own ſake, and for the ſake of the commonwealth. They are the pillars of the ſtate. On them reſt the fabric of our proſperity. Our commerce

commerce may be crippled. Our manufactures may decay; but our improved ſoil is a permanent treaſure, which ſpreads its riches among all claſſes of men, from the higheſt to the loweſt orders of ſociety.

A traveller, who makes even a tranſient excurſion through this or any other county, can be at no loſs to underſtand from the appearance of different eſtates, where the landlords give encouragement to their tenants, and where the tenants avail themſelves of this encouragement; neither I, nor any other perſon needs to point them out; they point out themſelves. For no demonſtration in mathematics follows with more certainty from the premiſſes, than that a neglected ſoil is demonſtrative of ſomething highly ſhameful in the perſons who poſſeſs it; and that an improved ſoil is an evidence of the good ſenſe of the landlord, and of the ſpirited induſtry of the tenants.

7. *Diſtance from Manure.* The diſtance in ſome parts of the county from lime and other ſtimulating manures is an obſtacle to improvement, which cannot eaſily be removed *. This inconvenience is owing to the local ſituation of different places: but the other obſtructions are entirely occaſioned by men, who neither ſtudy their own intereſt, nor that of their country.

There is, however, ſuch an abundant quantity of marle, near thoſe places which are moſt remote from lime, and ſome of theſe treaſures ſtill unopened, that if the one be diſtant, the other is at hand. When the roads are improved, of which there is ſo near a proſpect, from our two principal

* But if ſtimulating manures be uſed in ſmall quantities, at top-dreſſing, which is the ſafeſt and beſt method, good middling crops may be obtained at a moderate expence. *Sir William Murray of Auchtertyre.*

principal lime-markets, into the heart of the country, the journey will be more eaſy and the horſes thereby enabled to carry a greater load: And if any method ſhall be deviſed on an economical plan, of pounding raw lime ſtone for the uſe of the more inland diſtricts, this additional manure will compenſate the want of calcined lime.

8. *Commons.* The moſt noted commons in the county of Perth, have been already pointed out in the chapter upon waſtes. Oglegirt moor, near the bridge of Teath, has been divided and moſtly incloſed, ſince the ſurvey of 1793 has been in the hands of the public. The moor of Culroſs, which conſiſts of eighty or one hundred acres, is not divided, and no plan of diviſion adopted. There is another common near Muckart, at the ſouth entrance of Glendevon, which is called Common Edge, and conſiſts of 700 or 800 acres, on which the farms of that place have a joint right of paſturage. But as it is too valuable to be planted, and too high to be made arable, and the expence of incloſing every ſeparate ſhare is ſaved to a number of ſmall feuars, who are the proprietors, the proſpect of its being divided is diſtant and not very neceſſary *.

Some other hindrances to the improvement of the country might be pointed out; ſuch as looſe and vague contracts betwixt landlord and tenant, which is a ſource of frequent and vexatious litigation: A deſire which ſome proprietors cheriſh of keeping their tenants in conſtant dependence:

An

* In this liſt of obſtacles to improvement, the payment of tithe is not noticed. *Query*, Is the county of Perth tithe-free, or does the author think tithe no impediment to the improvement of poor waſte lands? *aliquis Ignotus*. *Anſ.* The exaction of tithe in kind is certainly an impediment, but it could not with propriety be included in the ſurvey of any county in Scotland, becauſe there is no tithe payable in the ſame manner as in England.

An undue advantage, which ſome tenants are watching, to take of any inadvertencies of their landlords, which breeds jealouſies and leads to rooted averſion: Racked rents, which not only diſable the tenant to improve, but urge him on the contrary to ſcourge the ground annually, to enable him to keep his day of payment: Forgetfulneſs of promiſes on either ſide, which begets diſtruſt: The rooted averſion of ſome among the tenantry to follow new modes of culture, which they account unmeaning innovations: The poverty of others, which criples their operations: The uſe of clumſy and cheap implements of huſbandry, which retards labour, and renders it unworkman-like, after it is performed: Employing horſes unfit for the work, and in ſome caſes too few, in others too many: Neglect of the proper ſeaſon of ſowing, reaping, or ingathering: A bad ſelection of ſtock in ſheep or in cattle: Want of care in chooſing proper ſeed. Theſe, and other obſtacles, have been occaſionally animadverted upon, in the preceding part of this report; therefore it is not neceſſary to reſume the diſcuſſion of them in this place.

CHAP. XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I. *Societies.*

THERE was a ſociety for the improvement of agriculture at Dumblane, at a very early period of this century, which continued to flouriſh for twenty years; and did much good, while

while it ſubſiſted. At preſent there is an agricultural ſociety in Strathearn, which meets twice at Perth, and once at Crieff, every year. Moſt of the gentlemen of that country and ſome of the moſt intelligent farmers are members. They diſtribute rewards for certain kinds of improvement. At Doune there is a ſmall ſociety of gentlemen from that neighbourhood, who meet occaſionally to compare notes and to converſe together on agricultural ſubjects. A ſociety for the improvement of agriculture has been eſtabliſhed ſome time ago at Blairgowrie, in the diſtrict of the Stormont, compoſed of ſome of the moſt intelligent gentlemen farmers in that country, who have joined a diſtinguiſhed knowledge in the cultivation of the ground, to eminence in the liberal profeſſions of life*.

SECT. II. *Weights and Meaſures.*

MUCH confuſion hath ariſen to the public, much chicane has been uſed by the artful, much loſs ſuſtained by the ignorant, and many law-ſuits have taken their riſe, from the diverſity of weights and meaſures, in different counties, and in different diſtricts of the ſame county. Many calculations and propoſals have been made, and many books have been written on this ſubject, by men of profound reſearch, and yet the embarraſſment does not ſeem to be leſſened. Without pretending to be any wiſer than other people, every perſon is at liberty, when the public good is concerned, not only to entertain his own opinion, but to propoſe it with deference and reſpect. Why have we a predilection for one weight or for one meaſure, more than for another? There was a time, when none of them exiſted: when all things

were

* Upwards of 50 gentlemen and farmers have eſtabliſhed a Farming Club at Callander ſince this report was in the hands of the Board.

were bought and ſold by barter: and none of them has more intrinſic excellence than another. The firſt weight known in this country was a rude ſtone from the brook, as the name ſtill imports. Let us cut the knot unleſs we can looſe it.

If it is ſtill found to be impoſſible to agree about eſtabliſhing ſome one of the various weights we have, as a ſtandard for the whole nation, and for all commodities which are ſold by weight, why may not a committee of the ſupreme council of the nation take a ſtone from the brook, and have it enacted that this ſtone ſhall be an ounce or a pound weight, according to its ſize? If it is called a pound, let ſixteen parts of it be ſo many ounces, and ſo downwards to other denominations; and ſixteen times the original weight added together be called a ſtone weight, and ſo upwards to hundred weights, &c. Perhaps it would be more proper to adopt ſome known weight and meaſure, and to aboliſh all the reſt: and although none of them has any claim to a preference, if it ſhall ſeem meet to the legiſlature, I ſee no good reaſon, why avoirdupois weight and the Wincheſter buſhel, which at preſent are very much in uſe, ſhould not be made the ſtandard.

It is with pleaſure, that the public have beheld the ardor, with which ſome counties have taken up this meaſure of late; and there is little doubt, that the good ſenſe, and the deſire of promoting fairneſs and juſtice between man and man, in ſome of the moſt important tranſactions of life, will induce all counties and burghs, and every community in the kingdom, to join in an application to Parliament to eſtabliſh this uniformity: and when the preſſure of foreign affairs will allow leiſure to turn their attention to matters of a minuter nature, relative to internal police, great hopes are entertained

ed that Parliament will liſten to the application, and carry the meaſure into effect.

The only objections, to which this propoſal ſeems liable, are two. 1ſt, That it will be difficult thereby to aſcertain the value of ſome of the more precious commodities, which are commonly eſtimated by ſmall weights. The diviſions or fractional parts of the new weight, may be as minute as theſe of any of the old weights; and in a ſhort time, every perſon concerned in theſe will calculate the difference betwixt the former weight and the new ſtandard, ſo that every commodity from wool to ſaffron, and from lead to gold, ſhall come to its proper level, and to its real price. 2dly, That theſe proprietors who are in uſe to receive payments from their tenants, vaſſals, or feuars, in commodities, by different weights, will be puzzled how to aſcertain, by the new ſtandard, the exact quantity of theſe commodities ſtipulated in their contracts. To remedy this inconvenience, let proportions be fixed betwixt the new ſtandard and the various old weights and meaſures now in uſe; let a table of theſe be publiſhed by authority: and by the ſmalleſt attention to theſe proportions, all the difficulties on this ſubject may be eaſily overcome, even in the firſt inſtance. After a few calculations they will totally diſappear. In ſome ſuch way as that mentioned above, it does not ſeem to be very difficult to have this matter adjuſted; and, under the ſanction of the Board of Agriculture, with the concurrence of ſo many reſpectable counties, there is little doubt that all difference of opinion may be accommodated, and a meaſure ſo evidently calculated for the public good, finally prevail. That it ſhould now miſgive, will be no leſs ſurpriſing, than that it has never hitherto been attempted.

SECT. III. *All commodities, which are not liquid, ought to be ſold by weight, not by meaſure.*

THERE is a matter of equal difficulty, and of equal importance with the former, which may naturally come under the conſideration of the Board; and it gives pleaſure to every well-wiſher of his country to ſee ſo many counties reſolving to apply for a law, ordaining that every commodity, which is not liquid, ſhould be ſold by weight alone, and never by meaſure. This was ſtrenuouſly recommended in the report, which I had the honour to write in 1793; and I wiſh ſtill to call the attention of the public to an object of ſuch national utility. In vain ſhall the Board of Agriculture, or others recommend the ſowing of plump heavy grain, and the cultivation of the ſoil to enable the earth to produce ſuch grain, ſo long as corn is ſold, not according to its real value, but according to its bulk; not according to its weight, but according to meaſure. At preſent all kinds of grain are generally ſold by meaſures of capacity alone; but the quality of grain is ſo various in different provinces, and almoſt in every different farm, by reaſon of the thickneſs of the huſk and the ſmallneſs of the kernel, that this mode of ſale is ſo extremely fallacious, that the moſt diſcerning may be impoſed upon. Whereas, if it were enacted that all grain were to be ſold by weight only, the impoſition upon the lieges would be leſs frequent, and the farmers more attentive to the quality of their grain.

It is recommended by the Board to take notice, in theſe reports, of any practice which prevails in one county, that might be profitably introduced into another. May we not alſo mention what is done by other nations, that ought to

be

be adopted in our own. I have the beſt authority* for ſaying that the Chineſe ſell not only their butcher-meat, whether dead or alive, but all their grain, their roots, and every other commodity not liquid, even the very pot herbs they uſe, not by meaſure, but by weight. Let us learn a leſſon from that ingenious people; and become wiſer, by their example.

SECT. IV. *The genius of the people in the county of Perth.*

THE people of this county ſeem in general to have a ſpirit for improvement; but it muſt be acknowledged, that it is greater in ſome places than in others. The highlands in general are behind moſt of the diſtricts in the lowland provinces in the knowledge of farming. That country is leſs adapted to an arable ſyſtem. The principal attention of the inhabitants is directed more to their cattle and their flocks, than to agriculture. Their intercourſe with the beſt improved parts of the lowlands is leſs frequent, owing to the difference of their language, the difference of their dreſs, the difference of their manners and habits of life. The progreſs of cultivation likeways is naturally weſtward. The acuteneſs of the people has nevertheleſs, in a great meaſure, ſurmounted theſe difficulties; and in many inſtances their ground is cultivated in the higheſt ſtyle of farming, that can be adapted to their climate and ſoil. Their genius, like their ſoil, is more eaſily ſtimulated than their neighbours on the eaſt and ſouth.

Over all the county, when the heritors improve upon an economical plan, which the farmers ſee to be within the reach of their circumſtances; when they are at pains to convince

* Robert Fairful, Eſq; of Struie, late captain of the Minerva, Eaſt Indiaman, who was often in China.

vince them, that it is their intereſt to adopt a new ſyſtem and the balance is fairly on the ſide of profit; when one of their neighbours, a perſon of the ſame claſs with themſelves, is making rich by improving his farm; all theſe cannot fail to be a powerful incitement to the farmers in the neighbourhood. If the land is incloſed to their hand, and no drudging ſervices exacted; if additional manure is eaſily commanded, and good examples every day before their eyes, their emulation will do the reſt. The principle of imitation allures them; their avarice ſtimulates them; the cravings of luxury, the love of ſhow, and the deſire of the comforts of life, ſolicit them; their ambition to be independent kindles their pride; and their envy itſelf lends its aid, to rouſe them to improve their lands.

Agriculture, however, is a progreſſive thing; and its progreſs depends on a variety of cauſes. If the people are poor, if they are ignorant, if their farms are too ſmall, if their rent be exceſſive, if they are oppreſſed, if proper examples are wanting, if they are deprived of the fruits of their induſtry by want of leaſes, illegal exactions or other ſiniſter means, they are neither able nor willing to do juſtice to their farms nor to themſelves. They never will improve.

Sect. V. *Vermin.*

EAGLES frequently carry off lambs in their talons to feed their young, which they hatch in the moſt inacceſſible rocks of the Grampian mountains; but by the vigilance of the ſhepherds, they are much reduced in their numbers. The crow is alſo a foe to ſheep, when entangled in briers, and to their young when found ſtraggling from their dams, by reaſon of weakneſs or cold. He picks out their eyes and afterwards feeds on the carcaſe.

Not-

Notwithſtanding the economy of nature in reſtricting all beaſts and birds of prey to a ſmall brood in one ſeaſon, theſe will certainly increaſe in this country, owing to the ſtrictneſs of the law about ſhooting. Nor is it eaſy to deviſe a method, by which ſhepherds might be allowed to ſhoot eagles and crows, without ſuffering them to deſtroy the game and to elude the tax.

The fox-hunters have regular diſtricts of the country committed to their care, from which they levy annual aſſeſſments on the ſeveral farms, according to their contract. This plan is capable of being much improved: and it were a wiſe meaſure, becauſe it would be more effectual, to make the aſſeſſment more moderate; and beſides the aſſeſſment, to pay each of them a ſmall ſum as a reward, for every fox they could kill; and to ſubject them to a ſmall fine for every ſheep or lamb that could be proven to have been killed by a fox, within their diſtrict. If this regulation were adopted, which is very much in the power of their employers, it would be a ſpur to their diligence, beyond any thing that has hitherto been deviſed.

This is ſaid to be the manner in which wolves were extirpated. Government increaſed the reward for killing a wolf, in proportion as the ſpecies became more rare. Might not foxes be extirpated by the ſame regulation?

Means of improvement, and the meaſures calculated for that purpoſe.

IN ſuch a great extent of territory and in ſuch varieties of ſoil and climate as this Survey embraces, it is difficult to compreſs the obſervations that occurr, or to do juſtice to the remarks which have been ſuggeſted by judicious perſons in different parts of the county, within the limits which might

might appear moderate. Brevity is attainable, when the ſurface is ſmall; when a ſameneſs appears in the features of the various diſtricts and a ſimilarity in all their agricultural operations: But when a diverſity prevails, in moſt of theſe reſpects, in the practice and natural ſituation of the different provinces, brevity is unattainable, without being ſuperficial. A train of reaſoning or illuſtrations might be abridged; but facts it is impoſſible to abridge.

The improvement of the kingdom being the ſole object of the Board, whatever has a tendency to promote the main deſign ought not to be ſuppreſſed; and the very deſire of contributing his ſhare to the national proſperity in this view ſhould ſcreen a writer from the charge of being prolix.

Various improvements have been pointed out in the preceeding pages of this report. In giving an account eſpecially of the obſtructions, that have a natural tendency to retard the progreſs of agriculture, the means of removing theſe, which appeared to be moſt practicable and moſt effectual, have alſo been taken notice of.

1. *Emigration.* In order to put a ſtop to emigration two things ſeem to be requiſite. 1ſt, To provide food for the people; and 2dly, To find accommodation for them. The quantity of food will no doubt be increaſed under the auſpices of the Board; and it is not improbable that the wiſdom of parliament may ſoon be exerciſed to deviſe meaſures for bringing back to tillage, the vaſt extent of arable ground, which is at preſent under graſs, and which is daily increaſing. If bread be ſcarce, bread will be dear. When bread is dear, rents will riſe with rapidity. This may be a pleaſing ſpeculation to ſome claſſes of men, unleſs they look forward and weigh the conſequences. But two things muſt follow. Whenever graſs lands that are fit for tillage are taxed,

or ſome other meaſure adopted, to ſubject them again to the plough, grain will become a drug, rents muſt fall with more rapidity than ever they roſe, the farmers will become bankrupt and the landlords muſt finally ſuffer in their income. To crown the diſtreſs, the labouring claſs of mankind had been baniſhed by the dearth of bread, during the progreſs of this ruinous ſyſtem, and neither are hands found to work the land nor mouths to conſume the grain.

Conſidering the ſituation of the Highlands of Scotland, and the ſyſtem that has been purſued there for ſeveral years paſt, unleſs villages, under wiſe regulations, be increaſed in number and in ſize, and married ſervants kept on the arable farms, a train of evils muſt follow: whereas, if maintainance, employment and lodging be provided for the people, their natural attachment to their country and their partiality to their natal ſoil will conſtrain them to ſpend their days where they were born. In the ſheep countries, there are many convenient ſpots, where villages may be eſtabliſhed; and the ſheep ſyſtem may prove hurtful to the population, unleſs this remedy be provided. We have adopted a cant-phraſe, *That things will find their level*, which in ſome caſes is ſtrained and carried too far. It is true with regard to prices, and was at firſt introduced under this acceptation; But with regard to population it is moſt incorrect. John or James may depopulate their farms or their eſtates and lay all their lands under cattle. If they cannot find a market at home, becauſe they meet with none to purchaſe, they can drive their cattle two or three hundred miles till they get their price. But can they with equal eaſe replace the inhabitants, whom they have baniſhed? Hic labor, hoc opus.

There is plenty of wool in the Highlands, to employ the people in ſpinning, plenty of land for potatoes and ſome grain,

abundance of paſture fitted for producing mutton, to feed all the inhabitants, in aid of their grain, enough of timber to erect houſes to lodge them, and inexhauſtible funds of moſs in different places to be fuel. There is more humanity in rendering mankind happy and comfortable, than in driving them from their native home, to wander they know not where; more pleaſure ſurely in rendering them convenient, than in reducing them to miſery; more prudence in keeping artiſts and labourers at hand, for being employed in providing the various neceſſaries which the advanced ſtate of the country and the taſte of the age require, than in purchaſing them at a dear rate and carrying theſe from afar; and certainly there is more patriotiſm in contributing to keep the people in their own country, to fight our battles in the time of need, and defend every thing that is dear to Britons, than in chaſing away the natural guardians of our privileges and independence, to ſeek an aſylum on a foreign ſhore. Muſt Britain be a cruel ſtep-mother to her children? And ſhall the Highland gentlemen, whoſe fathers had a pride in the number of their men, ſhut up their bowels of compaſſion againſt the children of thoſe, who fell by their fathers ſide? Have the anguiſh and the tears of their kindred, and thoſe of their blood no effect in melting their hearts to the tender feelings of compaſſion? And is the bleſſing of him, who is ready to periſh, not worthy of being enjoyed? How different was the conduct even of the Heathens to their tenants*!

It is to be hoped that avarice has not ſwallowed up all the faculties

* Lucium Voluſium aſſeverantem audivi, patris familias feliciſſimum fundum eſſe, qui colonas indigenas haberet, et tanquam in paterna poſſeſſione natas, jam inde a cunabulis longa familiaritate retineret. Columm. l. 1. c. 7.

faculties of their minds nor the tender ſympathetic feelings of their hearts. It is to be hoped they ſtill liſten to the voice of conſcience, to the dictates of humanity and to the authority of religion, and will therefore act towards their tenants, as they would wiſh to be the caſe, were they themſelves the tenants, and their tenants the proprietors.

This report may not reach theſe remote corners, where that national diſtemper rages with increaſing virulence; and although it did, the ſuggeſtions it contains, which may ſeem to militate againſt the emolument of ſome individuals, have a chance of being diſregarded as officious, or branded as the cloudy dreams of a diſtempered imagination. The voice of truth is ſometimes ſo feeble, that it cannot be heard, until it be too late. But it is the buſineſs of Government*, the natural guardians of the ſtate, to watch with a vigilant eye over the national proſperity, to guard againſt national evils, to foreſee danger and to prevent it by ſalutary regulations, to make its voice to be heard over all the empire, its authority to be regarded in every province and ſubmitted to by the moſt remote individual.

It is clear as noon-day, that if the preſent ſyſtem goes on in certain counties, and if villages are not eſtabliſhed in theſe counties to preſerve the population, that recourſe muſt e're long be had, in a certain degree, to mercenary troops for protection; and the hiſtory of the world in all ages loudly proclaims woe to that nation, whoſe defence is entruſted to mercenaries.

2. *Bridewells.* Owing to the defects of our criminal law, by which in a variety of inſtances, perſons are capitally puniſhed for leſs enormous crimes, than thoſe which others

 commit

* See Colonel Robertſon of Struan's Letter on this ſubject in the Appendix, N° 4.

commit with impunity, every poſſible remedy ought to be deviſed, to render the puniſhment adequate to the offence. What compariſon is there between ſtealing a ſheep or a cow, for which the thief is hung, and failing fraudulently for the fourth or the half of a million, for which the bankrupt's name is only publiſhed in the Gazette. The perſon againſt whom the theft was committed, may be in ſuch circumſtances as never once to feel the effects of his loſs: while a hundred families are reduced to beggary and deſpair by the bankruptcy of the other. They may have the additional mortification to ſee him handſomely provided for, out of the ruins of his fortune, while they are without a morſel of bread. The injury to the public is ſurely in proportion to the loſs ſuſtained by the crimes committed. If the law is ſuch, that a bankrupt does not forfeit his life, (for his honour is nothing in his eſtimation) the public have a right to any effects he left unſquandered away, and alſo to the labour of his whole life, unleſs his debts can be paid.

By tranſportation, perſons convicted of crimes relevant to infer only an arbitrary puniſhment, are reſtrained indeed from committing any more mal-practices in their native country, but they make no redreſs to the community for the damage they have already done. The eſtabliſhment of working-houſes in the head-town of every county would do much good in this reſpect, and in ſome degree indemnify the public. The expence of tranſporting felons would be ſaved, and a recompence made for the treſpaſs committed, as far as they have it in their power. Crimes would alſo be leſs frequent; becauſe ſolitary confinement and hard labour are more terrible than the gibbet. Two ſmall adjacent counties might join about one Bridewell; and large counties

ties might have ſeparate eſtabliſhments. The Dunblane diſtrict of Perthſhire might very properly be united to the county of Stirling.

The licentiouſneſs of theſe times requires vigour in the execution of the law; and the civil magiſtrate ought to be ſtrenuouſly ſupported in the diſcharge of his office. Licentious principles uniformly beget licentious practices. When the underſtanding is depraved, the heart will ſoon be contaminated; and when this is the caſe, ſociety is in danger of being torn up by the root, and the wildeſt anarchy to deluge the land. In vain do we improve the ſoil, if the people return to barbariſm. With ſuch awful examples of the depravity of mankind around, let us guard againſt the contagion: let every good ſubject ſtrengthen the police, and think himſelf bound to contribute his mite to preſerve order and ſupport meaſures, which are eſſential to the welfare of his country.

3. *Improvements adapted to the Highlands.* The principles of improvement applicable not only to the highlands of this county, but to the Highlands of Scotland in general, are eſſentially different in various reſpects, from theſe, which ought to be applied to the low lands: and the judgment of the proprietors will no doubt be employed in ſtudying the nature of the country, the temperature of the climate, the genius of their people, and the local ſituation of their reſpective eſtates.

Mr Marſhal has in the paper which he gave in to the Board in 1793, pointed out the peculiar improvements of the Highlands in ſuch a maſterly and impartial manner, that it merits the cloſeſt attention, and ſhall be taken down here almoſt in his own words, and altogether in his own ſentiments.

1. Increaſe the induſtry of the people, by teaching them how

how to make the moſt of their land, and by encouraging them to purſue their own intereſt on rational principles.

2. Permit the preſent inhabitants to remain; and endeavour to perſuade them that it is their intereſt to aſſiſt in the improvement of the country.

3. Uſe every mean of ſupplying by induſtry the natural defects of the climate.

4. Reclaim the ſoil from its preſent ſtate of rudeneſs and endeavour to render every part productive, by a judicious application of the culture, ſuited to its peculiar circumſtances.

5. Adapt the productions, whether animal or vegetable, to the ſoil, to the climate, to the number and to the neceſſities (or if you will to the comfort) of the people, and alſo to the emolument of the proprietors; without which no country can be improved. He explains each of theſe heads.

1. The great difficulty of introducing improvements in agriculture among men prejudiced in favour of ancient practices, is that of ſetting them examples, in ſuch a way, as to convince them, that certain profit accrues, to *men of their own claſs*, from the alteration. The improvements of men of fortune, though ever ſo great and evident, are paſſed over as matters, in which they have no concern.

Upon the *large* Highland eſtates, which are divided into officiaries, or upon any eſtate of *leſs* extent, make choice of a ground officer for the former, and of the moſt intelligent perſon among the tenants for the latter. No matter who is choſen, nor where he is found, nor what reaſonable encouragement he may require, provided he has the ability and the inclination to ſet the requiſite example before his neighbours. Set out a farm for him in the centre of his diſtrict, ſuitable to the nature of the improvements to be introduced;

duced; and whatever new is to be tried, furniſh him with the means of executing the deſign. If an improvement in the breed of ſtock, provide him with a male, and perhaps with females, of the beſt quality. If a new ſpecies or variety of crop, a new implement, or operation be thought fit to be tried, confide the trial to him: and if it ſucceed, let him ſhow the reſult to his neighbours and inſtruct them, if deſired, in the due culture, performance or uſe of it. Thus from the centre of each diſtrict in any eſtate, the rays of improvement would expand through the whole; an emulation among the tenants would give each attempt a fair opportunity of ſucceſs; and by their joint efforts, even the largeſt eſtate might be rapidly improved.

2. The queſtion, which has been agitated, whether the Highlands ſhould be inhabited by the *human race* or by *ſheep*, can have no ſufficient ground, until the country be rendered fully productive and fit for the ſupport of either. At preſent, no part is fully improved; and many places are in the ſame ſtate of wildneſs, in which nature has left them: and certainly the proper time of retrieving them from a ſtate ſo diſgraceful to a civilized nation, is while there are *people in the Highlands*: for ſhould they once be depopulated, it might be found difficult to re-people them. The preſent race of inhabitants, like all others, have an extraordinary attachment to their *native* ſoil, and by their habits of life, they are fitted for their ſituation; but theſe are habits which cannot ſoon be acquired, and attachments which cannot be eaſily formed by ſtrangers, whom it may be found difficult to induce, without exceſſive encouragement, to take up their abode hereafter in a depopulated, neglected, mountainous country. Hence to depopulate that country, in its preſent ſtate, would not only be cruel, but impolitic.

3. The

3. The natural defects of the climate of the Highlands are, the ſeverity of winter, the backwardneſs of ſpring, and the lateneſs of harveſt.

Soften the rigour of winter, by ſheltering the lower farms with ſkreen-plantations, and by dividing them into ſmall incloſures with well trained hedges. Protect the wintering grounds of the ſheep farms, by ſimilar plantations; raiſing furze, broom, juniper or other ever-green ſhrubs, within the ſhelter of thoſe plantations; and keep the more expoſed parts of the wintering grounds in a full bite of herbage, previous to the approach of winter.

The ſame precautions will tend to guard againſt the backwardneſs of ſpring; which, on arable farms, and by the help of modern huſbandry, might be in a great meaſure counteracted. On theſe farms cultivate the early graſſes and legumenous plants. By turnips, rape, cabbagges, and potatoes, the ſeverities of winter and the backwardneſs of ſpring would be equally guarded againſt: as the lateneſs of harveſt might, by keeping the land in a high ſtate of cultivation; thus preparing it for early ſowing, by which the diſadvantage might be leſſened or the evil removed.

The intrinſic quality of the ſoil in the vallies is almoſt invariably good. The improvements requiſite are freeing the ſurface from obſtructions and the ſoil from too much moiſture, in particular places. The ſtones which have in former ages, been gathered off the land, to remove its ruggedneſs and enable the plough to enter, are in many inſtances thrown together in heaps, without regard to the form or regularity of the plots thus cleared.

It is not meant that the rugged ſurfaces of the Highland vallies ought to be, or can be cleared and levelled in ſuch a manner as to render it practicable, in all caſes, to lay them

out

out in large ſquare incloſures or with regular ſtraight fences. But were the operations of fencing and under-draining to be carried on, with thoſe of clearing obſtructions from the ſurface, it is evident that the preſent fields might be greatly enlarged, and their out-lines rendered infinitely more regular and better adapted to the purpoſes of tillage or hay or paſture.

5. While the country underwent the work of reclaim, the requiſite productions would be in a great meaſure drawn from the ſoil. It may nevertheleſs be right to conſider, whether in the end, the Highlands, like the Cheviot-hills, ſhould be wholly ſheep-paſture. The Highlands and the Cheviot-hills are very different productions of nature. The Cheviots are a congeries of tall hillocks, without regular vallies and with little or no bottom-lands between them. The Highlands, on the contrary, are formed of long ridges of mountains interſected by extended vallies, and ſome of them of conſiderable width, which contain lands, well fitted by ſoil and ſituation for arable ground, of the firſt quality: and even ſuppoſing a general plan of ſheep-farming to be practicable, it would be perhaps a more profitable mode of occupation, to keep ſome of theſe lands under a courſe of cultivation.

Nevertheleſs let us examine the propriety and even the practicability of converting the entire Highlands of Scotland into ſheep farms. Where could be found a market for ſuch myriads of ſheep, as the whole Highlands would produce? Hitherto the demand has been greater than the produce; and muſt continue ſo, *until the country be ſtocked.* Young ſheep now travel northward from the central Highlands and from the ſouth of Scotland; but whenever the rage of ſtocking ceaſes, (though it may happen before the High-

lands be completely ſtocked,) ſheep of every age will, in the ordinary courſe of things, return in millions; and by overflowing the central and ſouthern markets will produce ſuch a glut as to create a ſtagnation of ſale: and therefore, unleſs ſome new market could be opened in England (which may or may not be the caſe) the Highlands would be under the neceſſity of returning to the corn and cattle ſyſtem, or, for want of inhabitants to carry it on, would lie waſte until a new race of natives could be reared, or a new people introduced.

On the other hand, the joint productions of *corn*, *cattle* and *ſheep*, appear moſt likely to give permanency and certainty to the proſperity of the country; the proportion of each being regulated by local circumſtances.

It remains to be conſidered, how far, in the preſent ſituation of things, ſheep-farming is admiſſible into the Highlands, and what is the deſcription of land which ought to be appropriated to that ſyſtem.

The culturable parts of the vallies are beſt adapted for cattle and corn; the hills for the ſummer paſture of ſheep, which however require the ſhelter of the vallies in winter. The hills are alſo valuable for rearing young cattle in the ſummer ſeaſon. Again, the brea-faces, or ſteeps on the ſides of the vallies, are better fitted for ſheep than cattle whoſe tread not only deſtroys the herbage, but by breaking the ſoil, renders it more liable to be waſhed away by heavy rains. The ſwells within theſe ſlopes of the vallies are not ſo readily buried under ſnow, and when ſlightly covered by it, are more eaſily laid bare by the ſcraping of the ſheep, than level ſurfaces; and therefore appear to be ſingularly adapted, as wintering grounds for that ſpecies of ſtock*.

Hence

* Nature ſeems to have intended the hills for the ſummer paſture of

Hence we may fairly conclude, that as many young cattle as are bred in the vallies, ſhould be on the hills in ſummer; and that ſo much of the hill-paſture, as is not required for them, ſhould be ſtocked with ſheep, which, in their turn, ought to be allowed as much of the glenheads, breas, and foot of the hills, as will ſupport them during the ſeverity of the winter and ſpring months: thus rendering the hills and the vallies, as perhaps they ever ought to be, ſerviceable to each other. In the narrow glens, and at the extremity of all glens, the extent of culturable ſurface is ſmall in proportion to the breas and hill-lands; for that reaſon, in ſuch places, the proportion of ſheep ſhould be greater, that of cattle leſs; but in the ſtraths, and on the broad margin of lakes, where plenty of provender can be raiſed, the ſyſtem ought to be reverſed; and cattle ought to be more, the ſheep leſs numerous.

By thus adapting the productions to the circumſtances of the country, and by laying out eſtates in ſuch a manner, as to keep the different ſpecies, as well as the individual farms, diſtinct from each other, every tenant would be kept to his own particular employment, and be the more enabled to do juſtice to the charge he may have undertaken. (P. 51 &c.)

of ſheep, by reaſon of the fineneſs of the graſs which grows generally there, and the foot of the hills for their winter feeding by reaſon of the coarſeneſs of the graſs found in ſuch ſituations, owing to the ſoftneſs of the ground. *Mr Buchanan of Strathyre.*

4. *Fiars* of the county of Perth from 1780 to 1796. Extracted from the county records by Mr James Paton; and the prices ſtated in Scots money per boll, which is to Sterling money in the proportion of 1 to 12.

Crops & years.	Wheat, beſt ſort.	Wheat, 2d. ſort.	Bear, beſt ſort.	Bear, 2d. ſort.	Oats, beſt ſort.	Oats, 2d. ſort.	Peaſe.	Rye.	Meal by weight	Meal by meaſure.
	L. *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*	*L.* *s.*
1780	12 —	11 8	6 18	6 6	6 6	5 14	6 —	6 —	8 —	8 12
1781	12 —	11 2	6 18	6 6	6 18	6 —	6 —	6 —	7 10	7 —
1782	14 14	13 4	11 14	10 16	8 2	7 4	11 8	11 —	11 4	12 —
1783	12 —	11 2	10 4	9 —	9 —	7 16	8 8	8 2	9 12	10 —
1784	12 6	10 16	9 12	8 8	7 16	6 18	7 10	7 16	8 16	9 6
1785	12 3	11 2	9 —	8 —	7 4	6 —	6 12	6 12	8 8	9 —
1786	11 14	11 2	9 6	8 8	8 5	7 1	8 8	8 8	9 3	9 6
1787	12 12	11 14	8 8	7 10	7 16	6 18	6 12	7 16	8 8	8 18
1788	12 18	12 —	7 4	6 —	6 9	5 8	5 8	5 8	6 18	6 12
1789	14 8	12 1[illegible]	9 12	8 8	8 2	6 6	7 4	7 4	8 8	8 14
1790	13 13	12 1[illegible]	9 —	8 —	7 16	6 9	7 4	7 4	8 16	9 2
1791	12 12	11 14	10 12	9 8	8 8	7 4	7 10	7 10	9 —	9 6
1792	12 12	11 14	11 8	10 13	7 16	6 6	9 —	9 —	10 8	10 16
1793	14 8	13 10	9 12	8 14	8 17	7 19	8 —	8 —	9 12	10 —
1794	15 —	14 2	12 12	11 8	9 12	8 2	9 18	9 12	9 12	10 —
1795	28 19	27 —	13 10	12 14	10 16	8 8	11 8	11 8	13 12	14 2
1796	14 14	13 4	12 —	10 16	9 6	8 24	9 —	9 —	9 18	10 6

The fiars of this county are ſettled annually, in the ſame manner as in other counties, by a jury of traders in grain. This mode of ſtriking the fiars, (as it is called), ſeems to be improper, becauſe the perſons examined as to the prices of grain, may all have an intereſt preponderating one way, being themſelves dealers in the article, of which they fix the price; whereas were only one third of that jury corn-merchants, another third actual farming gentlemen, and the other third farmers who pay 100l. or upwards of yearly rent, every claſs of the community would be repreſented in theſe meetings, every intereſt would be attended to, and every objection ſtated and conſidered: ſo that there was every chance,

chance, that the judgment given, would reſt on the broad baſis of the general good of the whole county. The ſheriff ſhould continue as at preſent to be chairman of the jury, be umpire in caſe of equality of votes, and have the power of judging of any objection that may be brought forward againſt any of the members as a dealer in grain, which might diſqualify him for holding a ſeat at the meeting. The time of ſettling theſe average-prices ſeems alſo to be capable of improvement. Candlemas is too early: becauſe a ſmall proportion only is by that time brought to market, and even that ſmall part of the crop which is thraſhed out and brought forward is neceſſarily green and under value. A fair eſtimate can hardly be made of any crop before the end of March or perhaps Whitſunday.

Deciſions are given frequently in courts of law, reſpecting the prices of grain, many contracts are entered into, and much meal and corn is ſold, with a reference to the fiars: and there can hardly be a retroſpective rule of equal publicity or of equal authority deviſed, or more proper for regulating theſe tranſactions; therefore too much circumſpection cannot be uſed in the mode of eſtabliſhing them, as the medium prices of every kind of grain for the reſpective years to which they refer.

5. *Thorns and Trees to Tenants.* When a tenant wants thorns for incloſing his farm, it would be proper, that they were furniſhed by the proprietor. For this purpoſe, a ſmall patch of ground, adjoining to every gentleman's garden, or in ſome convenient place near his manſion, might be kept for nurſing thorns, and timber-plants, under the inſpection of his gardener. In order that the good intention of the proprietor might not be fruſtrated, the tenant ſhould grant a receipt for the thorns, ſpecifying their value, and become bound

bound to refund the price, if the hedge be neglected; but if the hedge is reared into a proper fence, no price ſhould be exacted. Or perhaps it would be more proper, that the heritor, if there be much to do, ſhould be at the whole expence of the fence in the firſt inſtance, and that the hedge ſhould be afterwards reared and maintained at the mutual expence of landlord and tenant. This is likely to be the moſt effectual way of preſerving fences in good order, whether they be thorns or ſtone walls.

In addition to this ſcheme, if the proprietor were alſo to have a nurſery of foreſt trees, ſuitable to the different ſoils of his eſtate, and moſt uſeful for making the implements of huſbandry and the houſes of his tenants, they might be allowed (leave being aſked and given) to cut down a tree, at the ſight of the forreſter or ground officer, which was neceſſary for their purpoſes, upon planting a certain number along the fences or in other proper places, having them always under their care and at their riſk, till out of the reach of cattle; but if the plants were deſtroyed, the tenants to be bound to pay the full value of the tree or trees cut, and of the plants deſtroyed.

The landlord in this manner could provide plants at little expence, the tenants would get timber without paying for it; and in a ſhort time, the eſtate would be furniſhed with wood of different kinds, ſo far as it was thought proper. The complaints againſt the nakedneſs of our country would be ſilenced, and our climate would be rendered as temperate, as it was poſſible for planting to accompliſh.—The chance of the failure both of thorns and trees would be leſs, when taken from a nurſery near the place where they are to ſtand, than when they are brought at a diſtance, from the warm nurſeries and the rich ſoil, contiguous to great towns.

6. *In-*

6. *Inconvenience to Farmers.*—Farmers are expoſed by the exiſting corn laws, to one inconvenience, peculiar to their profeſſion, which affects not the buſineſs of any other claſs of men. Every manufacturer, every tradeſman, every vender of the produce of his own labour, except the farmer, enjoys the right of ſupplying the home-market with the commodities, which he offers for ſale, and is protected in the privilege of receiving gain from his induſtry. But whenever the badneſs of the ſeaſon and the ſcantineſs of the crop, which ought, in fairneſs, to be felt by the whole nation, affects the farmer's reſources, the ports are thrown open; and inſtead of enjoying the excluſive profit of his own commodity, when he may ſtand moſt in need of it, his gain is ſnatched from him, by perſons, who ſpeculate in importing foreign grain from countries, which, by paying lighter taxes, can afford to underſell the Britiſh farmer.

Under the article *Proviſions*, I ventured to make ſome remarks on the corn-law; and propoſed, with diffidence, ſome amendment on that delicate ſubject. Were the ports to be opened and ſhut gradually for exportation and importation, under certain reſtrictions there taken notice of, it is hoped that the price of grain would be leſs fluctuating, that the price of labour would riſe more ſlowly, and that the farmers of this country would reap the fruits of their induſtry more fairly, than is poſſible for them by the preſent unſettledneſs in the value of grain and the capriciouſneſs of the markets.

7. *New Canals.* A plan was propoſed near thirty years ago, to make the Forth navigable, between the Cruives of Craigforth and the bridge of Gartmore, partly by following the courſe of the river, and partly by a canal. An engineer gave in a plan and eſtimate both of the canal along this tract

of

of the Forth, and alſo of the lower part of the Devon, to the Board of Police, when that board exiſted. The fall of the Forth is twenty feet in that diſtance, and the navigation twenty miles long. The navigation in the Devon is ſhorter, and the fall leſs. Unleſs this plan were adopted, it was at the ſame time propoſed, to carry on a cut through the interior part of Monteath, by the water of Goodie, which in ſeven miles, falls only five feet, and is already cut at a proper breadth, in ſtraight lines, through a conſiderable part of its courſe.

From the improved ſtate of that country, and the ardor of the farmers to improve it farther, there is not the ſmalleſt doubt (whatever might have been the caſe at the time alluded to) that the tonnage, which would willingly be paid, at preſent, for coals and lime and other articles imported from Stirling, and the exportation of grain and other commodities carried down to enter the great canal, below Falkirk, would bring a high dividend on the ſhares of the money ſunk, which on both theſe canals was eſtimated at no more than £ 5830.

A Canal might be made a great way up the tract of the Earn from the Rhind where it meets the Tay. A Canal might be made along the Pow, which is very ſimilar to the Goodie, between Crieff and Perth; and a fine country, which is very diſtant from lime and coals, would be rapidly improved by facilitating the conveyance of articles, which are ſo eſſential to all improvements, from the port of Perth. I underſtand that ſome years ago, a ſurvey was propoſed to be made of a canal in this direction, not only as far as Crieff, but to the eaſt end of Lochearn: by which means raw Limeſtone might eaſily find its way into the very heart of Strathearn, from a quarry, which is inexhauſtible. One might gratify

gratify his benevolence, anticipate the operations of future ages and amuſe the fertility of a ſanguine imagination, by pointing out the practicability of making other canals, in various parts of the county; but theſe flights of fancy muſt be reſtrained. What is evidently practicable and highly conducive to the proſperity of the country muſt alone be propoſed; which has all along been adhered to, in this report, according to the beſt of my judgment; and no indulgence given to theoretical ſchemes or airy ſpeculations. No other canals can at any time be equally advantageous to the county of Perth, with thoſe mentioned, becauſe they communicate with the ſea and reach the tide way; which few or none elſe can.

8. *Correſponding Societies.* To promote the views of the board of agriculture and render their exertions for the cultivation of the country more ſucceſsful, they might requeſt the gentlemen of moſt public ſpirit, in each province or county, to eſtabliſh farming ſocieties; one half of the members to be heritors, who are improving or deſirous to improve their eſtates, and the other half the moſt enterpriſing of the tenants. To induce the tenants to attend, the expence ought to be moderate. Their meetings might be held four times in the year, and all their tranſactions recorded by a ſecretary, who would report the ſubſtance thereof annually to the Board. A few ſubjects or queries might be propoſed by the Board to the different ſocieties, ſuited to the nature of their diſtrict, ſo that they would have the collective opinion of the beſt farmers in the nation, on any difficult point, before them, at one time. The general tenor of the buſineſs and enquiries of theſe ſocieties might be left with propriety to their own choice. The Board would repay the good offices of theſe correſponding ſocieties, by ſolving the difficulties,

which would occur to them, in the management of rural affairs. Theſe ſocieties, being properly conſtituted and regulated with prudence, would, like the planets in their ſeveral orbits and at their reſpective diſtances, reflect on the world, that light, which deſcended for the benefit of men, from the fountain of agricultural illumination. The preſent profeſſor of agriculture in the univerſity of Edinburgh would not decline, it is preſumed, to eſtabliſh one, for an example to his ſucceſſors and for the good of his country.

If at any future period, the diſpoſal of the public money ſhould devolve upon perſons, who were indifferent about the progreſs of improvements, and grudged the ſmall ſalary of the Board; it might experience a powerful ſupport, even in its pecuniary reſources, from the collective body of its friends, aſſociated in this manner, who wiſhed well to the Board, as a channel of promoting the national proſperity.

The firſt dawn of improvement in this country, and probably in all others, was owing to ſocieties of this nature, compoſed of enlightened and patriotic noblemen and gentlemen.

Luminaries of the ſame kind, which at firſt did ſhed the rays of agricultural knowledge on this part of the world, can alone bring it to its meridian ſplendor. The efforts of individuals are like ſo many detached tapers; but collected into one, they ſpread a blaze of irreſiſtible light around them. The benefit ariſing from inſtitutions of this nature are ſo perſpicuous and of ſuch magnitude, that they muſt occur to every reader, without being pointed out.

9. *Dogs.* Uſeleſs dogs are the greateſt nuiſance that can be imagined; and for ſome years canine madneſs has produced ſo many lamentable effects, that a remedy is loudly called for. If every dog were taxed at the rate of three or five ſhillings yearly, thoſe which are uſeleſs would ſoon diſappear,

appear, and thoſe which are valuable could afford to pay the tax. The dogs in moſt, if not in all counties of this part of the kingdom, conſume more food than would ſuffice to maintain all the poor within their bounds; and many perſons keep dogs, who are themſelves ſupported at the expence of the public.

A tax has lately been laid upon the dogs of a certain deſcription of perſons, but the tax does not appear to be ſufficiently general. The very dogs are excepted, which ought eſpecially to be included. By the preſent limitations of the act, the tax can produce very little revenue, next to nothing; but if it had extended to all dogs without exception, the revenue would have been conſiderable, while at the ſame time, tinkers, gipſies and ſturdy beggars, would keep no dogs to annoy the families where they aſk alms.

The tax laid upon watches and clocks in the laſt ſeſſion of parliament is exactly in the ſame predicament, and liable to the very ſame objections. There ought to have been no exceptions in the one caſe or in the other. Both are luxuries; and ſuch articles are the moſt proper objects of taxation. The neceſſaries of life, eſpecially ſuch as affect the lower claſſes of the community ought to be treated with a tenderneſs which humanity dictates; but ſuperfluities ought to pay well, becauſe every perſon who uſes them, can either afford to pay for them, or has it in his option, to decline their uſe.

10. *Public Burdens.* It was formerly remarked that a number of diſtinct ſmall ſums, laid on a tenant in his leaſe beſides the landlords rent, galls him beyond meaſure. He is fretted with theſe, becauſe he conſiders himſelf as having no value for them. He never conceives, unleſs he be more liberal in his ſentiments than common, that the land-tax,

miniſter's ſtipend, &c. are a burden on the ground he poſſeſſes, as legally due, as the rent which his landlord draws: yet when a demand is made upon him for any of theſe items, he criticiſes the meaſures of government through the medium of ignorance and prejudice, and deplores the defection of the times—The various taxes collected by the officers of exciſe and cuſtoms do not rankle his ſpirit ſo much, becauſe he does not diſcern the train, by which they come out of his pocket. Were the proprietors to add theſe, and other ſmall ſums, to the aggregate of the rent, to charge the whole as due to themſelves alone, and to pay all public burdens by their factors, they would prevent much peeviſhneſs and many heartburnings, which however ill-founded, often breed the moſt ſerious conſequences. Heritors would thus ſave their people from becoming the tools of deſigning men, who watch the opportunity, for ſiniſter ends, of blowing the hidden embers of diſaffection into a flame, which is at all times more eaſily kindled than extinguiſhed. By doing ſo, their own yearly income would not be leſſened a penny, while they would have the ſatisfaction of being inſtrumental in promoting the peace and proſperity of their country, by preventing the irritation of the public mind.

11. *Married Servants.* In place of unmarried ſervants, if the farmers, who have large poſſeſſions, were to build, in a convenient place, a few houſes for married people, they would be better ſerved in the mean time, their ſervants would be more loath to leave them, and the population of the country would be fully ſupported. It is a miſtaken and an illiberal opinion, that all married ſervants are diſhoneſt. They are not more ſo than others. Nay they are under many ties to be both faithful and honeſt. They have a great intereſt in preſerving the good will of their maſter.

They

They have ſeveral things at ſtake, which involve their preſent comfort and the future proſperity of their families. As a motive to the maſter, their children would always be at hand to perform many little offices, for leſs hire, than boys engaged for a whole year at regular wages; and in due time they would grow up to be the hardieſt and the moſt expert of all principal ſervants for a farmer.

12. *A propoſal*, which would be uſeful, if adopted. By the vague and inaccurate manner in which leaſes are generally written, or by the manner in which they are frequently interpreted in courts of law*, much expence is incurred, much animoſity is bred, and the landlord often deſpairs of being able to bind the tenant, by any contract, how well calculated

* A gentleman, who has the beſt acceſs to know what is paſſing in public buſineſs, informed me that he learned from a high authority, in the preſent adminiſtration of juſtice in this country "That the principle of precedure in queſtions relative to breaches of theſe contracts, (eſpecially a departure from a rotation,) which is adopted in the interpretation of the law, is, to ordain damages in no caſe to a proprietor, unleſs the ſtipulated mode of cropping be departed from during the three laſt years of a tenant's leaſe.

With all poſſible deference to ſo reſpectable authority, every farmer muſt know that this maxim is erroneous. *Aliquando dormitat Homerus.* What the principle takes for granted, may in ſome caſes be impoſſible; in moſt caſes it is improbable. If a tenant become bankrupt, and the leaſe be forfeited or adjudged any time before the laſt years of the contract, it is impoſſible.—Few or no rotations are in *threes*; they are generally in *ſixes* or more: ſo that it is not probable that any man, let his inclination and ability be ever ſo great, can, in the ſpace of any three years of his leaſe, put his land in the ſtate contracted for, in one rotation out of fifty.

The damage done to a farm, by a departure from the ſtipulated mode of cropping and by the adoption of ſcourging crops, has been taken notice of, under the article of leaſes; It is ſo injurious to a farm, for ſome years thereafter, that no man can form any eſtimate of the loſs, who is unacquainted with the cultivation of land.

calculated ſoever it may be, to promote the good of both parties. The diſcovery of lime and marle therefore, as manures, has in many inſtances contributed, rather to exhauſt the ſoil, than to promote its fertility. The ſoil itſelf, a national property of the utmoſt conſequence, has rather ſuffered by the imprudent uſe of theſe ſtimulating ſubſtances, which might have doubled or tripled its value. The intereſt of the whole nation is intimately concerned, in having the ſoil managed in ſuch a manner, that its fertility may not be impaired by ignorance or avarice, but promoted by every poſſible means, and in every practicable degree.

The nation at large, the proprietor and the tenant have an intereſt in the ſoil. The proprietor having a perpetual right, muſt be more intereſted in the improvement and increaſing productions of the ſoil, than the tenantry who have only a temporary right, and who will therefore naturally endeavour to make the moſt of the land, during their leaſe. This being at all periods the natural bias, has been more eaſily gratified, ſince the tenantry have been in the practice of uſing ſo liberally the ſtimulating manures. Theſe manures indeed form the baſis of improvement, but in the hands of men, who have only a temporary intereſt in their poſſeſſion, they may be rendered the means of reducing the ſoil to a caput mortuum; which in many caſes has already happened. Had the tenantry, on the other hand, been reſtricted to a proper rotation of crops, the ſoil might have derived almoſt an infinite progreſſion of additional powers of fertility from the increaſing quantity of dung, *the food of land*, which the ſtimulating manures, by the luxuriant crops they throw up, enable the tenant to command.

It is hoped therefore that it is not foreign to my duty to ſuggeſt, that, if the law of the land does not empower heritors

tors to reſtrict their tenants to ſpecific modes of cropping, or if the preſent mode of interpreting the law does not render contracts of this kind binding, a law ſhould be enacted, conferring that power, and rendering theſe contracts as obligatory as any other contracts. Without an amendment of our law in this reſpect, the influence of the Board itſelf, upon the improvement of the country, can have leſs effect than otherways. What does it avail, although the moſt enlightened of the proprietors ſhould be perſuaded of the propriety of new modes of cultivation, recommended by the Board, if theſe modes can be eluded and never carried into effect? This law ought to embrace the intereſt of both heritors and tenants. The ſubſtance of it might be that whatever additional rent, by way of penalty, a farmer by ſigning his leaſe agreed to pay, upon a departure from the reſtrictions and preſcriptions it contained, he ſhould be found liable to pay that ſum. And on the other hand, that it ſhould be competent for the leaſee, before or after a departure from the articles of his contract, to demand a jury, one half being proprietors of land, and the other being farmers, the ſheriff of the county or his ſubſtitute being umpire, who might decide upon the propriety of his departure, as it ſhould appear to them to be more conducive to his intereſt, and no leſs ſo to the improvement of the farm, than the mode of management preſcribed in the leaſe. This would put the matter on a fair and equitable footing, between both parties: nor does it appear, that any reaſonable objection can be made againſt it. The contract is voluntary and the engagements are reciprocal on both ſides; and farmers are qualified in their own line to judge, with as much accuracy, as heritors, of what has a tendency to promote their own advantage.

Upon

Upon the ſuppoſition that three, four, or even five pounds per acre (which has an appearance of great magnitude indeed to thoſe who underſtand not the caſe) were the penalty, or the additonal yearly rent, ſtipulated to be payable for the land cropped differently from the mode preſcribed in the leaſe; to a perſon in any tolerable degree acquainted with the cultivation of land, it muſt appear evident, that any of theſe ſums is no adequate compenſation for the damage which may be done to a farm, by a ſcourging crop or two; becauſe it may be reduced to ſuch a plight, as may render it neceſſary, either to re-let the ground under a new leaſe at five or eight ſhillings an acre cheaper, than what it would have brought before the ſcourging crops were taken; or that the proprietor ſhall be at the heavy expence, for ſome years, of putting the farm again in heart, before he can find a tenant to take it at a reaſonable rent.

Nevertheleſs it muſt be obſerved that the rotation may be as *capricious* on the one part, as ſcourging crops are unjuſt on the other: and although this cannot happen, when the proprietor underſtands farming, or has a factor who underſtands it, yet there are ſo many circumſtances relative to ſoil, to climate, to manure, to markets and the ſtate of the country, which ought to regulate rotations, that it requires much deliberation and perhaps many trials, to fix on the beſt poſſible mode of cropping in any particular place. A rotation taken from books, even books in high eſtimation, may be dangerous, becauſe either the climate or the ſoil or the command of manure or the ſtock and intelligence of the tenantry, to which the book refers, and which were familiar to the writer, may all or at leaſt ſome of them be extremely different from yours. In which caſe your project will fail.

Rule

Rules of farming and rotations of croping may be very good in Middleſex, which are very abſurd in the county of Perth; and even in this county, the practice which may be followed with profit in one province, might be detrimental or impracticable in ſome other. Hence ariſes the embaraſſment and danger of adopting modes of cultivation at random, without regarding the local circumſtances of different countries; and the want of judgment in preſcribing rules dogmatically, while theſe deſcriminating circumſtances are overlooked.

A proprietor who underſtands human nature, will deſcend a little and conſult the moſt knowing and the moſt free of prejudice among his tenants, or will adviſe with another proprietor, who is maſter of the ſubject and whoſe eſtate is ſimilar in its natural qualities to his own. He will enjoin that management, which, from all this collected information, appears to be moſt conducive to promote the intereſt of his own property and the proſperity of his tenants. If he wiſhes to introduce ſomething which is entirely new and untried; by obtaining the conſent of the perſons moſt free from prejudice, (which is a compliment paid to their underſtanding) this new thing will not only be adopted without reluctance, but will in a ſhort time be diffuſed among the reſt, without employing any ſtrong meaſures to make it general.

Upon the ſuppoſition that the contract betwixt landlord and tenants were binding on the latter as well as the former, a *poſitive* rotation of crops need not be preſcribed in the leaſe, except to an ignorant peaſantry, whom the proprietor has to reclaim, from barbarous modes of cultivation. Whereever there is a tenantry, who have acquired habits of induſtry, who underſtand the management of land, and are able and willing to improve their farms, it will be only neceſſary to reſtrict them from carrying fodder off their poſſeſſions, to labour

their ground in regular diviſions, never to ſow two white crops ſucceſſively in the ſame field, to lay only a certain proportion of their farm annually under lint, and ſome other conditions of that nature, which may not be thought arbitrary.

Then, and not till then, will farming flouriſh and the genius of agriculture ſmile upon us, when the reſtrictions in leaſes are few and reaſonable; and when the contracts between landlord and tenants are equally binding on both parties. No good reaſon can be given, why they are not as binding as other contracts, but there are many reaſons why they ought to be equally ſo.

13. *The improvement of land a profitable ſpeculation.* Waſte land is a raw material, which cannot be wrought up beyond its own natural productions, without the application of capital; and the effect of this capital, in enhancing the value of land depends on the intelligence with which it is applied. The capital drawn from eſtates, by perſons poſſeſſed of landed property, is not ſo uniformly applied towards the melioration of the ſoil and the increaſe of revenue, as other capitals are by men in different lines of life, to increaſe the revenue on which they depend. The capitals derived from trade and manufactures are more frequently and more plentifully directed towards the enlargement of thoſe ſources of wealth from which they flow, than the rents of lands to the improvement of theſe lands which produce them. The richer the merchant becomes, the more he increaſes his ſhipping; the more wealthy the manufacturer grows, the more he increaſes the number of his workmen: and from the enterprize to which either of theſe has been accuſtomed in proſecuting his profeſſional buſineſs, the moment he becomes a proprietor of land, he outſtrips all other proprietors, as the moſt ardent and moſt ſucceſsful improver. The ſame ardor employed

ployed in the line of their profeſſion changes its object, but not its end. Is the wealth which is generally derived from the ſoil, employed in this manner? This wealth flows either into the hands of the farmers or into the coffers of the proprietors; partly into both. Farmers cannot afford the advance of the capital in queſtion, upon ordinary leaſes. It would be unjuſt to urge it, and in vain to expect it, from them. They have too little hold of the raw material, to proceed upon this expenditure with remote ſpeculations of being reimburſed. It reſts therefore with proprietors, and with themalone, to apply capital in bringing this raw material to its higheſt value: and they have every inducement to do ſo. Their property is better ſecured, than that of any other claſs of men. The merchant ſhips his goods under the hazard of winds and waves, under the hazard of captures by enemies, or the failure of payment by thoſe to whom they are conſigned; under the hazard of miſmanagement by being ſtolen or embezzled, and a thouſand accidents, which no human knowledge can foreſee, and no human prudence guard againſt. The manufacturer may be undone by many of the ſame cauſes abroad, by accidental fire and by the caprice or exorbitant wages of his workmen at home. Do any of theſe caſualties endanger the application of capital in the improvement of an eſtate? None. No capital can be more *ſecure*; and it may be added that no application of money can be more *productive* of wealth. Every perſon will allow its being ſecure, but perhaps ſome may doubt its being more productive. That I may not be thought to ſpeak at random and without evidence; in one of the numbers of the appendix a gentleman in the Stormont, a diſtrict of this county, has proven that a piece of land, which had been let ſome years ago at 23l. to a farmer, who relinquiſhed his poſſeſſion, becauſe he was

unable to pay that rent, is now let at 240l. of a well paid rent, beſides ſome caſualties. I met with other inſtances nearly ſimilar, both in that country and in other provinces. Where is there profit in trade equal to this? where is there a return from manufactures, that can be compared to it?

To diſcover that there are great tracts of waſte land in this and in all the counties of the kingdom is an eaſy matter; and to demonſtrate that the improvement of thoſe waſtes would amply repay the expence is not difficult; but the great difficulty conſiſts in perſuading thoſe perſons, in good earneſt, to ſet about the buſineſs, who alone are able, who alone have a permanent intereſt in the ſoil, who alone will derive the greateſt revenue from it, and on whom alone reſts the cultivation of waſte lands. Will not the deſire of raiſing more bread, of increaſing the population of their country and its conſequent proſperity, rouſe them? Will not the gratification of taſte in adorning the country and the pure ſenſations of joy in beholding waving crops of their own rearing in the place of barren deſerts and gloomy waſtes rouſe them? Will not their own intereſt and the propenſity, which is natural to men, of increaſing their income rouſe them? It is not only to be wiſhed, but it is to be hoped, that they will. Is there ſtill room to doubt or to fear that they ſhall not heartily engage in this buſineſs? Does their ſituation in life lead them into other purſuits? Does their rank in ſociety prevent them from making the improvement of land any part of their ſtudy? Theſe are no doubt ſtumbling blocks, but many are getting over them. Is the revenue collected from the ſoil applied, in the meaſure it ought, to increaſe its value, and to increaſe the revenue, which that ſoil doth produce? In ſome caſes, we muſt confeſs, it is not; but in many caſes it is; and it will ſoon be ſo in more.

more. Who would chooſe to be among the laſt in doing good to himſelf, to his country and to the human race?

In aid of every motive, that can ſtimulate to the ſtudy of agriculture and the practice of cultivation, among certain claſſes of men, might not diſtinctions be deviſed, which flow from the fountain of honour. Our warriors are enobled; our ſailors are dignified with coronets; and none repines at their honours or their rewards. This is a ſpur to their ambition; the love of fame mingles itſelf with their patriotiſm; and they have gallantly earned the laurels, which they wear. If once the attention of men were fixed, and their exertions called forth, by any or all of theſe motives, to their own, and ſtill more to the intereſt of the nation, our great men would diſtinguiſh themſelves no leſs as improvers and friends of their country at home, than they do as generals and admirals abroad.

In order that nothing, which others can do, may be wanting to induce landed gentlemen to apply their minds and to lay out a part of their income in the improvement of their eſtates; and to influence monied men to inveſt their capital in land, it is perhaps incumbent on the Board of Agriculture, in a detached publication, to hold out to theſe men, from the moſt unqueſtionable authorities and in the cleareſt light, the advantages of employing their money in the cultivation of land. The Board might alſo facilitate to them the means of procuring proper perſons to aid them in the application of the capital alloted for this purpoſe.

14. *The Burdens* of the nation ought fairly to be borne by every claſs of the community in proportion to their wealth; yet the landed intereſt bear more than their own proportion.

It is injurious to the ſucceſs of agriculture that money veſted in land ſhould pay more towards the ſupport of government,

ment, than that which is laid out otherways. When a man comes home, with a conſiderable fortune in his poſſeſſion, he naturally deliberates, where he can beſt ſecure the wealth he has gone ſo far and undergone ſo many dangers, to acquire. He ſees at once, that in no bottom can it be more ſafe than in land. He next conſiders, where it will make the greateſt returns. The purchaſe of landed property, if judiciouſly made and followed out with intelligence, in the improvement of an eſtate, will make very ample returns. But if he happens to revolve in his mind, where his money is liable to the feweſt draw-backs, where leaſt of his nominal income ſhall go out of his own pocket, where there are feweſt drains and leaſt to be applied to the payment of taxes, he relinquiſhes the idea of purchaſing land, and inveſts his money in the national funds.

Every ſubject of the Britiſh empire enjoys the protection of government equally, for the ſecurity of his perſon, his liberty and his property; and therefore every ſubject ought, in juſtice, to contribute fairly towards the ſupport of government, in proportion to the wealth he is poſſeſſed of. Protection and ſupport are reciprocal. He who has more at ſtake, requires more protection, and ought to contribute more. He who has leſs at ſtake, may in juſtice contribute leſs. The idea of all impartial taxation is either tacitly or openly, to lay on public burdens *ad facultates:* either according to the property which individuals are actually poſſeſſed of, or to the property, which, by the rank they aſſume in ſociety, they wiſh to be thought to poſſeſs. This is a maxim in finance, which is undoubtedly founded on the nature of our conſtitution, whatever may be the caſe in other ſtates.

The merchant contributes liberally, for the protection of his trade, by his payments at the cuſtom-houſe; and he moreover

moreover increaſes the number of our ſeamen: The manufacturer pays various taxes by the different regulations of the exciſe laws; and promotes the population of the country by the increaſe and eſtabliſhment of villages. The proprietor of land pays a greater variety of taxes than either of theſe; beſides that he improves the face of the country, makes the ſoil produce more food, and ſupports the increaſing population. The ſecurities on money lent, the payment of money which is due, and its conveyance from one perſon to another are all taxed, to a certain amount, by the duty on ſtamps. Yet the vaſt wealth veſted in the public funds pays nothing for the ſupport of government, in proportion to any of theſe, if it pays in any proportion at all. It adds neither a ſailor to our navy, nor a houſe to our villages, nor a buſhel of corn to our ſtock of grain. What may be the reaſon of this exemption with reſpect to taxation, I ſhall not ſay. But there is no queſtion that the creditors of government have an equal ſtake in its ſecurity and derive an equal benefit from the protection it affords, with any claſs of the community; and therefore they ought to contribute equally to its ſupport. Suppoſing the wealth veſted in the Britiſh funds to be four hundred millions ſterling; ſuppoſing again this money to produce only five per cent annually to the proprietors of ſtock, they draw twenty millions, as the income from their property. The land tax and all other public burdens, affecting landed property, may amount, at an average, to five ſhillings in the pound. If the proprietors of funded wealth were therefore to pay into the national treaſury, in the ſame proportion with perſons, who have a property in land, the yearly revenue from thence ariſing to the ſtate would be five millions. If every ſpecies of property ought to contribute proportionally to the ſupport of that government

government by which it is protected and ſecured; and there does not appear any good reaſon to the contrary; the holders of ſtock, both Britiſh and foreigners, ought to pay in proportion to the holders of land. Theſe two claſſes of proprietors pay indeed other taxes to government, according to their rank in ſociety, and according to our ſumptuary laws, from which neither of them are exempted, and from which no objection can be drawn againſt this reaſoning: but the full elucidation of this point, and of the other collateral circumſtances which occur, as connected with this ſubject, is left to the conſideration of thoſe, who will adopt the meaſure, if ever it ſhall be adopted *.

The original idea or duty of ſupporting the government of any country reſted on the landholders: and on them alone. Why was this the caſe? Becauſe there was no other property at that time to be defended. But things are very different in our day. There are many other ſpecies of property; although that in land be ſtill the moſt ſplendid and perhaps the moſt valuable; and to the credit of the landed intereſt of this country, it is uniformly obſervable that they are always the foremoſt to make their appearance at any criſis, with the offer of their lives and fortunes, in ſupporting the government of their country. But the creditors of the public, who poſſeſs more wealth than any other claſs of the community, and have fully as much at ſtake, and as much intereſt at leaſt in the ſtability of government, have not hitherto contributed, in the proportion, that others have done: by which means money veſted in landed property pays more than its juſt proportion into the national treaſury, which

* Since the M. S. of this Report was finiſhed and committed to the Board in Autumn 1797, an aſſeſſment of 10 per cent has been laid by Parliament on perſons of every deſcription, whoſe yearly income amounts to 200 l. or upwards.

which leſſens its value and retards the improvement of the country.

Not only the public creditors, but all other claſſes of men ought to be called upon, in critical times, to ſupport the expence of government. The church receives protection; and therefore the church ought to contribute her ſhare. The banks and all other corporate bodies of men, who enjoy their property, in ſecurity, under the ſhield of Britannia, ought to ſtrengthen that ſhield, which defends their lives from bloodſhed and their property from pillage. By a fair eſtimate of the income of all perſons, of whatever profeſſion, of whatever age, and to whatever claſs or denomination of the commonwealth they belong; the public burden of the ſtate ought to be laid on the whole ſhoulders of the nation collectively, that no particular claſs may have more than their own ſhare of the load. All are protected alike; and all ought to bear alike in proportion to their ability *.

CONCLUSION.

OF all arts, which employ the ingenuity of man, agriculture is not only the moſt ancient, but the moſt uſeful. Upon this all other arts depend: and men in every rank of ſociety, from the higheſt to the loweſt, are ſupported by its

 fruits.

* I am highly pleaſed with the coincidence between theſe ſentiments and thoſe expreſſed by a right reverend prelate, formerly quoted, in his addreſs to the people of Britain, whoſe profound erudition, whoſe ardent love for his country and for the cauſe of truth do honour to the Britiſh nation. This ſection of the report was written as it now ſtands, a whole year before that animated addreſs made its appearance.

fruits*. A well cultivated ſoil is more valuable than all the mines of Peru, and more precious than all the pearls in the ocean.—But agriculture is a complicated art, and admits of different degrees of perfection. Without *experience* without *application*, and without *capital*, it cannot be proſecuted with ſucceſs. He, that profeſſes this art with capital alone, will find himſelf defective in ſome of the moſt neceſſary qualifications. He expoſes himſelf to the ridicule of the world; and what is worſe, to the danger of hurting his own circumſtances.—Does the banker entruſt the management of his capital to his ſon, without a previous acquaintance with all the intricacies of his profeſſion? Does the manufacturer think his wealth ſafe in the hands of his ſon, before he be bred to every branch of the buſineſs, which he is about to profeſs? Or will the merchant commit the direction of his trade to any, who is not thoroughly acquainted with the commodities and the markets of different nations? No. Even in the common arts of life, there is a certain degree of knowledge, of practice and aſſiduity, which is deemed as neceſſary, as the poſſeſſion of capital. And ſhall the young gentleman, whoſe capital is in land, be the only exception to this general rule, which is ſo eſſential as to be adopted by all other claſſes of men, in conducting the affairs of life? If he is an exception, it is at his peril. His future experience is ſometimes bought very dear. Varro ſays, "That we may excel in agriculture, we muſt not only ſtudy the example of others, but by our own experience, try to improve upon their practice†.

No

* I beg leave to recommend an attentive peruſal of this chapter to the perſons of rank in Great Britain, who are poſſeſſors of its ſoil.

Mr Dann of Gillingham

† Debemus et imitari alios, et aliter ut faciamus quâdam experientiâ tentare. *Lib.* 1. *cap.* 18.

No man can be a farmer, without perſonal experience; and this experience cannot be ſuddenly acquired. All the books on earth will not ſuffice; and occaſional directions, founded on the experience of different perſons, will create ſuch a jumble of ideas, ſuch a confuſion of plans, and ſuch a contrariety of procedure, that no effect can follow, but diſappointment and chagrin. If experience, therefore, muſt be acquired, I ſhall ſuggeſt two directions which may be found uſeful, in caſe this Report ſhall be read by any perſon, who may be deſirous of obtaining that experience. 1. Let the firſt rudiments of farming be learned under the tuition of a perſon, who is maſter of the buſineſs, and who labours ſoil as ſimilar as may be to that, on which you propoſe to make trial of your ſkill. 2. Begin your operations on a ſmall ſcale, that you may not be embarraſſed in your outſet, by their complicated extent, by adverſe ſeaſons, or by diſappointment in your hopes of ſucceſs. If Virgil's rule be a good one to any farmer, it is ſurely indiſpenſible to a young one. "Praiſe an extenſive farm, but cultivate a ſmall one *." Many other directions might be given, which are of great uſe; but theſe ſeem to be the moſt eſſential: and both my duty and inclination lead me, not to deter, but to encourage. If errors are to be committed in the firſt eſſays of any buſineſs, are they not of leaſt danger, under the eye of a ſkilful teacher and on a ſmall ſcale.? Columella ſays, "Experience and application are the beſt maſters; nor is there any profeſſion, in which we do not receive inſtruction even by our own faults †."

* Laudato ingentia rura, exiguum colito. *Georg. lib.* 2. *line* 412.

† Uſus et experientia docet, neque eſt ulla diſciplina, in qua non peccando diſcatur. *Lib.* 1. *cap.* 1.

But how is this to be brought about? How are the young gentlemen of the Britiſh nation to be perſuaded to relinquiſh the airy purſuits of youth, for the ignoble trade of a farmer? Let us reflect a little. Theſe are ſeated in the imagination; they are not under the controul of reaſon. They riſe upon oppoſition, and are not to be overcome by attack. If the fortreſs of vanity cannot be ſtormed, let it be taken by ſap, or ſoothed into a capitulation by the offer of favourable terms.

The ſimplicity of rural occupations preclude corroding cares and theſe agitations of hope and fear, which are incident to the buſtle of the world. Their innocence relieves from the temptations to vice, which ever infeſt crowded population. The purity of the exhalations from the ſoil is more favourable to health than the ſmoke and putridities, which taint the air of large cities. The breath of the morning, ſo much celebrated by poets and philoſophers, for its benign influence on the mind and on the body, is, in no other way of life, enjoyed in ſuch perfection. Without health there can be no enjoyment: without health riches can purchaſe no pleaſure: without health neither power nor property can procure happineſs.

Virgil in his ſecond Georgic, has given an inimitable deſcription of the pleaſures of a rural life *.

An eaſy quiet and a ſafe retreat,
A harmleſs life devoid of foul chicane,
And home-bred plenty the rich owner wait,
With rural pleaſures ſporting in her train.
Unvex'd with quarrels, undiſturb'd with noiſe,

In

* At ſecura quies, et neſcia fallere vita
Dives opum variarum: at latis otia fundis,
Speluncæ, vivique lacus. *l.* 467. &c.

In peaceful induſtry time glides away:
He, living lakes and flow'ry fields enjoys,
Woods, hills and dales, and ſtreams that thro' them play.

No trade is ignoble, if it were faſhionable. No purſuit is diſhonourable, if it were countenanced by perſons of rank. Make agriculture the *ton*; and our young men of fortune will follow the faſhion.

Many great men of antiquity have been brought from the plough to command armies and to ſerve their country in offices of truſt, of dignity and of danger. Did not Curius Dentatus, for inſtance, who had thrice the honour of a triumph and drove Pyrrhus out of Italy, come from the plough and return again to improve his farm. Cicero ſays, "The ancients brought men from the plough to fill the higheſt offices of the ſtate."* The ſame author adds, in his book of offices, "Of all the ſources of wealth or pleaſure, none is more ſure than agriculture, none more productive, none more delightful, none more worthy of man, none more becoming a gentleman."† Pliny tells us "That generals improved their fields with their own hands. The earth (we may believe) rejoiced to be turned up by a plough adorned with laurels, and by a ploughman, who had been honoured with triumphs; becauſe he could handle the plough and wield the ſword with equal ability, and lay out his fields with the ſame diligence, that he pitched a camp."‡

Emperors,

* Antiquìtus ab aratro arceſſebantur, ut conſules fierent. *Pro Roſc.*

† Omnium rerum ex quibus aliquid conquiritur, nihil eſt agriculturâ melius, nihil uberius, nihil dulcius, nihil homine, nihil libero dignius.

‡ Ipſorum manibus imperatorum colebantur agri, (ut fas eſt credere) gaudente terrâ vomere laureato et triumphali aratore; ſive illi eâdem curâ femina tractabant, quâ bella, eâdemque diligentiâ arva diſponebant, quâ caſtra. *Plin. lib.* 18.

Emperors, kings, philoſophers and ſtateſmen, have had a pride, not only in ancient, but in modern times, to be accounted farmers, and have written upon that ſubject. Nothing is better calculated to make agriculture the faſhion at preſent in this country, than the eſtabliſhment of a profeſſional board, compoſed from among the moſt enlightened, the moſt patriotic, the moſt accompliſhed, and the moſt dignified characters in our age and nation; patroniſed by a ſovereign,* who loves his people and is beloved by them; and ſupported by the countenance of a reſpected and intelligent parliament.

The ſoil is the public ſtock, the great capital, the ſtamina of the nation. All other riches are fluctuating and may vaniſh; but this is wealth, which Britons ſhall enjoy, as long as they enjoy their country. We may hope therefore, that this is the happy æra, in which the improvement of the ſoil will be treated with the attention it deſerves, that agriculture will become the faſhion, that the turf will give place to the plough, and that good oats will be ſown, inſtead of oats that are wild.

O happy, if they knew their ſtate,
The ſwains, who, free from bus'neſs and debate,
Receive their eaſy food from nature's hand
And juſt returns of cultivated land.†

Marks of diſtinction in the improvement of land, which ought to be held out as a ſpur to the ambition of thoſe who wiſh to excel, the ſhining example of many of the preſent proprietors, to which their own eſtates can bear teſtimony, more

* De cultura agri præcipere *principale* fuit. *Plin. lib.* 18.

† O fortunatos nimium, ſua ſi bona nôrint
Agricolas! quibus ipſa, procul diſcordibus armis,
Fundit humo facilem victum juſtiſſima tellus. *Virg. Georg.*

more than any thing I can ſay, the growing taſte and ſpirit of the times, will all conſpire to draw the attention of the riſing generation to the moſt healthy, the moſt innocent, the moſt pleaſant, the moſt profitable and the moſt patriotic of all purſuits—the improvement of the country: and the difference of rank will not be marked merely by accidental circumſtances, which are derived from anceſtry: but by the true diſtinction of doing good, which is meritorious, by being perſonal.

If the line of cultivation, which the preſent age has marked out, ſhall be followed by ſucceeding heirs, it muſt, and doubtleſs will be adopted by the tenantry at large, and advance rapidly to perfection. Then every acre will be cultivated to the higheſt advantage; then the increaſe of the food of man will have the effect of increaſing the number of men; then Britain will become, in the language of a great man, "The garden of Europe"; then waſtes, which are not worth at preſent, more than one or two ſhillings the acre, will either be broken up by the plough, or produce ſix ſhillings in planting; then the barren glebe, which makes but three ſcanty returns, will be left in paſture to recruit its ſtrength; and the ſoil adapted for tillage will, by the alternate changes of white and green crops, reward abundantly the labours of the huſband-man and demonſtrate to the world, how much Agriculture has been perfected by my country-men.

APPENDIX

APPENDIX—No 1.

TOPOGRAPHICAL DESCRIPTION.

IN a ſurface ſo extenſive, it may naturally be ſuppoſed that the country exhibits an appearance very much diverſified. The grandeſt object, which attracts the notice of a ſtranger travelling northward from Edinburgh or Glaſgow, is the boldneſs of the Grampian Mountains,* piled upon one another in huge maſſes, which extend not only the whole length of this county, but reach acroſs the iſland from Aberdeen on the German Ocean, to Cowal on the Atlantic. The ſouthern front of theſe mountains, which runs from ſouth weſt to north-eaſt, has in many places a gradual and pleaſing ſlope into a champaign country of great extent and fertility; and notwithſtanding the forbidding aſpect, at firſt ſight, of the mountains themſelves with their mantle of heath and rugged rocks, they are interſected in a thouſand directions by winding vallies, which are watered by rivers and brooks of the moſt limpid water, clad with the richeſt paſtures, ſheltered by thriving woods that fringe the lakes and run along the ſtreams, and are acceſſible in moſt places by roads unqueſtionably the beſt in Britain. Theſe vallies,

 where

* Denominated ſo by the Romans, very probably from *Garv bein*, which, in the language of the natives, ſignifies *huge mountains*. The general name of that great tract of country, in the counties of Argyle Perth, Inverneſs and Aberdeen, through which the Grampians extend, is ſtill diſtinguiſhed by a name ſimilar to this, from which the Romans formed their Latin name *Grampiani*, applied to theſe large mountains.

where there is ſuch a rich variety of natural beauty, form a contraſt to the ruggedneſs of the ſurrounding mountains, and preſent to the eye ſuch romantic ſcenery as muſt be admired by every traveller of taſte. The rivers in the deep defiles ſtruggle to find a *paſſage, where the oppoſite hills approach ſo near, the indented rocks and impending woods embrace ſo cloſely, that the waters ruſh with incredible force and a deafening roar, in proportion to the altitude of the fall. Then, plains of various extent burſt ſuddenly on the eye, which are filled with villages and well-cultivated farms. Chains of lakes, finely wooded down to the water-edge, are connected with meandring ſtreams, ſtored with a variety of fiſh. The hills are covered with ſnowy flocks, and numerous herds are browſing on the paſtures below.—The noblemen and gentlemen's houſes are generally ſet down on the ſide of a lake or on gentle declivities facing the meridian ſun, with a lawn in front interſected by the winding links of a river, and plantations of ſtately oaks, beeches and other foreſt trees on the right and on the left, which together with the hills behind, variegated with planting, increaſe their beauty and their warmth.—The author has been adviſed by the Board to place this Topographical Deſcription not in the front of the Report but in the Appendix, in which he has endeavoured to give ſome account of the general appearance of the ſurface of Perthſhire, its moſt remarkable rivers, lakes and mountains, the ſituation, proſpects and embelliſhments of ſome of the noblemen and gentlemen's

* Provincially called Paſſes, owing to the difficulty of paſſing them before the roads were made. The moſt conſiderable of theſe, in the county of Perth, are the paſs of Leney, the paſs of Coheilg in Glenlochay, the paſs at the Spittal of Glenſhee, the famous one at Killicrankie and the paſs of Aberfoil.

clemens ſeats, with ſuch remarks upon each as have naturally occurred.

Along the ſouth ſide of the Grampians, and on the north ſide of another range of green hills, there lies a large valley or ſtrath * which runs in the ſame direction with theſe mountains, and terminates on the north-eaſt at Stonehaven and on the ſouth-weſt at Dunbarton, reaching from ſea to ſea. This ſtrath is of unequal breadth, from 10 to 15 miles over, in different places, and upwards of 100 miles long. It is interſected by many large and beautiful rivers, every one of which is peculiar to this county, excepting two on the eaſt, and one at the weſtern extremity, beyond the limits of Perthſhire.

The two Eſks flow through this ſtrath on their way to Montroſe. The two greateſt rivers of the county are the Tay and the Forth, which collect many tributary ſtreams in their courſe to the German Ocean. The Tay carries more water into the ſea, than any other river in Great Britain. The Earn, riſing from a lake of the ſame name, directs its courſe nearly due eaſt through this ſtrath for 24 miles, by Drummond Caſtle, to its junction with the Tay at Rhind (the *Point* where they meet). The Almond falls into the Tay, a few miles above Perth, where the Romans had a timber bridge to croſs over the latter to the Stormont. The Iſla, after being ſwelled with the waters of the Ardle and the Shee, which uniting their ſtreams at Rochalzie are

* A word borrowed into Engliſh from the ancient language of Britain, which in Scotland is provincially applied to long, wide, low-lying vallies, with a chain of hills on both ſides, to diſtinguiſh them from vallies, that are narrow, ſhort, and more inland, which are called Glens.

called the Ericht*, ſurrenders itſelf to the Tay at Kinclaven, one of the ſeats of Malcom Kenmore. The Brand falls into the Tay at Dunkeld. The Garry and Tummel, joining at Faſcaly, retain the name of the former and meet the Tay at Logierait. The Lyon falls into the Tay about a mile below Taymouth, where the latter iſſues from the lake, which gives it the name.

The Forth is alſo augmented by ſeveral large rivers, which ſwell its current, as it winds its courſe to the ſea. The Devon flows into it at the Bridge of Tullybody; the Allan betwixt the houſe of Kier and the bridge of Stirling. But the great body of the Forth is compoſed of two large ſtreams, the greateſt one emerging from the Grampians at Callander, and the other at Gartmore, which after a courſe of many miles and the addition of many waters, unite below Blair-Drummond, and flow under the bridge of Stirling.

The Forth having no dangerous bars at its mouth, and fewer ſhallows and ſand banks in its Frith than the Tay, enjoys more commerce, although the body of its water be not ſo great. Having the advantage alſo of being nearer the capital than the Tay; the land on its banks being ſuperior with reſpect to fertility, except the Carſe of Gowrie alone; and entering into a larger arm of the ſea; towns and villages and the general population along its ſides are more crowded, the ſoil was improved at a more early period, and the trade more extenſive.

Beſides theſe rivers already taken notice of, which all flow in various directions though this great Strath, except the Devon.

* The Erichts were places of rendezvous for the people in tumultuous times; when they *roſe* to meet their chiftians, on the eve of going to battle. Robertſon of Strouan aſſembled his clan in Glenericht, a concealed valley between Athol and Rannoch.

Devon. The Enrick and the Blane on its weſtern entremity meet a little above the bridge of Catter, and aſſuming the name of the former, hold a ſerpentine courſe below the Houſe of Buchanan, through the moſt fertile haughs, into Lochlomond where it is broadeſt and its wooded iſlands moſt numerous, moſt pictureſque and beautiful. From this lake iſſues the Leven, remarkable for the variety and extent of its printfields, which, being the laſt ſtream in that direction that adorns this valley, flows into an arm of the Atlantic at Dunbarton. A tract of country of this magnitude, interſected by no hills of any conſiderable height and enriched and beautified by ſo many rivers, is not in Scotland, nor perhaps in Britain; from which circumſtance, this vale has deſervedly obtained the name of *Strathmore* or the great Strath; although in a reſtricted ſenſe, that appellation is often confined to the diſtrict of Strathmore, which lies between Methven Caſtle and the village of Lawrence-kirk.

On the South Eaſt ſide of Strathmore there runs a range of green hills almoſt parallel to the Grampians, and of the ſame length with the Strath itſelf, of which they form the Southern boundary. Theſe hills are lower than the Grampians; yet in ſome places, they riſe with beautiful green conical tops to a great height above the adjacent country. They have not one general name as the Grampians have; but from Montroſe to Perth, where they are interſected by the Tay, they are called the Seedlaw hills: * from thence to Stirling.

* The *Seed-laws*, it is probable got their name from the circumſtance of their commanding a proſpect of the German Ocean and of the eaſtern coaſt, from Aberdeen to Berwick, which was often the poſt of danger. Some fanciful Etymologiſts derive *Ochills* from two words which ſignify a *young wood*, becauſe ſay they, wood is found in all

Stirling, where they are interfected by the Forth, they are called the Ochills; and from thence to Dunbarton, the Dundaf and Campfie hills. Thefe hills being more verdant and lower than the Grampians have richer paftures, and are better calculated for an extenfive range of fheep pafture than the latter.

The only parts of this county, which are fituated on the fouth fide of thefe green hills are the Carfe of Gowrie on the Tay, the diftrict of Culrofs on the Forth, and that of Gogar and Menftrie on the Devon.

The only parts of the county fouth of the Forth are a few farms in the parifh of Kippen, immediately weft from that village, and fome more, ftretching from Gartmore through a hilly country towards Benlomond.

Along the banks of the rivers of this county, after they defcend from the northern hills into the champaign country, there are extenfive tracts of rich land, under high cultivation, adorned with elegant manfions and extenfive plantations, which exhibit a pleafing and plentiful appearance. Where the ground fwells between one river and another, the

all the moffes of the Ochills. But every hill in Scotland ought to have been called ochill for the fame reafon, fince wood is found in the moffes of them all. Some other circumftances ought always to juftify an Etymology, befides the fimilarity of found. The *Dundaf hills* are evidently the *Deer hills*, becaufe their paftures are more rich and more abundant, than any other hills in Scotland, and therefore a favourite haunt of thefe animals, while they had the choice of their own refidence. The *Campfie-hills* are denominated from a valley, that interfects them, which *widens* as it defcends along the courfe of the Blane. There are many Cambufes in various parts of the country, where the form of the land refembles that poflure of the human body: and a thoufand places are named after different parts of our body, to which they had a likenefs. But it is not my intention to trouble the reader with Etymologies, which are imaginary or unintereffing.

the fertility of the ſoil on both ſides of theſe ridges decreaſes gradually, until it ends at laſt in a barren moor, on the higheſt part of the aſcent. Between ſome of the rivers, theſe moors are large, between others leſs extenſive. Some of them riſe but very little above the adjacent rivers; others have a conſiderable ſwell. They are all covered with heath which is longer or ſhorter according to the degree of their elevation. In ſouth Britain ſuch tracts of land are called *Heaths*, becauſe they are clad or have been clad with heath: in North Britain they are called *Moors*, to diſtinguiſh them from mountains, which for the moſt part have a ſimilar covering, but always more altitude. This diſtinction is ſo carefully marked, that in ſome parts of the county of Perth, the higheſt hills of the diſtrict, whoſe ſides form an angle of 30 or 40 degrees with the horizon, are covered with a rich carpet of graſs; while the contiguous moor below, which is almoſt in the plane of the horizon, is covered all over with ruſſet heath. On both ſides of the Seedlaw hills, on both ſides of the Ochills, and in the vicinity of Kippen, theſe appearances take place.—In almoſt every part of the county under review, theſe low moors are undergoing great improvements; and the different modes of cultivation, adopted by ſpirited farmers, have been taken notice of in their proper place. In general they are more deficient in ſoil than in climate; and our fathers always rejected the ſoil that was moſt barren, becauſe it required moſt labour to render it productive. Not many years ago, the only improvement of which ſuch land was deemed capable, was planting: and in ſome places, the moors were deemed ſo bleak, ſo barren and expoſed, that they were abandoned, as unworthy of any attention whatever. The ſurface of theſe moors is univerſally a thin ſtratum of moſs, compoſed of the deciduous

parts

parts of heath; the ſoil below is generally gravel, a bed of ſand, a barren till, or a poor red clay that retains water.

The moſt conſiderable lake in the county is Loch Tay; which is ſo deep that it never freezes far beyond the water-edge: the cold water always deſcending by its gravity, and the warmer getting to the ſurface, till the whole maſs be equal in cold to the freezing point, before ice can be formed. This is a fine winding piece of water making ſome bold ſweeps, 16 miles long and from one to two miles broad, with ſloping banks, partly wooded and partly under cultivation. It abounds with a variety of fiſh. The Char are larger than theſe in any other lake of the county. Loch Tay was agitated on the 12th Sept. 1784 and for ſome days thereafter, in a manner that alarmed the country people, while no ſigns of an earthquake were felt in any part of the adjacent ground. The flux and reflux were fifteen feet from the ordinary boundary, where the beach had a gradual ſlope. Since that period there have been repeated ſhocks of an earthquake in the vicinity of Comrie, a village in Strath-earn, owing probably to the ſame cauſe. Loch-lomond was agitated in the ſame manner in 1755, when Liſbon was deſtroyed by an earthquake.

Loch-Ericht is the next lake, with reſpect to ſize, being rather longer but not ſo broad as Loch-Tay. It lies at the head of Rannoch on the confines of this county, and extends ſome miles Northward into Inverneſs-ſhire. Being in the very heart of the Grampians, it is encompaſſed on all ſides, by lofty mountains and rugged cliffs of the moſt tremenduous aſpect. In the vallies around Loch-Ericht there is ſome herbage, but Ceres is a ſtranger to its banks, having relinquiſhed that poſſeſſion to heath and a few ſtraggling birches and alders, a haunt for the game of the foreſt.

In

In one of theſe vallies, the only delightful ſpot on its north ſide, a houſe of one floor was built ſome years ago by the preſent Lord Advocate Mr Dundas of Arniſton, Mr Hamilton of Pencaitland and others, for the purpoſes of hunting and fiſhing, on a feu granted by the duke of Gordon. In this romantic and ſolitary place, ſtags and Alpin hares roam undiſturbed during the ſummer and autumn; grouſe, heath-fowl and Tarmachans in abundance inhabit every hill: but in the depth of winter, when the ſnow lies ſo deep and cloſe that not a green thing is to be ſeen, they aſſemble in tribes and are compelled to take their departure, like a flight of pigeons, to more hoſpitable quarters; even the deer take ſhelter in the neighbouring foreſts of Athol.

Loch-Rannoch, which is 12 miles long and one broad and has bull-trouts of 24lb. weight, is ſituated in a diſtrict of that name, on whoſe banks the only natural fir wood of conſiderable extent in this county is now to be found. Loch-Earn in the pariſh of Comrie, whoſe banks are ſo cloſely clad with copſe of oak, that the profit ariſing from the ſale of bark and timber is nearly equal to the rents of the arable ground; and Loch-Catherine in the pariſh of Callander, celebrated for the variety and grandeur of its ſcenery, are the only lakes worthy of further notice in a general deſcription of the county of Perth.

Ben-lawers on the north ſide of Loch-Tay is the higheſt mountain in Perthſhire, and the third for height in Britain. Its beauty and its elevation conſpire to attract attention. Without being diſfigured with rocks, it riſes by a gradual aſcent from the water-edge of Loch-Tay to the altitude of 4015 feet above the level of the ſea. The baſe has two or three tire of farms above one another; the middle region is

green paſture; and ſince the introduction of ſheep on a large ſcale, the verdure is aſcending to the very ſummit.

Benmore at the head of Glendochart is 3903 feet above the level of the ſea and commands a moſt extenſive proſpect towards the German and Atlantic oceans. In 1769 ſome gentlemen obſerved the tranſit of Venus over the diſk of the ſun from the top of Benmore.

Shichallion at the foot of Rannoch is more inſulated than any of the former. It riſes with a conical ſhape and terminates in a point, at the height of 3564 feet. Although its ſides are extremely barren, preſenting little to the eye except ſolid rock with occaſional tufts of heath, Shichallion has acquired celebrity, by doctor Maſkelyne, aſtronomer to the king at Greenwich having made choice of this mountain ſome years ago to make obſervations on its power in attracting the pendulum.

Benledi near Callander is the only mountain in the county of Perth, which, according to tradition, has been devoted to the purpoſes of devotion; and therefore the only mountain, which has been dreſſed on the ſummit; Its altitude above the ſea is 3009 feet; It commands on the eaſt the whole proſpect of the Forth and of the rich country through which it flows to the German ocean; on the ſouth the tract of the Clyde with its ſhining bleachfields and thriving towns lie open to view, by Dunbarton to the extremity of the ſhire of Lenrick.

Beſides theſe, Bengloe in the foreſt of Athol, Benchonie at the head of Glenturret, and Benvorlich on the ſouth ſide of Loch-Earn, are mountains of conſiderable note. Dunſinnan, one of the ſeedlaw hills 1040 feet above the ſea, is famous not only for the richneſs and variety of its proſpects, but for being the ſtrong hold of the bloody uſurper Macbeath, whoſe

whoſe caſtle was built upon its top (of which I ſhall give an account in the ſequel;) and Birnam hill near Dunkeld, 1580 feet high, has ſtill the remains of that wood, from which the royaliſts marched againſt the tyrant to cut off his life, and put a period to his uſurpation. The inimitable pen of Shakeſpeare has rendered theſe claſſic ground.

Turleum, whoſe height is 1400 feet, forms the back ground to Drummond Caſtle and preſents a fine contraſt to the improvements of that place, and the well cultivated country along the banks of the Earn. Theſe and many others merit a detail of which my limits will not admit.

Deſcending into Perthſhire from the north, through the hill Drumuachder, a defile awful by its narrowneſs and the altitude and ſteepneſs of the ſurrounding mountains, you come down on the Caſtle of Blair Athol, ſituated on a riſing ground with an extenſive plain to the ſouth, which is ſurrounded by the Garry and Tilt at their confluence. The beauty of the lawn in the higheſt ſtate of cultivation, the grandeur of the caſtle which riſes like a white cloud in the center, and the thriving plantations which climb half way up the hills, correſpond in the higheſt taſte to the piles of mountains that are ſituated in the back ground. The fallow deer browſing in hundreds in the park around the houſe, the variety of foreign and native foreſt trees, the walks and gardens and ponds of this noble place, refreſh the traveller's eye, after his dreary ride in the deep and long defile of Drumuachder (the *higheſt ridge* of hills in Scotland) which is often as fatal to the lives of the unwary in the winter ſeaſon, as the Caudin forks were to the honour of the Romans. The variety of water falls, the deepneſs of the glens, the number of roes and wild fowls in their favourite haunts, the ſturdy oaks that mock the blaſt, beech-

es and limes that rear their conical heads, tall larches and a ſtately progeny of pines, with all their floating foliage, richly robed to the ground, adorn the approach of this magnificent place. The lobby is a muſeum of the horns, ſkins and ſculls of wild animals. The loftineſs and elegance of the apartments are ſuited to the magnificence of a Ducal manſion, and the thickneſs of the walls are a proof of its great ſtrength in former times. Yet I could not ſuppreſs a ſigh of regret knowing that the roof had been modernized and that three floors were taken from its height, in place of all the turrets, embraſures, battlements and parapets, which prior to the year 1747, made the Caſtle of Athol the pride and defence of the country, were ſuited to the rude grandeur of the mountains around it and gave the place ſuch a venerable air of antiquity.

Near the paſs of Killicrankie and below the houſe of Orrat, the place is ſhewn, marked by a large block of rude ſtone, where Lord Dundee fell, after having defeated King William's forces under General M'Kay in 1689. This paſs, which is about half a mile long, with a high aſcent on both ſides almoſt perpendicular, is aſtoniſhingly ſteep, rugged and wild. The united waters of the Garry and Tilt flow in a chaſm, which is worn ſo deep by the rapidity of the river, ſo gloomy by the projecting rocks, that ſeem to cloſe from the oppoſite ſides, and ſo darkened by hanging wood which grows out of the clefts, that the river is in moſt places inviſible to a paſſenger on the road, who only hears its deafening roar. And where he ſees it, the troubled water is precipitated over a rock into a pool, that boils in the middle, whirling and foaming all around.

Taymouth in Breadalbane is alſo within the Grampians, ſituated at the eaſt end of Loch-Tay, which gives their

names

names both to the river and the place. The Caſtle, with groteſque figures engraven on its front, is ſituated in one of the links of the Tay, which flows behind with a ſwift, ſtrong but ſmooth current. The pleaſure ground on both ſides of the river extends to the baſe of the oppoſite hills, and from the lake on the weſt for ſome miles down to the confluence of the Tay and Lyon. A Chineſe bridge near the caſtle, renders the acceſs eaſy from the one ſide to the other. The ſloping banks of the Tay are finely wooded, with well-dreſſed walks on the top, which correſpond to the windings of the river, while the clear ſtream that runs ſmoothly below, is ſeen through the intervening trees; and the herds of fallow-deer, beautifully dappled, roam at large around the houſe ſporting with their fawns or ſtaring at ſtrangers. The variety of the ground exhibits every moment new ſcenery, the ſwells and the walks being adorned with ſummer houſes temples and ſeats. The hills are generally planted with a variety of wood up near to their ſummit: and their baſe fringed with more laburnums of ſize, than I have ſeen in any other place. The neat village of Kenmore and its elegant church are happily placed on a promontory at the eaſt end of Loch-Tay, commanding an extenſive view of the lake, of the iſland of Nuns and the barge moored in its lee. The fort ſituated on an eminence, fronting the caſtle on the ſouth with all its apparatus of flag-ſtaff, ſwivels and glacis, embraſures and baſtions, is perhaps the beſt ſtation for viewing the whole landſcape at once. The magnificent walk of great limes behind the caſtle is ſingularly grand, whoſe outer branches hang to the ground, whoſe inward branches riſe aloft and form a long Gothic arch impenetrable by a ray of the ſun. The reflected light adds a venerable air of ſolemnity to this walk beyond all others about Taymouth.

Some

Some minute ornaments in the parterre ſtyle, introduced lately on ſome other of the walks, may not pleaſe every taſte; being more ſuitable to a ſmall villa near a town, than to the grandeur of a great place, where the lake, the river, the park, the walks and plantations are all in a very ſuperior ſtyle. The Hermitage of Taymouth about a mile weſt on the ſouth ſide of the lake is ſingular for the lonelineſs of its ſituation and the grandeur of its proſpects. The hermit's cell is entered by a winding ſubterraneous paſſage, gloomy and ſolemn, with occaſional peeps of light through the arched rocks above. The walls are clad with moſs, the bed and ſeats are covered with the ſkins of wild animals. In front of the hermitage, a large body of water is precipitated over a perpendicular rock 240 feet high, into a large pool that boils and wheels and foams below. This white ſheet of water in its fall touches the trees on either ſide, until it is loſt from the eye in a glen, deeply awful and darkened all around with hanging trees.

On the right ſide of the Tay, a little below Tay bridge are the falls of Moneſs, ſingular for their variety and their altitude. A walk guides the traveller to this romantic ſcene. A ſucceſſion of cataracts and caſcades in one place tumble furiouſly from rock to rock; in other places, the whole waters ruſh with a hideous roar over precipices of immenſe height, until they are loſt from the view among gloomy woods and impending rocks at the foot of the glen.

Dunkeld, once the capital of the Caledonians, and in later times a Biſhop's ſee, is a moſt romantic place. The houſe is modern and neat; the gardens laid out with taſte and kept in the higheſt order. The valley is narrow; but the ſcenery is pleaſing and extenſive. Ruins in a fantaſtic ſtyle are placed on eminences, where they peep through the trees

on

on the hills, whoſe ſides are clad with waving foliage down to the very brink of the river, their foot is waſhed by the Tay, deep, broad and ſilent. The Cathedral is a venerable pile, but not large. On the oppoſite ſide of the Tay the Hermitage called Oſſian's hall, which is ſituated on a rock 40 feet high that hangs over the water of Braan, has ſo much the appearance of peril, that a perſon of weak nerves, when his ſituation is diſcovered, can ſcarcely believe himſelf out of danger. The whole water ſeems to ruſh againſt him, ſtreaming with foaming violence, reflected in different lights by mirrors of various colours, and forcing its way with noiſy fury through an abrupt rocky deſcent, into an abyſs where the waters wheel and boil below.

Methven Caſtle, is a commanding ſituation, built upon a riſing ground not far from the confluence of the Almond and Tay. The proſpect from this place is grand, pleaſant and extenſive. Strathmore opens to the north-eaſt; Perth with its magnificent bridge and river and rich fields on the ſouth-eaſt. Many new farms rear their heads on the ſouth towards Duplin and Gaſk, with comfortable ſteadings, well dreſſed fields and plentiful crops; where Lord Methven ſees, in his own time, the progreſſive ſteps of cultivation and the buſy hand of induſtry improving and incloſing land, which ſome years ago had been bleak and bare, with no covering but heath and a few wretched cottages.

In a ſouth-weſt view appears Tibbermuir (the fountain of the virgin Mary) where the famous Marquis of Montroſe routed ſuperior numbers in 1644, with a few Highlanders armed moſtly with the ſtones of the field. The ſpot on which the battle of Methven was fought in 1306, between King Robert Bruce and the earl of Pembroke, is not exactly known; after which the former ſuffered incredible hardſhips,

ſhips for ſome years ſkulking in the Highlands and weſtern iſles.

Behind the wood of Methven which conſiſts of 172 acres and is a great ornament to the caſtle, there is a ſingular ledge of rocks croſſing the Almond, known by the name of the Devil's bridge. One end reſts on the eſtate of Methven, the other on the eſtate of Lednock, the property of Mr Graham of Balgowan. Nothing remains of this magical bridge except the abutments, all the arches having fallen before it was finiſhed, upon ſome paſſenger wiſhing good ſpeed to the builder. Theſe abutments are ſome hundred feet high, the ſtones all nicely jointed, having the appearance of the hewn front of an old fortification.

This ledge is a part of a ſmall chain of rock of an uniform quality, which croſſes Scotland from ſea to ſea, in the direction of ſouth weſt and north eaſt, almoſt parallel to the Grampians. In this county it frequently appears above ground, particularly in the breas of Doune, at Muthil, at Methven, and at the Linn of Campſie on the Tay.

Strathearn* is full of gentlemen's houſes, and affords ſuch a variety of ſcenery, that it would be inconſiſtent with my plan to enter upon a detail. A traveller is perpetually refreſhed

* This is the great valley, through which the river that gives its name to the country flows almoſt with a ſtraight courſe for about forty miles. The courſe of the Earn, and of the lake from which it takes its riſe, being nearly from weſt to eaſt, may have given it a name ſignificant of its weſterly direction, to diſtinguiſh it from the Tay, which runs nearly from the North, betwixt Logierait and the tide-way. Argylethire (Jar-ghael) has its name from being the moſt weſterly county of Scotland: and (Jar-inn) the proper name of Ireland ſignifies the weſtern iſle, being the moſt remote in that direction, known to thoſe who gave their original names to provinces and iſlands in this part of the world.

freſhed by the ſight of new beauties coming in his view. Owing to the length and ſtraightneſs of this Strath, bounded by two ranges of hills at the diſtance of twelve or fifteen miles from each other, with a fine river flowing in the middle and rich land ſloping down to its banks on both ſides, the noblemen and gentlemen's ſeats, under the cover of thriving plantations, behold the buſy hand of man engaged in the various operations of agriculture, and enjoy proſpects equally grand, extenſive and beautiful: they ſee and are ſeen by one another, forming one great ſcene, in which every houſe has its proper ſtation, receiving and reflecting beauty on thoſe around it.

In the lower part of the ſtrath, Duplin caſtle, where a bloody battle was fought in 1332, fatal to the Scots in the intereſt of Bruce, is ſituated on the north bank of the Earn oppoſite to the meridian ſun, enjoying the view of the moſt open and fertile part of the valley, crowded with elegant manſions, populous villages and farms laden with the moſt luxuriant crops. Auchterarder bounds the view on the right, which was a royal burgh in the time of the Scottiſh parliaments; and Abernethy on the left, once the capital of the Picts, ſtill noted for its round tower of ſingular workmanſhip, 74 feet high and 48 in circumference, the only one, except that at Brechin, which remains as a monument of that ingenious people.

Time itſelf ſeldom changes the names of places, except where the conquerors underſtand not the language of the conquered. *Aber*, a word very frequent on the eaſt of Scotland ſignified among the Picts the confluence of waters; and *Inver*, equally frequent on the weſt, had the ſame ſignification among the Scots. Kenneth the II. having finally ſubdued the Picts and reduced all Scotland into one

monarchy, adopted the Pictiſh names of places, ſouth of the Grampians, which had been the territory of the conquered people.

Drummond Caſtle, at the head of this vale, raiſes its head above all the adjacent country. In a princely ſituation, at the termination of a gentle aſcent of fertile land, fronting the eaſt, where the country around forms an inclined plane down to the Earn, the proſpect is obſtructed in no direction. Surrounded with well dreſſed fields to the ſouth, with woods to the north and a variety of foreſt trees fully grown in choſen ſituations, it commands at once a magnificent view of all Strathearn, with its towns and villages and ſeats and rivers and plantations and farms, from the face of the Grampians on the one hand to that of the Ochills on the other, and beyond this county eaſtward, as far as the ſhires of Kincardine, Angus and Fife.

The houſe of Auchtertyre, with a manly front of cut granite, is ſituated immediately over the lake of the ſame name. Surrounded and ſheltered by thriving copſe and ſtately droping trees, it enjoys the view of Crieff and of Strathearn to the ſouth-eaſt, and of the rich valley towards Comrie on the weſt, in which the Earn flows. This ſituation is delightfully romantic. The durable granite correſponds to the ſtability of the mountains behind; and the elegance of the apartments to the cultivated fields in its front. The lake winds beautifully among green hills and through the lower parts of the wood: and the marle found in its bottom being judiciouſly applied has enriched Sir William's own and his neighbours property.

Nature has done much for Lawers; and art has poliſhed and improved nature. The lawn to the ſouth is extenſive, and the Earn holds a winding courſe through the middle.

The

The ſoil is a fertile haugh, formed by the ſediment of the river, and in the higheſt ſtate of cultivation. The trees are aged and luxuriant, eſpecially ſome of the fineſt Scots firs in the county; and the houſe on a riſing ground on the declivity of a hill, with a ſouthern aſpect, is covered from every ſtorm by a variety of tall foreſt trees. New villages are riſing in view and old ones extended. Diſtant waſtes are cultivated by the buſy hand of induſtry; and fields of corn are growing where ſcarcely a blade of graſs grew before.

Dunira is a ſingular place. The ſcenery from Crieff to Lochearn, a diſtance of 10 or 11 miles, is in the higheſt degree romantic and delightful. It is called by travellers the Mountpelier of Scotland. Dunira is the moſt diverſified ſpot of the whole. Auchtertyre and Lawers are diſcovered by paſſengers with eaſe. They preſent themſelves to the eye. The valley before them is wide and the mountains more diſtant: But the ſituation of Dunira ſhows it to be a retreat from public buſineſs and the buſtle of the world. From the taſte with which all the ground is laid out, one muſt know there is a houſe at hand, yet hardly can diſcover, without enquiry, where it is. Here the valley begins to narrow: you approach the foot of the rugged Grampians; the mountains before you ſeem to cloſe and to ſtretch up their towering heads into the clouds. The inſulated hills, which are ſcattered in the plain below, are covered with tufts of copſe wood; and the river Earn flows with a meandering courſe, winding round theſe wooded hills. The lawn is partly dreſſed and partly planted with waving belts, in the neateſt ſtyle, ſuited to the ſoil and ſituation. A Chineſe bridge unites the two ſides of the Earn, and ſerpentine walks lead to the moſt favourite proſpects from the tops of the hills: a ruſtic bower on the ſummit of a hill, commands a view of the whole. The

ſkirts of the mountains are covered with oaks and a mixture of other wood, except where the naked pinnacle of rock ſhooting its head like a magnificent ruin through the trees, forms a contraſt to the verdure of the foliage and fields: Which, with the ſublimity of the ſurrounding mountains, gives an air of romantic grandeur, which few places enjoy.

Blair Drummond in Monteath is a very different place from theſe, although finiſhed in the higheſt ſtyle: Removed from great mountains, the ſituation is leſs diverſified, yet nature has been very kind: Between the two principal branches of the Forth, near their junction, in a plain of great extent and in the richeſt ſoil, with the rude majeſty of the caſtle of Stirling, ſituated on a rock, in front, and the country behind riſing with a gradual aſcent towards the diſtant mountains. The north river is neareſt the houſe; and along its banks avenues and plantations follow the courſe of the ſtream with horizontal lawns of ſome hundred acres, which are enlivened with droping trees and ſloping ſwells ſmooth and green. To theſe ornaments a counterpart is formed on the oppoſite ſide of the river by the huge maſs of the caſtle of Doune, a monument of the power and jealouſy of the Duke of Albany, who was an excellent regent but aſpired to the ſovereignty of his country, during the captivity of his nephew James the firſt. Blair Drummond is like an Engliſh place, in the manner of a park, whoſe diameter may be eſtimated at 12 furlongs, and in ſome directions more. On the ſouth-weſt, the pleaſure ground follows the Larch-bank, with obeliſks and ſeats, and is ornamented with a vaſt variety of ſhrubbery and gravel walks, which humour the ſituation of the ground. On the lower ſide of this bank an artificial river, with iſlands and bridges, turns naturally along, till it loſe itſelf among the trees. This place is a ſpecimen of the taſte

taſte of the author of the elements of criticiſm and of the gentleman farmer, whoſe plans are followed out and perfected by his ſon.

Cardroſs is in the heart of Monteath, on the verdant banks of the Forth, where it glides, ſlow, ſmooth and ſilent. The land is of the richeſt mould dreſſed down to the river's edge and carries the fineſt and cloſeſt graſs. The trees are ſtately and vigorous, ſuited to the approach of a great place; many of them planted before the reformation, eſpecially the planes which never turn a ſhoulder to the blaſt. The houſe has an air of antiquity, which gives a dignified appearance that ſpurns at minor criticiſms on the irregularity of its parts. At one time it was certainly the firſt houſe in this country, and both without and within, ſtill correſponds to the hoſpitality of the times, in which it was built.

Gartmore, on the confines of the county to the ſouth weſt, is ſituated on a riſing ground, and commands the whole view of that extenſive vale, in which the Forth holds his courſe, which, in ſpite of Flanders moſs, is one of the fineſt ſtraths in Scotland. The ſouth-gate is Gothic, ſuited to the grandeur of the northern mountains, which here preſent themſelves to the eye. The north gate is more plain and beautiful, correſponding to the ſtyle of the adjacent ground, in that approach to the houſe. The fields to the ſouth and eaſt are well dreſſed. On the north and weſt, the ſurface is more rocky and barren; but in many places improved by trenching, and in others, covered with large and thriving plantations. The houſe, although built at different times, has the appearance of an original uniform plan and the apartments are finiſhed with taſte and elegance.

Kier is a magnificent looking place and commands a moſt extenſive proſpect, from Benlomond in Dunbarton-ſhire down

down to the frith of Edinburgh. Situated on high ground and on the north-ſide of the vale formed by the Forth, it looks down on the rich and populous country, through which that river holds its courſe in links of incomparable beauty to the ocean. The varieties of wood and water, of hills and cultivated fields, of gentlemen's ſeats, of towns and villages enjoyed in this proſpect it is impoſſible to deſcribe. In a near view appears the bridge of Stirling, the neareſt to the ſea on the Forth; the caſtle of Stirling once the ſeat of royalty; the Abbey-Craig, where the undaunted Wallace encamped with his warriors and beat Surry in 1297; and Craig-Forth, with its tuft of trees; three inſulated rocks, like ſo many ancient Pyramids riſing out of the middle of the champaign country. About the houſe of Kier there may be 600 acres of dreſſed ground, with ſloping banks and ſwelling hills, diverſified with full grown trees and extenſive plantations; exhibiting the taſte for agriculture and embelliſhment of four ſucceſſive proprietors, whoſe knowledge in theſe arts kept pace with the progreſſive improvement of the country.

The Caſtle of Lenrick rears it majeſtic head on the ſouth bank of the Teath, with its turrets, battlements and embrazures, in a ſituation warmly ſheltered and rurally picturesque. The air of antiquity, which the building exhibits, the lofty trees which ſurround it, vying with the altitude of the houſe, the magnificent river flowing through woods of native oak, which rolls its floods below and bounds the lawn on that ſide, and the variegated ſcenery of the approach along the ſloping wooded margin of the tumultuous ſtream, with a diſtant view of the weſtern Grampians, where Benledi raiſes its towering head to the clouds, all conſpire to give an appearance of ancient grandeur and romantic ſimplicity to a place, where, notwithſtanding all that the ſpirited proprietor

prietor has already done, ſtill an ample field remains to exerciſe his genius for agriculture and his taſte for embelliſhment.

The Abbey of Culroſs and Valley-field, on the confines of Fife, enjoy the proſpect of the fertile fields and ſeats of weſt Lothian on the oppoſite ſide of the coaſt: The trade from the German ocean to all the ports up the Frith and to Glaſgow by the canal is carried on below their windows. Here the adventurous Genius of commerce is continually employed in exporting the manufactures and commodities of Scotland to foreign markets and importing thoſe of diſtant nations, ſteering innumerable ſails, braving every danger and ploughing on the boſom of the main.

The water of Devon is ſingular for its circuitous courſe, the deepneſs of the glen in which it flows from the Ochills and the wildneſs and altitude of its falls. After flowing 30 miles it returns to within 6 miles of its ſource, before it falls into the Forth. Between the church of Muckhart and that of Glendevon, its banks are uncommonly ſteep and picturesque, and the glen ſo narrow, that one can ſcarcely look down without giddineſs: from which circumſtance it derives its name*. Near the church of Dollar the rumbling bridge, which is 22 feet in ſpan and 12 feet broad, is 86 feet above the bottom of the fall, at the head of which it is built. On oppoſite ſides of the chaſm a few ſhrubs and trees ſhoot out, from the crevices of the rugged cliffs. The water in its deſcent, daſhing from rock to rock, is ſometimes ſeen through the hanging trees. The deafening ſound of the fall, the confuſed noiſe of the feathered tribes flying about, the ſteepneſs of the ground and the ſpray carried aloft by the winds gives to the whole a wildneſs mingled with horror ſeldom to be met

* The deep glen.

met with. At the place called the Devil's mill, there is a fall of 14 feet, which uſed to make a clapping noiſe ſimilar to that of a corn-mill; but has now ceaſed. The Cauldron linn is a mile below the rumbling bridge. The whole caſcade is 88 feet. The linn is in the middle of the fall, where the boiling turbulence of the water daſhing on the rocks below appalls the ſpectator. Immenſe pits of a cylindric form are worn in the ſolid granite by the continual friction of peebles whirling round, upon which the water falls with a tremendous roar: Then the whole river is precipitated in one ſheet from a height of above 40 feet upon blocks of ſtone, ruſhing, guſhing, foaming, thundering down.

The Carſe of Gowrie is a ſingular diſtrict. It is nearly in the form of a ſegment of a great circle, the Seedlaw hills forming the arc and the Tay the chord. This tract of country, which is now ſo rich and under ſuch high cultivation, ſeems at one period to have been very much under water. In the remembrance of ſeveral perſons alive, many parts were a moraſs, which are this day extenſive fields of arable land. The river Tay is ſuppoſed to have formed a circuit round the Carſe, waſhing the foot of the Seedlaw hills and entering the preſent channel at Invergowrie. Staples for holding cables have been found in the rocks at the bottom of theſe hills, on the north ſide of the flat land. The pariſh of St Madoes, which is now in the Carſe of Gowrie is ſaid to have been once on the Strathearn ſide of the river. Such parts of the Carſe, as are elevated above the common level of the country are called *Inches* (which word ſignifies *iſlands*); this circumſtance implying that all the flat land, was at one period not habitable, on account of water, either ſtagnant or flowing.

It

It is at leaſt probable that the Tay may have had different mouths where it entered the ſea, like the Danube, the Nile, the Rhine, and many other large rivers; that one of theſe flowed in the preſent channel, and another by the foot of the Seedlaws, which occaſionally inundated the low lands.

The ſoil of theſe eminences in the Carſe of Gowrie, called Inches, is not leſs different from that of the level country, than the names. The former like all the land on the ſouth aſpect of the Seedlaws being a red till, capable of high cultivation and in moſt places approaching to the nature of loam; the latter, like all land that had been immerſed in water, being a blue clay, which is of a very rich quality when it is drained, expoſed to the ſun and pulverized.

Caſtle Huntly ſtands near the eaſt end of the Carſe, elevated on the ſummit of a rock which has a gentle aſcent on the north eaſt, but on the ſouth weſt is 40 feet above the plain. James the II. granted to Lord Gray a charter in 1442, authorizing him to build here *Caſtellum de Huntly*, in honour of his lady, who was deſcended of the Huntly family. The Kingoody ſtone, which was uſed in the building, is ſaid to have been carried by water to the foot of the wall, although the place is now about ten furlongs from the ſea or any other water carriage. The rock itſelf ſeems to have been waſhed by the waves. The walls of the caſtle are ten feet thick; Athol houſe is the only caſtle, which I met with in the county, whoſe walls are of the ſame dimenſions. This wall conſiſts of three diſtinct parallel walls joined in one. The two external walls are built with more art; the wall betwixt theſe is compoſed of irregular rude blocks of ſtone, great and ſmall, thrown in without order and cemented with liquid mortar. In one room 4 feet are ſcooped out of the inſide wall on all the ſides; ſo that the wall

of the room above projects 4 feet in every direction over the room below. In the year 1615 Lord Gray ſold this eſtate to the Lyons of Glamis for 40,000 merks Scots; and in 1777 Mr Paterſon bought it for 40,000 l. ſtr. from which it appears that property roſe, during that interval, in the proportion of eighteen to one.

From the Copula of Caſtle Huntly, the proſpect is extenſive, pleaſant, diverſified and grand beyond deſcription: The whole Frith of Tay, with the continual navigation upon it, the oppoſite coaſt of Fife, and all the diſtrict of Gowrie, that favoured ſpot in the very lap of nature, with their towns and villages; the elegant manſions of proprietors, with their beautiful lawns and extenſive plantations; rich farms and their ſnug ſteadings fields; laden with the heavieſt crops, paſtures abounding with cattle, the moſt luxuriant ſoil ſmoking under the genial rays of the ſun and ſheltered from the baneful breath of the northern blaſt by an amphitheatre of hills, which are either cultivated to their tops or covered with flocks white as ſnow.

If any perſon continues to give credit to Dr. Johnſon's illiberal account of Scots trees, which has been founded in ignorance, dictated by prejudice and written with gall, let him take a view of the trees of the places already mentioned in this report and of many others in the county, which ought to have been taken notice of, were it not for fear of appearing prolix. Let him take a view of Caſtle Huntly and ſay, if he can, that there are no trees in Scotland. At this place alone there are aſhes, whoſe trunk is from 27 to 19 feet in circumference; elms 11; horſe chefnuts 10; poplars 10; planes 9; firs from 13 to 9; and ſome at the root of the trunk, 19. Ews 6, thorns 6, limes between 7 and 8. The diameter of the top of one fir tree is 66 feet. Inferi-

or

or planes have been ſold at between 13 and 14 l. each; and firs have been cut which contained 90 feet of wood below the boughs.

At Monzie near Crieff there are larches, not above 60 years of age, 16 feet in girth, and between 80 and 90 feet high: The diameter of the ſpan of the branches 60 feet.

At Kippenroſs near Dunblane, there are ſome large trees. the greateſt of the planes is 27 feet in circumference at the bottom, and where it branches 30 feet.

At Athol houſe, at Taymouth, at Drummond Caſtle, at Roſſie, at Gleneagles, Aberuchil, Finlarig, Caſtle Menzies, little Dunkeld, Lenrick, Lawers, Edinample and ſeveral other places are many great trees of various kinds; but having neglected to take down the dimenſions in my notes, it would be improper to gueſs at their ſize.

Beſides Caſtle Huntly, there are many other ſtately manſions in the Carſe of Gowrie, which muſt ſtrike the eye and attract the attention of every traveller. The elegance of the buildings, the taſte with which the ground is laid out, ornamented with gardens and orchards, beſides the general beauty of the country, evince both the judgment and opulence of the proprietors. The operations at Milnfield, at Mury, at Ballendean and other places muſt be referred to the agricultural part of this report.

The extenſive caſtle now building at Pitfour, which commands a near view of the Frith of Tay with all the ſhipping below the windows, and of the oppoſite coaſt of Fife, with the villages and ſeats on both ſides of the river, and a ſouth-weſt view far up the Earn, towards the fine country about Abernethy, of the towering hill of Kinnoul to the north and of Kinfauns at the foot of that hill, will ſoon be a noted

place; a ſpecimen of the effects of induſtry, of a genius for trade, and of the taſte of the proprietor.

Belmont Caſtle, on the eaſtern frontier of this county is a magnificent place; and next to Glamis is the ornament of Strathmore. The houſe is large, elegant and commodious; the fields around dreſſed in the higheſt ſtyle, the trees aged, thriving and numerous. The obſervatory, erected by the preſent proprietor in a lawn near the houſe, denotes an enlightened mind and an elevated train of thinking, which, although ornamental to human nature and friendly to the ſciences, cannot be gratified in its full extent, except by perſons of opulent fortunes.

The houſe of Arthurſtone and that of St Martins are ſpacious, elegant modern buildings: and by the time that the proprietors have had time to ornament their fields in the ſame ſtyle they have followed in the architecture of their dwellings, both places will be eſteemed by poſterity as ſpecimens of the taſte diſplayed in the latter end of the 18th century.

The palace of Scone, venerable to every Scotſman as the ſeat of royalty, where the monarchs of that kingdom were crowned on the marble chair coeval with the monarchy itſelf, is ſituated on the banks of the Tay two miles above Perth. It was impoſſible for me to ſee the inſide, becauſe the houſe-keeper was abſent, but the fabrick has an air of antiquity which pleaſes, makes one forget its irregularity, owing to the additions made in different ages, and ſtrikes a man of ſentiment with awe, from the recollection of the heroes who trod this *almoſt ſacred* ground, in the days of the years that are paſt. The declining bank in front of the palace is covered with a rich carpet of graſs, for half a mile, down to the river-edge. The park extends to a conſiderable

conſiderable diſtance on the right and on the left, which is ornamented with droping trees of the moſt magnificent and vigour appearance. The majeſtic river, which made the Roman ſoldiers cry out *ecce Tiberim*, waſhes the ſouth border of the lawn, in its courſe to the bridge of Perth; under which it flows through nine arches, elegant for their ſymmetry, their beauty and the lightneſs of their appearance. On the ſouth banks of the river, the Inch which is the pleaſure ground of the inhabitants, the rich farms towards Tullybelton, and Huntingtower a ſeat of the duke of Athol, vary and extend the proſpect, which is bounded by large plantations behind the county-town and a diſtant view of the Ochills over the trees. On the right the wood and and caſtle of Methven, and the river Almond with bleachfields on every ſide, flowing into the Tay above Scone, ornament this princely place, which itſelf reflects dignity on every ſpot within its view.

Many other places in this extenſive county are deſerving of notice, for their antiquity, or their elegance, or their ſituation, or the plantations around them, or the taſte diſcovered in dreſſing their fields; Murthly on the weſt bank of the Tay below Dunkeld would merit deſcription, for the beauty of the ſituation, and the extenſive and rich ſcenery of which it commands the proſpect; Ruthven bank, where the Iſla winds about and aſſumes a weſterly courſe; Mickleure in the angular point, where the Tay receives the waters of the Iſla; from which circumſtance it derives its name; Blairgowrie, a fine modern building, on the ſide of the Ericht, with a great extent of planting on the ſouth and weſt, and a riſing bank of the richeſt ſoil on the north; Delvin, on a rich elevated plain of 160 acres, regularly ſteep on every ſide, and raiſed 60 feet above the level of the adjacent

jacent country, which ſeems both from its ancient name (Inchtuthil, *the iſland of floods*) and the appearance of the ground, to have been once an iſland in the Tay; Stobhall on the banks of the Tay, where the whole waters of the river ruſh over a ledge of rock at the Linn of Campſie, the greateſt caſcade on all the Tay; Faſkaly, a moſt romantic ſituation at the conflux of the Gary and Tumil near Killicrankie; Logie Almond, on the finely wooded banks of that river, where the beauty of the fields form a contraſt to the ſurrounding mountains; Balgowan, on the weſter pow, where the policy is extenſive, alternately covered with clumps of trees, hedge rows and rich land, improved according to a ſyſtem which does honour to the underſtanding and activity of the proprietor; Monzie, remarkable for its ſnugneſs and warmth and the ſize of its larches; * Caſtle Menzies in the heart of a rich country, well ſheltered by art and nature, having the river Tay in full view and the firſt bridge built acroſs that river, a monument of the attention of government to the good of the public; Kinfauns on the ſouth baſe of the Seedlaws, having a moſt extenſive proſpect of the Frith, and of all the Carſe of Gowrie, where the luxuriance of nature is aided and directed by the induſtry and ſkill of man; Megginch Caſtle, ſituated on a riſing ground, as the name denotes, whoſe tall trees and ſtraight avenues and venerable buildings put the traveller in mind of the laſt age; Rednock houſe in Monteath, where the ſoil is uncommonly rich, having carried 14 ſucceſſive white crops without any manure and without the leaſt appearance of being exhauſted; Here is the moſt elegant and the moſt compleat ſteading of offices in that part at leaſt of the county;

* Since this Survey was made an elegant houſe is building at Monzie.

ty; Cambuſmore near Callander, where every ſpecies of improvement in land is carried on with ſpirit and ſucceſs; The ancient caſtle of Kilbride with its romantic glen, its hanging garden, and the wildly wooded banks of the Ardoch, where it pours its noiſy torrents from the northern hills; Kippenroſs on the banks of the Allan, where the river is finely wooded, and the glen moſt picturesque, and ſome of the largeſt trees in this country; Ardoch farther up the Allan, where extenſive plantations rear their heads to correct the influence of the climate and ornament the country; The caſtle of Braco, where every thing has been done in planting, building and dreſſing the ground, that man could do to remedy the bleakneſs and inconvenience of an expoſed ſituation; Invermay, with its green banks and thriving woods, commanding a full view of the Earn for many miles and of all the ſeats upon its ſides; The natural beauties of this place have given occaſion to one of the ſweeteſt airs in the Scots muſic; Moncrieff-houſe under covert of the hill of that name, which will ſoon be wooded to the top, having the vale of Abernethy and the lower links of the Earn in full view, the environs dreſſed in a ſuperior ſtyle and baſking under the meridian ſun.

However I may regret that ſome places may have been overlooked, which ought to have been taken notice of in a deſcription of this important county, yet under a conſciouſneſs of having exceeded the limits at firſt intended for this article, it is time to draw it to a cloſe.

No.

No. 2.

An account of the Moss of Kincardine.

Preface.

THE following full and accurate account of the Moss of Kincardine, muſt no doubt be acceptable and uſeful to the public; as it deſcribes the riſe and progreſs of the moſt ſingular and conſiderable piece of improvement that has been executed in any pariſh in Scotland.

There is probably no tract of land of the ſame extent, equally unprofitable and uſeleſs, that has ever been rendered ſo productive and populous, in any part of the three kingdoms. As there are extenſive tracts of waſte land ſimilar to the Moſs of Kincardine, both in Britain and Ireland; the ſucceſsful improvement here deſcribed, well deſerves to be generally known and purſued. Whatever advantage accrues from it to the proprietor is meritoriouſly obtained, as by this practice the produce of the country in corn and cattle is enlarged; the country itſelf is rendered more populous; and the loweſt of the people not only find beneficial employment, but it affords motives to excite them to the exertion of the moſt vigorous and uſeful induſtry.

A large number of ſettlers in the Moſs of Kincardine were people of the loweſt rank in the Highlands, expelled from their native reſidence in conſequence of the extenſive ſheep farms which have been eſtabliſhed of late. Had opportunity offered, they would have removed to America. Fortunately, however, they have here found, not only an aſylum, but a comfortable ſettlement, in which they are uſefully employed for themſelves and with great benefit to their

their country. Were this mode of reclaiming waſte land, adopted by the great proprietors in the Highlands they would not only retain their people, but by retaining them would augment the value of their property and ſtop all emigration to America, which, without this or ſome other effectual remedy, will not be prevented.

This extraordinary piece of improvement, took its riſe from the inventive genius, and patriotic views of the late Lord Kames! and has been conducted and brought to perfection by his ſon in a liberal and judicious manner. But though it had no precedent, it is ſurpriſing, that from the experience of its utility, it ſhould not as yet have been followed as an example, by any other proprietor. In Moſs Flanders which is adjacent, there are near 10,000 acres perfectly ſimilar, but which have greater advantages, with reſpect to water than the moſs of Kincardine.

It is urged by ſome landholders, who have extenſive moſſes upon their eſtates, that the ſubſoil in Kincardine moſs is a clay of a very rich quality, and peculiarly favourable for this method of improvement. But the very ſame clay is to be found in the bottom of many of our moſſes in Scotland. Moſt of our extenſive moſſes are bottomed by clay, or a mixture of clay and ſand, which, with a proportion of peat earth, forms a moſt improveable ſoil. Wherever timber is found in a moſs, it muſt have grown on the ſoil at the bottom; and wherever large trees have grown, on a plain or in a valley, there muſt remain a ſoil well worth the cultivation. It will be obſerved in the peruſal of this paper, that the great obſtacle to the undertaking, was the want of a ſufficient command of water, which occaſioned a conſiderable expence. But in many of our moſſes in Scotland, there

is no ſuch obſtacle, and conſequently all ſuch expence will be avoided.

The moſt important part of this plan, is the nature of the tenure, by which the people who improve the moſs, are to hold their poſſeſſions. In whatever way our moſſes are to be reduced to culture, it will be found that this ſort of tenure or ſomething ſimilar to it, is the moſt effectual means to attain the end.

Account of the Moſs.

THE moſs of Kincardine is ſituated in the pariſh of the ſame name, comprehended between the rivers Forth and Teith, and in that diſtrict of Perthſhire called *Monteith*. The moſs begins about a mile above the confluence of theſe rivers; from thence it extends in length about four miles, and from one to two in breadth; and before the commencement of the operations (an account of which is to be given,) comprehended near 2000 Scotch acres, of which about 1500 belong to the eſtate of Blair Drummond, the property of Lord Kames by his marriage with Mrs Drummond of Blair Drummond.

As moſſes are extremely various in their nature; before entering upon the improvements made in Kincardine moſs, it will be proper to give a ſhort deſcription of that moſs, and of the ſubjacent ſoil which is the object of thoſe improvements.

The moſs lies upon a field of clay, which is a continuation of thoſe rich, extenſive flats in the neighbourhood of Falkirk and Stirling, diſtinguiſhed by the name of *carſes*. This clay, which is one uniform homogenous maſs ſinking to a great depth, is found near the ſurface, conſiſts of different colours, and is diſpoſed in layers. The uppermoſt is grey; the

the next is reddiſh; and the loweſt, which is the moſt fertile, is blue. Through the whole maſs not a pebble is to be found. The only extraneous bodies it contains are ſea-ſhells, which occur in all the varieties peculiar to the eaſtern coaſt of Scotland. They are diſpoſed ſometimes in beds, ſometimes ſcattered irregularly at different depths. By attending to theſe circumſtances, it cannot be doubted that the ſea has been the means of the whole accumulation, and that it was carried on in a gradual manner by the ordinary ebb and flow of the tide. Upon any other ſuppoſition, why ſhould there not have been a congeries of all the different materials that compoſe the ſurface of the ſurrounding heights? But to whatever cauſe the origin of this accumulation may be aſcribed, certain it is that no ſoil whatever is more favourable to vegetation, or carries more abundant crops of every kind.

The ſurface of the clay, which, upon the retreat of the ſea, had been left in an almoſt level plane, is every where thickly covered with trees, chiefly oak and birch, many of a great ſize. Theſe trees ſeem to have been the firſt remarkable produce of the carſe; and it is probable they were propagated by diſſemination from the ſurrounding eminences. They are found lying in all directions beſide their roots, which ſtill continue firm in the ground in their natural poſition; and from impreſſions ſtill viſible, it is evident they have been cut with an axe or ſome ſimilar inſtrument. For the cutting of wood, the two common purpoſes are, either to apply it to its proper uſe, or that the ground it occupies may be cultivated. In the preſent caſe, however, neither of theſe ends had been propoſed, ſince the trees, by being left juſt as they were cut, were not only entirely loſt, but the ground was rendered totally unfit for cultivation. Hence it

is evident, that the downfal of this wood muſt be aſcribed to ſome more extraordinary cauſe; and to none more probably than to that expedient, which, as we learn from Dion Caſſius and other hiſtorians, the Romans put ſo extenſively in practice to diſlodge from their foreſts the ancient inhabitants of the Britiſh iſlands.

This hypotheſis acquires no ſmall degree of force from a circumſtance that occurred in May 1768, when a large round veſſel of thin braſs and curious workmanſhip, 25 inches in diameter and 16 inches in height, was diſcovered upon the ſurface of the clay buried under the moſs. This veſſel, found upon the eſtate of John Ramſay, Eſq. of Ochtertyre, was by that gentleman preſented to the Antiquarian Society of Edinburgh; in whoſe muſeum it remains depoſited for preſervation. And in a liſt of the various donations preſented to that ſociety, publiſhed by them in 1782, it is there denominated a *Roman camp-kettle*.

Between the clay and the moſs is found a ſtratum nine inches thick, partly dark brown and partly of a colour approaching to black. This is a vegetable mould, accumulated probably by the plants that covered the ground previous to the growth of the wood, and by leaves from the trees thereafter. The difference of colour muſt be owing to a difference in the vegetable ſubſtances that compoſe it. The brown mould is highly fertile; the other, eſpecially in a dry ſeaſon, is very unproductive. The crop that had occupied this mould when the trees were felled is found ſtill entire. It conſiſts chiefly of heath; but ſeveral other ſmaller plants are alſo very diſtinguiſhable.

Immediately above this ſtratum lies the moſs, to the height, upon an average, of ſeven feet. It is compoſed of different vegetables arranged in three diſtinct ſtrata. Of theſe the

firſt

firſt is three feet thick. It is black and heavy, and preferable to the others for the purpoſe of fuel. It conſiſts of bent-graſs *(agroſtis)* which ſeems to have grown up luxuriantly among the trees after they were felled. The ſecond ſtratum alſo is three feet thick. It is compoſed of various kinds of moſſes, but principally of bog-moſs *(ſphagnum)*. It is of a fallow or iron-colour, remarkably elaſtic: It is commonly called *white-peat*; and for fuel is conſidered as much inferior to that above mentioned. The third ſtratum is compoſed of heath and a little bent-graſs, but chiefly of the deciduous parts of the former. It is about a foot thick, and black.

Three ſtrata of different vegetables lying above each other, the limits of each diſtinctly marked, and each diſtinguiſhed by a different colour, is certainly a curious natural phenomenon.

An inquiry will here occur, What has occaſioned this ſucceſſion in the vegetables of which the moſs is compoſed?

Every vegetable has a particular ſoil, more or leſs moiſt, peculiarly adapted to its nature. Let a piece of ground be in a moiſt ſtate, ruſhes will introduce themſelves; drain the ground ſufficiently, the ruſhes will diſappear, and finer vegetables will ſucceed. It ſeems reaſonable to account for the ſucceſſion of the different plants that compoſe the moſs on ſimilar principles.

Let us imagine an extenſive plain covered with trees lying in all directions, full of branches, and poſſibly loaded with leaves. This it is evident would produce a great ſtagnation of water, which, as the crops of bent-graſs accumulated, would ſtill increaſe: and the probability is, that at length it had ſo increaſed, as to be the cauſe why the bent-graſs and other congenial plants of the firſt ſtratum ceaſed to grow.

But

But it is evident that a plant was to be found that could live in ſuch a ſituation. Accordingly we ſee that bog-moſs had eſtabliſhed itſelf; a plant that loves even to ſwim in water.

When the accumulations of bent-graſs and the moſſes had, in proceſs of time, ariſen to the height of ſix feet above the ſurrounding *carſe* ground, the water that fell upon the ſurface had by that means an opportunity to diſcharge itſelf. It has accordingly formed many channels, which are often three feet deep; and the intermediate ſurface being wholly turned into little hillocks has become dry and firm. By this means it became unfit for moſſes, and heath ſucceeded.

Such ſeems to have been the proceſs in the formation of what is now called *a moſs*.

By far the greateſt part of the moſs in queſtion is, upon an avarage, full ſeven feet deep, and has in all probability lain undiſturbed ſince its formation: this is called the *High Moſs*. The remainder, called the *Low Moſs*, lies to a conſiderable breadth around the extremities of the high; and is, upon an average, not above three feet in depth, to which it has been reduced by the digging of peats. Theſe are formed of that ſtratum of the moſs only that lies four feet below the ſurface and downwards; the reſt is improper for the purpoſe, and is thrown aſide.

Before the introduction of the plan which is now purſued, two methods chiefly were employed to gain land from the moſs. 1ſt, The ſurrounding farmers marked off yearly a portion of the Low Moſs next to their arable land, about 15 feet broad. This they removed with carts and ſpread upon their fields, ſome acres of which they for that end left unſown. Here it lay till May or June; when, being thoroughly dry, it was burnt to aſhes to ſerve as a manure. By this means they added to their farms about half a rood of land

land yearly. But this plan proved unſucceſsful; for by the repeated application of theſe aſhes, the ſoil was rendered ſo looſe that the crops generally failed. 2dly, Many farmers were wont to *trench down* the low moſs, and to cover it *furrow deep*, with clay taken out of the trench. This, though commendable as an attempt to improve, proved likewiſe an unavailing method; becauſe in a dry ſeaſon the ſuperficial covering of clay retains ſo little moiſture that the crop commonly fails.

It has been attempted to cover the moſs with clay brought from the adjacent grounds. But what from the neceſſary impoveriſhment of the ground from which the clay was carried, and the ſoftneſs of the moſs, this was ſoon found to be impracticable.

Draining has alſo been propoſed as another mode of improvement; and it muſt be acknowledged, that, by means of draining, many moſſes have been converted both into arable and meadow grounds, which in the end became intereſting improvements. But in a moſs, ſuch as that of Kincardine, this method would be ineffectual; as for ſeveral feet deep it is of ſuch a nature, that upon being dry and divided into parts, it would blow with the wind like chaff; and when thrown aſide in the operation of digging peats, it lies for years without producing a ſingle vegetable, except only a few plants of ſorrel.

Hence it is evident, that all attempts to *improve* this moſs muſt ever prove abortive; and that the object to be had in view is the acquiſition of the valuable ſoil lying underneath; to which end nothing leſs is requiſite than the total abolition of the moſs.

By the methods above deſcribed from 100 to 200 acres of moſs had been removed. When the preſent plan was introduced,

duced, there ſtill remained covered with moſs from 1300 to 1400 acres of carſe clay—a treaſure for which it muſt be ever intereſting to dig.

In the year 1766 Lord Kames entered into poſſeſſion of the eſtate of Blair Drummond. Long before that period he was well acquainted with the moſs, and often lamented that no attempt had ever been made to turn it to advantage. Many different plans were now propoſed; at length is was reſolved to attempt, by means of water as the moſt powerful agent, entirely to ſweep off the whole body of moſs.

That moſs might be floated in water, was abundantly obvious; but to find water in ſufficient quantity was difficult, the only ſtream at hand being employed to turn a corn-mill. Convinced of the ſuperiour conſequence of dedicating this ſtream to the purpoſe of floating off the moſs, Lord Kames having made an agreement with the tenant who farmed the mill, and the tenants thirled conſenting to pay the rent, he immediately threw down the mill, and applied the water to the above purpoſe.

In order to determine the beſt manner of conducting the operation, workmen were now employed for a conſiderable time upon the Low Moſs both by the day and by the piece, to aſcertain the expence for which a given quantity of moſs could be removed. It was then agreed to operate at a certain rate per acre; and in this manner ſeveral acres were removed.

But this was to be a very expenſive proceſs. The ground gained might, indeed, be afterwards let to tenants; but every acre would require an expenditure from 12 l. to 15 l. before it could be ready for ſowing; ſo that the acquiſition of the whole, computing it at a medium to be 1350 acres, would ſink a capital of nearly 20,000 l. Sterling.

One

One other method ſtill remained; namely, to attempt ſetting portions of the moſs, as it lay, for a term of years ſufficient to indemnify tenants for the expences incurred in removing it. For ſome time both theſe plans were adopted; but ſeveral reaſons made the latter preferable. 1. The quantity of water to be had was ſmall; and being alſo uncertain, it was very inconvenient for an undertaker; neither were there any houſes near the ſpot, which occaſioned a great loſs of time in going and coming: but when a man ſhould live upon the ſpot, then he could be ready to ſeize every opportunity. 2. The moſs was an uſeleſs waſte. To let it to tenants would increaſe the population of the eſtate, and afford to a number of induſtrious people the means of making to themſelves a comfortable livelihood.

In the mean time it was determined, till as many tenants ſhould be got as could occupy the whole water, to carry on the work by means of undertakers.

But before proceeding farther, it will be neceſſary to deſcribe the manner of applying water to the purpoſe of floating the moſs.

A ſtream of water ſufficient to turn a common corn-mill will carry off as much moſs as 20 men can throw into it, provided they be ſtationed at the diſtance of 100 yards from each other. The firſt ſtep is to make in the clay, along-ſide of the moſs, a drain to convey the water: and for this operation the carſe-clay below the moſs is peculiarly favourable, being perfectly free from ſtones and all other extraneous ſubſtances, and at the ſame time, when moiſt, ſlippery as ſoap; ſo that not only is it eaſily dug, but its lubricity greatly facilitates the progreſs of the water when loaded with moſs. The dimenſions proper for the drain are found to be two feet for the breadth and the ſame for the

depth. If ſmaller, it could not conveniently receive the ſpadefuls of moſs; if larger, the water would eſcape, leaving the moſs behind. The drain has an inclination of one foot in 100 yards: the more regularly this inclination is obſerved throughout, the leſs will the moſs be liable to obſtructions in its progreſs with the water. The drain being formed, the operator marks off to a convenient extent alongſide of it a ſection of moſs 10 feet broad; the greateſt diſtance from which he can heave his ſpadeful into the drain. This he repeatedly does till the entire maſs be removed down to the clay. He then digs a new drain at the foot of the moſs-bank, turns the water into it, and proceeds as before, leaving the moſs to purſue its courſe into the river Forth, a receptacle equally convenient and capacious; upon the fortunate ſituation of which, happily forming for ſeveral miles the ſouthern boundary of the eſtate, without the interpoſition of any neighbouring proprietor, depended the very exiſtence of the whole operations.

When the moſs is entirely removed, the clay is found to be encumbered with the roots of different kinds of trees ſtanding in it as they grew, often very large: their trunks alſo are frequently found lying beſide them. All theſe the tenants remove often with great labour. In the courſe of their operations they purpoſely leave upon the clay a ſtratum of moſs ſix inches thick. This, in ſpring, when the ſeaſon offers, they reduce to aſhes, which in a great meaſure enſures the firſt crop. The ground thus cleared is turned over, where the dryneſs admits, with a plough, and, where too ſoft, with a ſpade. A month's expoſure to the ſun, wind, and froſt, reduces the clay to a powder fitting it for the ſeed in March and April. A crop of oats is the firſt,

which

which ſeldom fails of being plentiful, yielding from eight to ten bolls after one.

In the year 1767 an agreement was made with one tenant for a portion of the Low Moſs. This, as being the firſt ſtep towards the intended plan, was then viewed as a conſiderable acquiſition. The ſame terms agreed upon with this tenant have ever ſince been obſerved with all the reſt. They are as follow:

The tenant holds eight acres of moſs by a tack of 38 years; he is allowed a proper quantity of timber, and two bolls of oatmeal to ſupport him while employed in rearing a houſe; the firſt ſeven years he pays no rent; the eighth year he pays one merk Scots; the ninth year two merks; and ſo on with the addition of one merk yearly till the end of the firſt 19 years; during the laſt five years of which he alſo pays a hen yearly. Upon the commencement of the ſecond 19 years, he begins to pay a yearly rent of 12s. for each acre of land cleared from moſs, and 2s. 6d. for each acre not cleared, alſo two hens yearly: A low rent indeed for ſo fine a ſoil; but no more than a proper reward for his laborious exertions acquiring it.

In the year 1768 another tenant was ſettled. Theſe two were tradeſmen; to whom the preference was always given, as having this great advantage to recommend them, that even when deprived of water they need never want employment. The motives that induced theſe people to become ſettlers were, *1ſt*, The proſpect of an independent eſtabliſhment for a number of years. *2dly*, The moſs afforded them great abundance of excellent fuel; to which was added the comfortable conſideration, that, while buſied in providing that neceſſary article, they had the double advantage of pro-

moſing, at the ſame time, the principal object of their ſettlement.

Notwithſtanding theſe inducements, ſtill ſettlers offered ſlowly; to which two circumſtances chiefly contributed: *1ſt.* The whole farmers ſurrounding the moſs threw every poſſible obſtruction in their way. *2dly.* By people of all denominations the ſcheme was viewed as a chimerical project, and became a common topic of ridicule. The plan, however, ſupported itſelf; and in the year 1769 five more tenants agreed for eight acres each; and thus 56 acres of Low Moſs were diſpoſed of. From the progreſs made by the firſt ſettlers, and the addition of theſe, the obloquy of becoming a moſs-tenant gradually became leſs regarded; ſo that in the year 1772 two more were added; in 1773, three; and in 1774, one; in all 13: which diſpoſed of 104 acres; all the Low Moſs to which water could then be conveyed. As water is the main ſpring of the operation, every tenant, beſide the attention neceſſary to his ſhare of the principal ſtream, collected water by every poſſible means, making ditches round his portion of the moſs, and a reſervoir therein to retain it till wanted.

The tenants in the Low Moſs having now begun to raiſe good crops, in the year 1774 ſeveral perſons offered to take poſſeſſions in the High Moſs, upon condition that acceſs to it ſhould be rendered practicable. The High Moſs wanted many advantages that the Low poſſeſſed. To the Low Moſs, lying contiguous to the ſurrounding arable lands the acceſs was tolerably good; but from the arable lands the High Moſs was ſeparated by 300 or 400 yards of the Low, which, even to a man, affords but indifferent footing, and to horſes is altogether impracticable. The Low Moſs is in general only

only three feet deep; the High Moſs is from ſix to twelve feet in depth.

It will appear at firſt ſight, that without a road of communication the High Moſs muſt for ever have proved unconquerable. Without delay, therefore, a road was opened to the breadth of twelve feet, for ſeveral hundred yards in length, by floating off the moſs down to the clay.

This being effected, and at the ſame time an opening given to admit water, in the year 1775 twelve tenants agreed for eight acres of High Moſs each. In conſideration of the greater depth of this part of the moſs, it was agreed, that during the firſt 19 years they ſhould pay no rent; but for the ſecond 19 years the terms of agreement were the ſame as thoſe made with the tenants in the Low Moſs. To the above mentioned tenants every degree of encouragement was given; as upon their ſucceſs depended, in a great meaſure, the diſpoſal of the great quantity of moſs ſtill remaining. But their ſucceſs, however problematical, was ſuch, that next year,

1776, 6 more took 8 acres each,
1777, 1
1778, 4
1779, 3
1780, 1
1781, 1
1782, 1

In all, including thoſe upon the Low Moſs, 42 tenants, occupying 336 acres.

Though for ſome time the diſpoſal of the High Moſs went but ſlowly on, it was not for want of tenants; but the number of operators were already ſufficient for the quantity of water;

water; to have added more, would evidently have been imprudent.

In the year 1783 Mr Drummond entered into poſſeſſion of the eſtate of Blair-Drummond, and went fully into the plan adopted by his predeceſſor for ſubduing the moſs. At this time there ſtill remained undiſpoſed of about 1000 acres of High Moſs. As water was the great deſideratum, it was determined, that to obtain that neceſſary article neither pains nor expence ſhould be wanting. Steps were accordingly taken to aſcertain in what manner it might be procured to moſt advantage.

Meanwhile, to prepare for new tenants a ſecond road parallel to the former, at the diſtance of half a mile, was immediately begun and cut, with what water could be got, down to the clay, 12 feet broad, and 2670 yards long, quite acroſs the moſs. This opening was previouſly neceſſary, that operators might get a drain formed in the clay to direct the water; and it was to remain as a road that was abſolutely neceſſary, and which relieved ſettlers from an expence they were unable to ſupport. Theſe preparations, the progreſs of the former tenants, and the proſpect of a farther ſupply of water, induced 10 more to take poſſeſſions in the year 1783; in the year 1784, 18 more took poſſeſſions; and in 1785 no fewer than 27;—in all, 55 tenants in three years, which diſpoſed of 440 acres more of the High Moſs.

As the introduction of an additional ſtream to the moſs was to be a work both of nicety and expence, it was neceſſary to proceed with caution. For this reaſon ſeveral engineers were employed to make ſurveys and plans of the different modes by which it might be procured. In one point they all agreed, that the proper ſource for furniſhing that ſupply was the river Teith; a large and copious ſtream that paſſes

paſſes within a mile of the moſs: but various modes were propoſed for effecting that purpoſe.

To carry a ſtream from the river by a cut or canal into the moſs was found to be impracticable; and Mr Whitworth* gave in a plan of a pumping machine, which he was of opinion would anſwer the purpoſe extremely well.

Soon after this Mr George Meikle of Alloa, a very ſkilful and ingenious mill-wright, gave in a model of a wheel for raiſing water, entirely of a new conſtruction, of his own and his father's invention jointly. This machine is ſo exceedingly ſimple, and acts in a manner ſo eaſy, natural, and uniform, that a common obſerver is apt to undervalue the invention: But perſons ſkilled in mechanics view machinery with a very different eye; for to them ſimplicity is the firſt recommendation a machine can poſſeſs. Accordingly, upon ſeeing the model ſet to work, Mr Whitworth, with that candour and liberality of mind that generally accompany genius and knowledge, not only gave it the greateſt praiſe, but declared that, for the purpoſe required, it was ſuperior to the machine recommended by himſelf, and adviſed it to be adopted without heſitation.

The better to explain this machine, two ſketches are annexed, to the firſt of which the following letters refer. The explanation of the ſecond will be found upon the ſketch.

a. Sluice through which is admitted the water that moves the wheel.

b, *b*. Two ſluices through which is admitted the water raiſed by the wheel.

c, *c*. A

* This gentleman is ſuperintendant of the London water works, and an engineer of great reputation in England. He was ſeveral years employed in Scotland in completing the great canal.

c, c. A part of one of two wooden troughs and an aperture in the wall, through which the above water is conveyed into the buckets. [The other trough is hid by two ſtone walls that ſupport the wheel.]

d, d, d. Buckets, of which 80 are arranged on each ſide of the arms of the wheel = 160.

e, e, e. A ciſtern, into which the water raiſed by the buckets is diſcharged.

f, f, f. Wooden barrel-pipes, through which the water deſcends from the ciſtern under ground, to avoid the high road from Stirling and the private approach to the houſe.

Sketch ſecond contains a plan of the ciſtern, and exhibits the manner in which the water is filled into the buckets.

The diameter of the wheel to the extremities of the float-boards is 28 feet; the length of the float-boards, 10 feet. The wheel makes nearly four revolutions *per* minute; in which time it diſcharges into the ciſtern 40 hogſheads of water. But this is not all the wheel is capable of performing; for by ſeveral accurate trials by Meſſrs Whitworth and Meikle, in the reſult of which, though made ſeparately, they perfectly agreed, it was found that the wheel was able to lift no leſs than 60 hogſheads *per* minute; but that the diameter of the pipes through which the water deſcends from the ciſtern would not admit a greater quantity than what they already receive.

To a perſon at all converſant in hydraulics, the reſemblance of this to the Perſian wheel muſt be obvious: and indeed it is probable, that from the Perſian wheel the firſt idea of this machine was derived. But admitting this, ſtill the ſuperiority of the preſent wheel is, in moſt reſpects, ſo conſpicuous, as to entitle it to little leſs praiſe than the firſt invention. For, 1ſt, In the Perſian wheel, the buckets being

ing all moveable, muſt be conſtantly going out of order: In this wheel they are all immoveable, conſequently never can be out of order. 2dly, Inſtead of lifting the water from the bottom of the fall as in the Perſian wheel, this wheel lifts it from the top of the fall, being from four to five feet higher; by which means ſome additional power is gained. 3dly, By means of the three ſluices (*a*, and *b*, *b*, fig. 1.) in whatever ſituation the river may be, the quantity of water to be raiſed is ſo nicely adjuſted to that of the moving power, as conſtantly to preſerve the wheel in a ſteady and equable motion. In ſhort, as a regulator is to a watch, ſo are theſe ſluices to this wheel, whoſe movements would otherwiſe be ſo various, as ſometimes to carry the water clear over the ciſtern, ſometimes to drop it entirely behind, but ſeldom ſo as fully to diſcharge the whole contents of the buckets into the ciſtern.

It is however but candid to remark, that this machine labours under a ſmall defect, which did not eſcape the obſervation of Mr Whitworth; namely, that by raiſing the water about $3\frac{1}{2}$ feet higher than the ciſtern where it is ultimately delivered, a ſmall degree of power is loſt. To this indeed he propoſed a remedy; but candidly confeſſed, that as it would render the machine ſomewhat more complex, and would alſo increaſe the friction, he thought it more adviſable to keep it in its preſent ſtate. At the ſame time he juſtly obſerved, that as the ſtream by which the wheel is at all times copious and powerful, the ſmall loſs of power occaſioned by the above circumſtances was of little or no avail.

This ſtream is detached from the Teith at the place where that river approaches neareſt to the moſs. The ſurface of the latter is about 15 feet higher than that of the former;

the ciſtern is therefore placed 17 feet above the ſurface of the ſtream, ſo as to leave a declivity ſufficient to deliver the water upon the ſurface of the moſs.

The pipes through which the water deſcends from the ciſtern are compoſed of wooden barrels hooped with iron 4 feet long and 18 inches in diameter within.

In theſe pipes, having been conveyed under ground for 354 yards from the ciſtern, the water at once emerges into an open aqueduct. This aqueduct, which was formed according to a plan by Mr Whitworth, is conſtructed wholly of earth or clay: and in order to keep the water on a level with the ſurface of the moſs, it is for nearly two-thirds of its courſe elevated from 8 to 10 feet above the level of the adjacent grounds; the baſe being 40 feet broad, the ſummit 18 feet, and the water courſe 10 feet broad. It commences at the termination of the pipes; from whence extending above 1400 yards, it diſcharges the water into a canal formed for its reception on the ſurface of the moſs.

For raiſing the water to this height there were two reaſons. 1ſt, That not only where it was delivered on the moſs, but even after being conveyed to the moſt diſtant corners, it might ſtill retain ſufficient power to tranſport the moſs to the river Forth. 2dly, That reſervoirs of a ſufficient height might be formed in the moſs to retain the water delivered during night.

In conſequence of Mr Whitworth's advice, a contract was entered into with Mr Meikle in ſpring 1787; and by the end of October in that year, the wheel, pipes, and aqueduct, were all completely finiſhed: and what, in ſo complex and extenſive an undertaking, is by no means common, the different branches of the work were ſo completely executed, and ſo happily adjuſted to each other, that upon trial the effect

fect anſwered the moſt ſanguine expectations. The total expence exceeded L.1000 Sterling.

To induce the proprietor to embark in this undertaking, the moſs tenants had of their own accord previouſly come under a formal engagement to pay the intereſt of any ſum that might be expended in procuring a ſupply of water. But he was determined they ſhould not enjoy by halves the ſweets of this long wiſhed for acquiſition. With a view, therefore, not only to reward their paſt induſtry, but to rouſe them to future exertions, he at one ſet them free from their engagement; nor has any intereſt ever been demanded.

This new ſupply was a moſt acceptable boon to the moſs tenants.—In order to make an equitable diſtribution, the water raiſed through the day was allotted to one diviſion of operators; that raiſed during the night to another. To retain the latter, a canal was formed, extending almoſt three miles through the centre of the moſs. From place to place along the ſides are inſerted ſluices to admit water to the reſervoirs of the poſſeſſors; each ſluice having an aperture proportioned to the number of operators to be ſupplied from the reſervoir which it fills. For the water raiſed through the day in reſervoirs are neceſſary; as it is immediately uſed by the diviſion to which it is allotted.

This additional ſtream, though highly beneficial, yet is not more than ſufficient to keep 40 men at conſtant work. But ſuch a quantity as would give conſtant work is not neceſſary; the operators muſt be often employed in making and repairing their drains, grubbing up roots of trees, &c. ſo that a quantity ſufficient to give five or ſix hours work *per* day to the whole inhabitants is as much as would be wanted. But as the quantity procured was ſtill inſufficient

for this purpoſe, a ſmall ſtream that deſcended from the higher grounds was diverted from its courſe and brought into the moſs. From want of level this ſtream could not be delivered to the greateſt advantage; namely, upon the ſurface of the moſs. Yet by making, at a conſiderable expence, a drain half a mile long, and a reſervoir for the night-water, it was rendered of much importance. And during the whole winter months, as well as in ſummer, after every fall of rain, it keeps 15 perſons fully employed.

In the year 1787 two more tenants agreed for eight acres each; in 1788, four; in 1789, eight; in 1790, four tenants, all agreed for the ſame number of acres.

The whole moſs was now diſpoſed of, except that part called *Flow-moſs*, which comprehended about 400 acres. Here it is twice the uſual breadth, ſo fluid that a pole may be thruſt with one hand to the bottom; and the interior part, for near a mile broad, is three feet above the level of all the reſt of the moſs. Hitherto the many and various difficulties that preſented themſelves had been overcome by perſeverance and expence. But here the extraordinary elevation of the moraſs, joined to its great fluidity, ſeemed to exclude all poſſibility of admitting a ſtream of water; and it was the general opinion that the moſs-operations had now arrived at their *neplus ultra*, and that this moraſs was doomed to remain a nuiſance for ages to come.

But the proprietor had now advanced ſo far that he could not ſubmit to retreat; and he conſidered himſelf as, in ſome meaſure, pledged to the country for the completion of this undertaking. To detail the various methods practiſed to introduce a ſtream of water into that moraſs, would prove tedious. It is ſufficient to ſay, that after a thouſand unſucceſsful efforts, attended with much trouble

and

and conſiderable expence, the point at laſt was gained, and a ſtream of water was brought in, and carried fairly acroſs the centre of the moraſs.

The greateſt obſtacle was now indeed overcome; but ſtill another remained of no ſmall moment, namely, the diſcouragement given to ſettlers from the total impoſſibility of erecting habitations upon the ſurface of this moraſs. To find a remedy for this evil was difficult. Happily a reſource at laſt occurred. This was to bargain with a certain number of the old tenants whoſe habitations were neareſt, to take leaſes of portions of the moraſs. But as ſome additional aid was here neceſſary, it was agreed that L. 12. Sterling ſhould be gradually advanced to each tenant till he ſhould accompliſh the clearing of an acre, for which he or his ſucceſſor is bound to pay 12s. of yearly rent, equal to five *per cent* upon the ſum advanced. When this point ſhall be gained, they are bound to diſpoſe, as moſt agreeable to themſelves, either of their old or of their new poſſeſſion; for which, when once an acre is cleared, purchaſers will not be wanting.

In conſequence of the above arrangement, during the year 1791 no fewer than 35 of the old tenants agreed, upon the forefaid conditions, for eight acres each of the Flow-moſs. Thus 1200 acres are now diſpoſed of to 115 tenants. But when theſe 35 tenants ſhall each have cleared their acre, then, according to agreement, 35 additional tenants will ſpeedily be acquired; and the moſs will then contain in all 150 families.

To the leaſes already granted to the tenants in the High Moſs, it is now determined to add a further period of 19 years (making in all 57 years), during which they are to pay one guinea per acre; a rent not greater than the land is worth even at preſent, but greatly below its probable value

at

at that diſtant period. This, it is hoped, will prove to the tenants a ſufficient incitement to continue their operations till their poſſeſſions are completely cleared from moſs.

Having now gone through, in detail, the whole progreſs of the colony ſince its firſt ſettlement in the year 1767, it ſtill remains to take a general view of the effects produced by that eſtabliſhment.

For ſeveral years, at firſt, the water was uſed chiefly to carry off moſs, in the forming of new roads, and preparing reſervoirs; which conſiderably retarded the principal object of gaining land. Nevertheleſs there have been cleared full 300 acres of excellent land, producing wheat, barley, oats and clover, yielding from ſix to twelve bolls after one.

From the nature of the undertaking, there is good reaſon to ſuppoſe that the operations will yearly advance with greater rapidity; eſpecially as the greater number of the ſettlers have only of late begun to operate. Many, beſides maintaining their families otherwiſe by occaſional employments, have in the High Moſs cleared in a year one rood of land; ſome have cleared two, ſome three roods, and in the Low Moſs an acre.

It was a remark often made, even by perſons of ſome obſervation, that by collecting together ſuch a number of people, Kincardine would be over-ſtocked; and the conſequence would be their becoming a burthen on the pariſh: for as the bulk of them were labourers not bred to any trade, and poſſeſſed of little ſtock, it was foreſeen that, for ſome time, they could not afford to confine themſelves ſolely to the moſs, from which the return muſt be ſlow; but behoved, for immediate ſubſiſtence, to work for daily hire. Happily theſe predictions have proved entirely groundleſs; for ſuch is the growing demand for hands in this country, that not only

only do the whole of theſe people find employment whenever they chooſe to look for it, but their wages have been yearly increaſing from the time of their firſt eſtabliſhment. In ſhort, they have proved to the corner where they are ſet down a moſt uſeful nurſery of labourers; and thoſe very farmers who, at firſt, ſo ſtrongly oppoſed their ſettlement, now fly to them as a ſure reſource for every purpoſe of agriculture. Still they conſider the moſs-operations as their principal buſineſs; none pay them ſo well; and when they do leave it to earn a little money, they return with cheerfulneſs to their proper employment. Many of them already raiſe from 10 to 60 bolls of grain, and have no occaſion to go off to other work; which will ſoon be the caſe with the whole. Their original ſtock, indeed, did not often exceed L. 25, and ſome had not even L. 10; but what was wanting in ſtock is compenſated by induſtry.

Of the whole inhabitants full nine-tenths are Highlanders, from the neighbouring pariſhes of Callander, Balquhidder, &c.; a ſober, frugal, and induſtrious people, who, inured to hardſhips in their own country, are peculiarly qualified to encounter ſo arduous an undertaking. From this circumſtance, too, ariſes a very happy conſequence; that wearing a different garb and ſpeaking a different language from the people amongſt whom they are ſettled, they conſider themſelves in a manner as one family tranſported to a foreign land. And hence upon all occaſions of difficulty, they fly with alacrity to each others relief. Neither ought it to be forgotten, that, from their firſt ſettlement to the preſent day, not a ſingle inſtance has occurred amongſt them of theft, bad neighbourhood, or of any other miſdemeanour, that required the interpoſition of the civil magiſtrate. Nor, however poor in circumſtances, has any one of them ever

ſtooped

ſtooped to ſolicit aſſiſtance from the funds of the pariſh appropriated to that purpoſe.

Though few of the tenants entered with a large ſtock, one only has been obliged to leave the moſs from incapacity to proceed. Many indeed have ſpent their ſmall ſtocks, and even run a little in debt: but in this caſe they have been permitted to ſell their tacks upon the following conditions: *1ſt*, That the purchaſer ſhall be a good man: *2d*, That the ſeller ſhall take another poſſeſſion. By this manœuvre a new inhabitant is gained; while the old one, relieved from debt, and aided by experience, recommences his operations with double ſpirit upon a new poſſeſſion. The monied man again, has at once a houſe and a piece of ground; the want of which, chiefly, ſtartled new beginners.

Some have even made a kind of trade of ſelling; inſomuch, that from the year 1774 to the preſent year 1792, no fewer than fifty ſales have taken place, producing in all the ſum of 849 l. Sterling. This proved from time to time a moſt ſeaſonable recruit to the colony, and gave new vigour and ſpirits to the whole.

The number of the ſettlers is productive of an excellent effect; that although ſome are generally abſent, enough ſtill remain to occupy the water conſtantly. In a favourable day there may be ſeen hundreds, men, women, and children, labouring with the utmoſt aſſiduity. The women declare they can make more by working at the moſs than at their wheel; and ſuch is the general attachment to that employment, that they have frequently been diſcovered working by moon-light.

Another happy conſequence ariſing from their numbers is the great quantity of moſs they conſume for fuel. There are in all 115 families. Each family requires at an average 10 dargues

dargues * of peats yearly. Each darg uncovers a ſpace equal to 10 ſquare yards of clay: ſo that by caſting peats, the moſs tenants gain yearly about 6 roods of land.

The advantage too, of providing their fuel with ſo little trouble, is very great. They require yearly 1150 dargs of peats; which, as each darg when dried and ſtacked is valued at five ſhillings, are worth 287 l. 10s. Sterling; a ſum which otherwiſe muſt have been expended on the prime coſt and carriage of coals. Many of them caſt peats for ſale; and 100 l. worth are yearly diſpoſed of in the town of Stirling, the villge of Down, &c.

Though moſs-work be laborious, it is at the ſame time amuſing. The operator moves the moſs five feet only at a medium; and the water, like carts in other caſes, carrying it off as faſt as it is thrown in, excites him to activity. Still he muſt ſubmit to be wet from morning to night. But habit reconciles him to this inconvenience; while his houſe and arable land fill his eye and cheer his mind. Nor is it found that the health of the inhabitants is in the ſmalleſt degree injured either by the nature of the work or the vicinity of the moſs.

The quantity of moſs that one man can move in a day is ſurpriſing; when he meets with no interruption, ſeldom leſs than 48 cubic yards, each weighing 90 ſtones. The weight then, of moſs moved per day is no leſs than 4320 ſtones. A cubic yard is moved into the water, and of courſe carried into the river Forth for one farthing. It follows, that the expence of moving 48 cubic yards is one ſhilling. But the

* A dargue (or darg) of peats, is the quantity that one man can caſt and two can wheel in a day to the field where they are ſpread out to dry.

ſame quantity moved to the ſame diſtance by carts would coſt 24 ſhillings. Hence the advantage derived from the poſſibility of floating moſs in water, and the great importance of having water for that purpoſe.

The moſs, when contraſted with the rich lands ſurrounding, appeared, eſpecially before the improvements, a very dreary ſpot; one wide unvaried wild, totally unproductive, unfit even to furniſh ſuſtenance to any animal, except here and there a few wretched ſtraggling ſheep. Beſides, it entirely cut off all connection betwixt the farms on either ſide; amongſt which no intercourſe was practicable but by a circuit of ſeveral miles.

The ſcene is already greatly changed. The following are the numbers of the inhabitants now reſiding in the moſs; alſo of their cows and horſes, and of the acres gained by them from the moſs, together with their produce.

Number of Scotch acres cleared from moſs,	350
Men, Women, Boys and Girls.	764
Number of cows at leaſt,	201
Ditto of horſes and carts,	54

Their produce in bolls cannot be exactly aſcertained: but, conſidering the goodneſs of the ſoil, may be fairly ſtated at 8 bolls per acre, *inde* 2400 bolls.

As oats are the ſtaple commodity, the calculation ſhall be confined to that grain. According to the fiars of Stirlingſhire, crop 1790, carſe oats are valued at 14s. per boll. *Inde* 2400 bolls at 14s. is 1680l.

A track of ground ſo conſiderable, formerly a nuiſance to the country, thus converted into a fertile field, filled with inhabitants, comfortable and happy, cannot ſurely be ſurveyed with an eye of indifference by any perſon whoſe mind is at all ſuſceptible of feeling or of public ſpirit.

An

An excellent gravelled road 20 feet wide and a mile and a half long, is now carried quite acroſs the moſs. By this means, in the firſt place a ſhort and eaſy intercourſe is eſtabliſhed between two conſiderable parts of the eſtate, formerly as little connected as if ſeparated by a lake or an arm of the ſea. Secondly, the inhabitants of the Moſs, to whom, hitherto, all paſſage with carts or horſes was impracticable for at leaſt one half of the year, have now obtained the eſſential advantage of being able, with eaſe, to tranſport all their different commodities at every ſeaſon of the year. This road was entirely formed by the hands of the moſs-tenants, and gravelled by their own carts and horſes: a work which, it will not be doubted, they performed with much alacrity; when it is conſidered that to the proſpect of procuring a laſting and material benefit to themſelves, there was joined the additional inducement of receiving an immediate ſupply of money, the whole being done at the proprietor's expence.

The poſſeſſions are laid off in the manner beſt fitted for the operations: and are divided by lanes running in ſtraight lines parallel to each other, Parallel to theſe again the drains are carried; and this ſtraight direction ſalicitate the progreſs of the water with its load of moſs. Upon the bank of moſs fronting the lanes, the operation of floating is begun; and twenty or thirty people are ſometimes ſeen heaving moſs into the ſame drain. That the water may be the more conveniently applied, the lanes include between them the breadth of two poſſeſſions only. The new houſes are erected upon each ſide of theſe lanes at the diſtance of 100 yards from each other.

Before the formation of lanes and roads, and while yet no ground was cleared, the firſt ſettlers were obliged to erect their houſes on the ſurface of the moſs. Its ſoftneſs denied

all acceſs to ſtones; which, at any rate, are at ſuch a diſtance as would render them too expenſive. Settlers, therefore, were obliged to conſtruct their houſes of other materials. Upon the Low Moſs there is found for this purpoſe great plenty of ſod or turf, which accordingly the tenants uſe for the walls of their houſes. For the rudeneſs of the fabric nature in ſome meaſure compenſates, by overſpreading the outſide with a luxuriant coating of heath and other mooriſh plants, which has a very picturesque appearance.

But upon the High Moſs there is no ſod to be found. There the tenant muſt go differently to work. Having choſen a proper ſituation for his houſe, he firſt digs four trenches down to the clay, ſo as to ſeparate from the reſt of the moſs a ſolid maſs, containing an oblong, rectangular area, ſufficiently large for his intended houſe. This being done, he then ſcoops out the middle of the maſs, leaving on all ſides the thickneſs of three feet for walls; over which he throws a roof, ſuch as that by which other cottages are commonly covered.

Upon the ſofteſt parts of the moſs, even theſe walls cannot be obtained. In ſuch places the houſes are built with peat dug out of the moſs, and cloſely compreſſed together while in a humid ſtate*. It is neceſſary even to lay upon the ſurface a platform of boards to prevent the walls from ſinking; which they have frequently done when that precaution was neglected. After all, to ſtamp with the foot will ſhake the whole fabric as well as the moſs for fifty yards around. This, at firſt, ſtartled the people a good deal; but cuſtom ſoon rendered it familiar.

The coloniſts have now made conſiderable advancement in

* This does not apply to the *moraſs*, upon the ſurface of which, it has already been obſerved, it is impoſſible to erect houſes in any ſhape.

in rearing better habitations for their comfort and convenience. Their huts of turf are but temporary lodgings. As ſoon as they have cleared a little ground, they build houſes of brick; when the proprietor a ſecond time furniſhes them with timber gratis. It has alſo been found neceſſary to relieve them entirely from the payment of the burdenſome tax upon bricks; a tax which ſurely was never intended to fall on ſuch poor induſtrious adventurers; and which, without this aſſiſtance, would have proved a moſt effectual bar to the employment of theſe materials.

There are now erected in the moſs 69 brick-houſes, ſubſtantially built with lime. The total expence amounted to 1033l. ſterling. And it is a very comfortable circumſtance, that the money expended upon theſe houſes is moſtly kept in circulation among the inhabitants themſelves: for as a number of them have learned not only to manufacture but alſo to build bricks, and as others who have horſes and carts furniſh the carriage of lime and coals, they thus interchange ſervices with each other.

With a view to excite the exertion of the coloniſts, the following premiums have lately been offered: 1. To the perſon who ſhall in the ſpace of one year remove the greateſt quantity of moſs down to the clay, a plough of the beſt conſtruction. 2. To the perſon who ſhall remove the next greateſt quantity, a pair of harrows of the beſt kind. 3. For the next greateſt quantity, a ſpade of the beſt kind, and 10 lb of red clover-ſeed. But as theſe premiums, if conteſted for by the whole inhabitants, could reach but a very few of the number, they have therefore been divided into ſix diſtricts according to their ſituation, and the above premiums have been offered to each diſtrict.

The eſtabliſhment of this colony has no doubt been attended

tended with a very conſiderable ſhare of expence and difficulty; for the undertaking was altogether new, and there were many prejudices againſt it, which it was neceſſary to overcome. At the ſame time it was noble and intereſting: it was to make a valuable addition to private property: it was to increaſe the population of the country, and to give bread to a number of people; many of whom having been turned out of their farms and cottaries in the Highlands, might otherwiſe, by emigration, have been loſt to their country: and that too at a time when, owing to the great enlargement of farms, depopulation prevails but too much even in the low countries. And it was to add to the arable lands of the kingdom, making many thouſand bolls of grain to grow where none ever grew before.

Theſe conſiderations have hitherto preponderated with the proprietors againſt the various obſtacles that preſent themſelves to the execution of ſo extenſive an undertaking. Should their example tend in any degree to ſtimulate others, who both in Scotland and in England poſſeſs much ground equally uſeleſs to the country, to commence ſimilar improvements, it would be a moſt grateful conſideration ſuperadded to the pleaſure already ariſing from the progreſs of this infant colony.

Establishment of a School in the Moss.

Since writing the above Account, it was found that the inhabitants ſtill laboured under two material diſadvantages: Firſt, That there was neither, within their reach, any public worſhip in the Gaelic Language, nor any means of obtaining religious inſtruction in the ſame; and the bulk of them have too imperfect a knowledge of the Engliſh, to be capable of receiving much inſtruction in that language. Secondly, The difficulty of procuring proper education for their children, the

the diſtance of the Pariſh School from the greater number, being ſuch as almoſt to preclude a poſſibility of ſending them thither, and their circumſtances not enabling them to ſupport the expence of a Teacher. In this ſituation it occurred that an application to the Society for propagating Chriſtian Knowledge, might probably be attended with ſucceſs. For though by the rules of that Society, its eſtabliſhments are confined chiefly to the Highlands, yet as almoſt the whole inhabitants of the moſs are Highlanders, they ſeemed to have a well founded claim to the aid of the Society. Application having accordingly been made by the proprietor, the Society was pleaſed to enter very warmly into the ſituation of theſe poor people, and with the greateſt alacrity agreed to the appointment of an experienced Teacher, who was ſettled in the moſs at Martinmaſs 1793. This Teacher who is well acquainted both with the Engliſh and Gaelic Languages, officiates through the week as a Schoolmaſter, and on Sundays convenes the people in the School-Houſe, where he inſtructs them in the principles of Religion, and prays with them in their native tongue. In order to promote this eſtabliſhment, and with a view to procure a Teacher better qualified than common, the proprietor has engaged to contribute L 5. ſtr. annually, over and above the ſalary of L 10. allowed him by the Society, and the conditions commonly required by them, of furniſhing gratis, a good dwelling houſe and ſchool-houſe, a kail yard, fuel, and the maintenance of a cow. And as an additional encouragement he has voluntarily given the ſchoolmaſter, about an acre of good carſe land, free ofrent.

No. 3.

OBSERVATIONS ON THE CULTIVATION OF WASTE LAND.

THE following Letter is written by John Smyth Esq. of Balharry, a general improver, in the parish of Alyth, in the Stormont, a district of Perth-shire, who is a Cultivator of waste land since 1781. He has inclosed, brought under culture, and set off five new farms, formerly waste land, containing 520 acres; and has begun to and passes his working stock upon the sixth, at Martinmas 1797, which contains above 128 acres more.

The rent, over-head, in the original state of the land, was under 1s. 6d. per. acre; it is now acknowledged to be very moderately set, and already pays above 16s. per acre: There are some rises of rent agreed on. At a low computation each acre will now produce subsistance for a human being.

Edinburgh, 26 June, 1796.

DEAR SIR

During your Agricultural Survey of the East part of Perthshire, last autumn, you mentioned to me, that the progress I had made in the cultivation of waste lands had drawn your attention; and that you wished to know the method I had followed.

In compliance with your request, I shall give you a genuine account; I wish you may find it in any degree interesting. My success, which has no doubt been considerable, having chiefly

chiefly followed from perſeverance and a ſtrict attention to œconomy; means which, under the bleſſing of God, rarely fail of ſucceſs in any undertaking.

The firſt object I purſued was for the maintenance of my ſtock, to dreſs all my ſmall patches of old or formerly cultivated land, of which I had but little, and at ſame time to cover the ſurface of my new or waſte land, juſt as thick as poſſible, not only by haining it (ſaving it from cattle) and protecting it from being uſed by either man or cattle, but by encouraging to grow every thing that naturally grew upon it; even broom, Scots firs, and by ſowing of whins; and when I got the ground covered compleatly with an impenetrable bed, even of traſh, I thought a great point was obtained.

My next object, was to clear ſuch a portion of waſte land as I could well manage, I mean, keeping in my view what I ſhould be able to do, 1ſt, as to incloſing and clearing from ſtone, while the different ploughings were going on; 2d, the extent I ſhould be able to bring marle or lime to; and laſtly, to provide dung for, which commonly proved my chief difficulty, but which was leſſened by the object of gain, inclining a neighbouring village to increaſe, by care, the quantity preſerved by them.

My methods of breaking in, were three: the 1ſt, when the ſurface was not impenetrable, I, by means of ſtrong oxen and plows, plowed it up as it then ſtood. This I found the worſt method, for though the ground was ſoon thereafter ſo far cleaned, by the beſt of the broom, fir trees, &c. being picked away by the neighbouring cottagers, who had leave to do ſo for their own behoof, the remainder with all the heath was left, which being very difficult to be got rotted, kept the ground long open and retarded the after operations

greatly. Therefore, I diſuſed this method early, and watched the ſeaſon, when the ſurface traſh would burn, and burnt it; but gaining by experience, that oleagenous and volatile matter ſo uſeful for food to plants, both in the roots and ſtems was thereby forced away, I found a third method much better than any of the former, which was to dig up the whole of this traſh, lay it on its ſide, and let it ly a year or two, as the courſe of my operations would ſpare; then before winter came on, I diſpoſed of all the withered traſh that would ſell, and burnt the remainder in corners.

I found by what fell off from the whins, broom, firs, &c. in the courſe of their withering, the conſtant warm moiſture and ſecluſion from the air neceſſary to vegetation, the heath, fog, or moſs, bent and other coarſe vegetable ſtems and roots were rotted, and the ſurface not only preſerved from the waſte by expoſure to ſun and wind, but greatly thickened, ameliorated, and in a manner made into vegetable mould, ſo that after ſuch a courſe, I have often had very good crops, even before I put either marle, lime, or dung, to the ground; after this method too I found the land go kindlier down to graſs.

Both the ſecond and third method greatly, and nearly equally ſhorten the general labour; and though I much more approve of the third, yet rather than retard my operations I often have practiſed the 2d.

I break up the ground by a large and ſtrong plough, to which I put always, for the firſt ploughing, ſix and ſometimes eight oxen, of from 40 to 50 ſtone weight, in working condition; by this means I put the ſole of the arable ground, or under ſurface, as far as I can from the upper ſurface; and as I have my people, who dig, blow, and cart the ſtones conſtantly

conſtantly in the field, attending the ploughs, obſtructions are nearly removed at the firſt and all at the ſecond ploughing.

The firſt ploughing I always give during the courſe of and as early in the winter as I can. If the ground has been completely bedded over, and the traſh has burned well; or if the third method has been accurately and ſucceſsfully performed, I ſometimes with and ſometimes without a ſecond furrow, ſow oats the enſuing ſpring.

But if the ground has been broken up in the firſt manner, or if the 2d or 3d method has not been got completely accompliſhed, I give up thoughts of ſowing the firſt year; let the firſt furrow lie till my ſeed time is over; and the ground is again grown a little together, and I then croſs-cut and then brake-harrow it, all of which operations I have been obliged to repeat when I break up in the firſt method, or when the ſecond or third was ill done: this ſhews the advantage of doing things to purpoſe, for when done to the purpoſe, I have never found theſe repetitions neceſſary.

The crops I practiſed were 1ſt, oats; 2d, turnips, yams, and other potatoes; 3d, barley with graſs-ſeeds; but from the want of dung for turnip and potatoe and a deſire to get on, (as I was reſolved never to keep a farm after a farmer could make bread of it, and make payment of ſomething like a rent,) I ſeveral times have had firſt oats and then barley with graſs-ſeeds, in this caſe the whins, broom, &c. were very apt to riſe; But for that reaſon the field was the ſooner broke up again by my myſelf or the tenant; and then an intervening turnip-crop, during the ſecond turn of the field, reduced and extirpated theſe traſh pretty completely. The marle or lime I uſed, I have been always very careful of, either by ploughing them in with a very ſhallow ſeed-fur-

row; or putting them on even after the ſeed-furrow and only harrowing in.

I wiſh always to keep a quantity of compoſt, freſh mould from ditches, ſediment of water with rotten vegetables, peat-moſs, &c. and ſome dung, and when the fields go down to graſs, any parts where the graſs is ſickly, or inclined to blain, I do cover with compoſt and freſh ſeeds, which I have found great benefit from.

As to the ſucceſs, I need not trouble you with a detail; my firſt eſſay will ſhow the reward is ſufficient for the labour: It was on the farm of Over-muirtown, conſiſting of about 15 acres infield, as much outfield, and a muir, valued at little and worth little. It was purchaſed at L. 520 from the late Dr Young of Edinburgh, who made a great deal of money by his knowledge of the value of land, and it was then poſſeſſed at L. 20 yearly rent by an intelligent and induſtrious tenant, who has ſince become the proprietor of the adjoining farm by his ſucceſs in his profeſſion; and he gave up this farm rather than pay only L. 3 additional rent: another tenant took it at L. 23 rent and became bankrupt; which circumſtance made me at firſt become a cultivator of waſte land. I have, out of this farm, a conſiderable thriving wood and ground for a ſheep park, on which I can put no poſitive value; but I alſo made two farms, ſet well worth the money, to two very thriving tenants, and as punctual payers as any in the kingdom: the amount of their money rent is L. 240 ſtr. beſides kains, carriages, &c. and this one of my muirs, even in a year of ſcarcity, ſuch as the laſt was, produced food for about 200 fellow ſubjects, beſides the cultivators of it.

'My other eſſays have been more extenſive, and though they have anſwered very well, have not equalled the firſt; but

but they have had the happy effect to diffuſe the knowledge of and ſpirit for this kind of improvement, even where it could hardly be expected, among ſmall tenants poſſeſſing from year to year at will.

I am, with much regard,
Dear Sir,
Your moſt obedient ſervant,
JOHN SMYTH.

The Rev. Dr Robertſon at Callander of Monteath.

No. 4.

STRUAN'S LETTER RELALIVE TO RANNOCH.

THE following letter from Colonel Robertſon of Struan contains ſuch juſt remarks, not only on his own country, but on the Highlands in general, that I cannot alter or abridge it, without doing it injuſtice.

SIR,

I had the pleaſure to receive your very obliging letter of the 20th inſt. and have great ſatisfaction in tranſmitting to you the account you mention.

The climate of Rannoch is rather more favourable than that of other parts in the ſame latitude, probably owing to the vicinity of Loch-rannoch, which ſeldom or never freezes, and to its being better wooded than moſt other diſtricts in Scotland.

Weſterly winds are the moſt prevalent in this country. They are at times exceedingly impetuous and occaſion conſidera-

ble

ble damage. The changes in the weather are ſo frequent and ſo ſudden, that no ſatisfactory obſervations can be made upon the hydrometer or barometer.

In ſome parts the ſoil is equal to any in the Highlands of Scotland; a great part of it being ſtill tolerably productive, although continually cropped for more than a century paſt, and otherways miſerably managed. What is at preſent under cultivation bears but a ſmall proportion to what ſeems to be equally fit for that purpoſe, were it properly incloſed and ſheltered by belts of planting. In ſeveral parts pretty far up on the hills, the marks of the plough are ſtill viſible; and by procuring to theſe places the ſhelter which they formerly had by ſurrounding woods, they might undoubtedly be ſtill cultivated to advantage.

There is good clay fit for pottery-work, in this diſtrict; and as marle has been found in the neighbourhood, it is hoped that the trials which are to be made here of that ſtimulus will be ſucceſsful.

There are inexhauſtible quarries of lime-ſtone in different places; and the inhabitants are beginning to make the proper uſe of it, in raiſing better crops. When the eſtate of Struan was the property of government, Mr Small the factor upon it, erected a mill for pounding raw lime-ſtone, which by all accounts anſwered the purpoſe, beyond expectation: and the pounded lime-ſtone was found to be ſuperior in ſome reſpects, as a manure, to that which was burnt.

There is no appearance of coal, but there are very extenſive tracts of moſs at a convenient diſtance from the inhabited parts of the country. The proprietors do not allow their tenants to cut wood for fuel, except when the peats have not

not been properly got in; which frequently happens in rainy ſeaſons.

The caſting or cutting of peats is in general very injudiciouſly managed, great part of the moſſes being entirely loſt by that circumſtance. Previous to the ſeaſon for cutting peats, the moſſes ought to be ſurveyed by proper judges, and certain parts of them allotted to the different tenants. It would alſo be materially advantageous to induce the tenants, during a favourable ſeaſon, to caſt, as nearly as poſſible, double the quantity they commonly conſume in one year, one half to be carried home as uſual, and the other half to be made up in ſtacks near the moſs: by which exertion for one ſeaſon, they would ever after be ſecured from the great inconvenience of ſcarcity of fuel, to which they are now ſo frequently liable.

The farmers in general have no idea of uſing the neceſſary means of ſecuring their dung-hills, which are commonly made upon ſloping ground, whereby a great part of their ſubſtance is drained off and entirely loſt.

The moſt evident and advantageous improvement for ſome of the proprietors in this diſtrict, would be to endeavour to prevent, as much as poſſible, the overflowing of an extenſive meadow, of which they have ſhares. It does not ſeem poſſible to prevent the great floods in winter; but by widening the channel of the river below the meadow, and clearing it of large ſtones, the ſummer and harveſt floods might be ſo far prevented as not to be materially detrimental: and by embankments a great part of the meadow might be converted into good arable ground.

There is a moor of conſiderable extent at the eaſt end of Loch-rannoch, which ſeems to be very improveable.

The preſent high wages of ſervants is an inſurmountable obſtacl

obſtacle to the well-being of the tenants, and of courſe to agricultural improvements. It would be in vain for the proprietors of any particular diſtrict to attempt remedying this evil, which nothing leſs than the adoption of a general plan for that purpoſe, through all parts of Scotland can effectuate.

The ſouming of cattle is not ſo much attended to as it ought to be; which has the worſt effects.

Obliging the tenants to keep proper bulls and rams is neglected.

Until a greater proportion of land can be brought into tillage, it would be improper to encourage the culture of flax upon a great ſcale.

The tenants of Rannoch in general have not long leaſes; and it would be improper to indulge them in that reſpect, until they can be brought to adopt a better method of managing their farms: which cannot be done ſuddenly. Such as are remarkably intelligent and induſtrious have leaſes of the endurance of from ſeven to nineteen years. Some farmers upon the eſtate of Struan, who got leaſes of extenſive farms from government for forty one years, of which there are ſtill many years to run, manage their farms with great propriety.—A great number of ſmall tenants were removed to make place for theſe tackſmen.

Although it would be evidently advantageous for the proprietors in the Highlands to remove, at leaſt one half of their tenants, it is to be hoped that humanity as well as proper attention to the intereſts of the nation at large will always be ſufficiently prevalent (with thoſe who can poſſibly avoid it) to induce them to refrain from adopting that meaſure; but as many of the proprietors, from unavoidable circumſtances, will be under the neceſſity of having recourſe to this expedient, would it not be an object worthy of the paternal

paternal care of government to deviſe ſome means of enabling them to follow their earneſt wiſhes to prevent the depopulation of the country? Premiums are very properly allowed for the encouragement of every uſeful improvement of national advantage; and none can be of more general utility, than keeping the people in their own country. Upon the ſame principle; why ſhould not the proprietors of eſtates in the Highlands, who ſacrifice their own intereſt to that of the nation and to the dictates of humanity, be in ſome degree, indemnified by government? Timous relief in this reſpect would be of *real* importance to the country, and at the ſame time give many proprietors the heart-felt ſatisfaction of not being forced by cruel neceſſity, to act in a manner repugnant to their feelings.

It is only of late that two-horſe ploughs, without a driver, have been generally uſed in Rannoch—Theſe ploughs do not ſeem to be properly conſtructed, but are unuſually heavy and ſtrong: which may in ſome degree be neceſſary on account of the large ſtones under ground, too frequently to be met with in almoſt all the arable fields.

All the tenants have a proportionable ſhare of hill-paſture; but as moſt of them cannot derive any conſiderable advantage from it, owing to their being unable to keep proper ſtocks of ſheep, it would ſeem reaſonable, upon condition of allowing them a certain diminution of rent, that they ſhould be prohibited from keeping ſheep, which upon the whole would be advantageous to them, and evidently ſo for the proprietors, who might, by theſe means, draw the full value of their hill-paſture, by letting it to ſheep-farmers.

The woods upon the eſtate of Struan on the ſouth-ſide of Loch-rannoch are extenſive *, and would be of great value,

* See the ſection on woods and plantations in the preceding report

were they ſituated in a leſs remote part of the country.—The fir-wood is of a ſuperior quality, and grows to a ſufficient ſize for maſts and yards to the largeſt ſhips—Although there are ſome rapid falls in the river, which flows from Loch-rannoch, it does not ſeem impoſſible to float timber, during great floods, to the Tay; and by blowing the rocks, in different places, which impede the paſſage at other times, it would be practicable, during the greateſt part of the year; by which means, wood for ſhip-building, of a ſuperior quality to what is now imported, could be delivered at Perth, at the ſame, or perhaps a lower price, than the foreign timber.

It would ſeem that the ſlow progreſs of improvements in the Highlands, not only in Perthſhire, but in general, may be, in a great degree, attributed to the inadvertency of many of the proprietors, eſpecially thoſe of great eſtates, who have only of late begun to give ſerious attention to that very important object.

Notwithſtanding the ſuppoſed poverty and miſery of the lower claſſes of people in the Highlands, they ſeem to live more comfortably than thoſe of the ſame order in the low country; which any common obſerver will be ſenſible of, by attending to the appearance they make at Church, or wherever they have occaſion to aſſemble; as there can be no better index to point out the circumſtances of the lower claſſes of Mankind than their faces and cloaths.

At Mount Alexander, part of the eſtate of Struan, there is a fine ſpring called the ſilver well, on account of the remarkably bright coloured ſand to be found always at the bottom of it. This well was lately cleaned, to a conſiderable depth, and in a few days, was again ſupplied with its uſual bed of ſand.

For

port, where the number of acres under different kinds is accurately taken down from the notes furniſhed by this gentleman.

For between four and five hundred years paſt, the family of Struan have been in poſſeſſion of a ſpherical tranſparent ſtone called *Clach na bratich* (the Stone of the Standard or colours.) Tradition ſays that this ſtone was found by Duncan of Athol, the founder of that family, in Perthſhire in the following manner. As Duncan was in purſuit of Macdougal of Lorn, who had made his eſcape from him out of the iſland of Loch-rannoch, night came upon him towards the end of Loch-ericht, and he and his men laid them down to reſt, the ſtandard-bearer fixing the ſtaff of his colours in the ground. Next morning, when the man took hold of his ſtandard (as it happened to be fixed in looſe, ſpouty ground, near a fountain,) the ſtaff, which probably was not very ſmall or well poliſhed in thoſe days, brought up a good deal of gravel and ſmall ſtones, and among the reſt came up this ſtone, which being of a brightneſs almoſt equal to cryſtal, Duncan thought fit to keep.

They aſcribe to this ſtone the virtue of curing diſeaſes in men and cattle, eſpecially ſuch diſeaſes, whoſe cauſes are not eaſily diſcovered. Frequent application is made to the preſent proprietor of this ſtone, not only by his own tenants, but by people at a great diſtance, and all of them he has had occaſion to examine on the ſubject, ſeem convinced of its efficacy; inſomuch that many of the preſent generation in Perthſhire would think it very ſtrange to hear the thing diſputed*.

From the archives of the family of Struan it appears that this Duncan†, a ſon of Angus Lord of the Iſles, ſtiled of A-

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* The family of Advorlich in this county has a ſtone, to which ſimilar virtues are aſcribed. It has a cryſtalline appearance, with a fine tinge of red.

† Hence the Robertſons are frequently called Clann-Dannichi, the deſcendants of Duncan.

thol (as were ſeveral of his ſucceſſors) of whom the family of Struan is deſcended, having been invited over by thoſe in the Highlands of Perthſhire, who found themſelves oppreſſed under the tyranny of the Baliol party, to be their captain and leader, had got ſuch a footing in Athol, Rannoch and the adjacent countries, as enabled him to render eſſential ſervice to King Robert Bruce, after he was defeated at Methven and Dalree.

In troubleſome times Duncan reſided in the iſland of Loch-tummel, where he is ſaid to have received his king. Part of the converſation that paſt upon the occaſion, particularly the king's promiſe to take care of Duncan's fortunes, when affairs ſhould be ſettled (which promiſe was afterwards amply performed) is ſtill related by the people of the country. The king reſided afterwards for ſome months in the wood Kynachan in the neighbourhood of Loch-tummel, where there were temporary habitations built for him and his followers. The place is known to this day by the name of Larach ty an Ri (ruins of the king's houſe,) and there are ſtill faint veſtiges of the principal houſe and other buildings. It appears that the queen had been there alſo, for a pool near it, upon the river Tummel, is called the Queen's ferry.

That you may be enabled to form a juſt opinion of the character of the late Alexander Robertſon of Struan, I ſhall give you a ſhort ſketch of it drawn by my father, who could not be ſuſpected of partiality towards him, as he did every thing in his power to deprive my father of his birthright, in favour of the female line.

"This gentleman was much eſteemed by all of his acquaintance for his ſprightly wit and agreeable converſation. He had a conſiderable genius for poetry, as appears by many of the pieces found in the collection publiſhed under his name,

name, after his death;* but he wrote careleſly and was ſeldom at the trouble to reviſe what he wrote. Many of thoſe, who were about him, are of opinion, that he never intended any thing for the preſs, which was probably the caſe; for there

* In his deſcription of mount Alexander, one of his feats, he ſays, in the trueſt poetic vein:

There ſhady trees adorn the river's ſide
And cryſtal fountains thro' the vallies glide
Woods, hills and dales with milk and corns abound,
Traveller, pull off thy ſhoes, 'tis holy ground.

A character of Struan, beſides that given by his relation in the text.

Be it ne'er ſaid of Struan he deny'd
His tender aid, when poor or needy cry'd;
For in each footſtep of his life, 'tis known
To mind their wants, he quite forgot his own.
Sound was his judgment and his reaſon firm,
His virtue ſteady and his courage warm;
Unmov'd, he bore the ſhocks of adverſe fate
Nor fear'd the danger, were it e'er ſo great.

A part of his epitaph written by another hand:

No more thy gentle numbers pleaſe the ear;
Stopt is that ſpring, from whence they flow'd ſo clear;
Yet tho' thy body be reduc'd to duſt
As falls alike the good, the brave, the juſt,
Thy name, illuſtrious ſhade! ſhall e'er ſurvive,
And deathleſs fame unfading honours give.
There's nothing dignifies ſo much this duſt,
As that, like God, he aim'd at being juſt.

How contrary to all this and how falſe the picture of Struan drawn by a ſnarling cynick, about 25 years ago, who in a fit of the ſpleen and diſpoſed to detraction, poured forth a torrent of ſcurrility on the aſhes of the *dead*, which he concludes in theſe words, "He died as he lived, a ſot." Some dogs bark at the moon.—Very different was the character given by Lewis the fourteenth, who was wont to ſay that Alexander Robertſon of Struan was one of the moſt accompliſhed and beſt bred gentlemen at the court of France, the moſt refined at that time in Europe.

there are a number of pieces in that collection, which he would have committed to the flames, if he had intended a publication; especially if he could have foreseen that his manuscripts were to have fallen into the hands of a mercenary servant: for whatever he might have said or written in his youth, or over a bottle or in an angry mood, he had too much sense and judgment, in his calm deliberate hours to give public offence to morality or decency."

I remain, with great regard,

SIR,

Your most humble servant,

ALEX. ROBERTSON.

Rannoch 30th Jan. 1797.

To the Rev. Doctor James Robertson, Minister at Callander.

No. 5.

5th July, 1795.

RESULT of the TRIALS of FINE WOOLLED SHEEP, by MR HALDANE of Gleneagles in Perthshire.

ALL along the Ochill hills in the shire of Perth, there is a very extensive tract of as fine sheep pasture, as any in this island, which from bridge of Allan on the west to beyond Newburgh on the east, may extend to above 20 miles in length, and on an average to between five and six in breadth, from south to north.

The summits of some of this range of hills in the centre, rise to a very considerable height, perhaps the highest to near 1500 feet above the level of the sea; but the greater part

part of them are lower, from 500 to 1000 or 1200.—And on the ſides, at leaſt on the north and eaſt, they riſe gradually and are interſected by many rivulets deſcending from them. There are many little, and ſome large open glens, and hollows running through them, and many gently riſing hills, or hillocks, or ſwells, every where interſperſed. They are moſtly green to the top, covered with fine, ſhort, ſweet graſs, in general dry and admirably fitted for the paſture of ſheep, for which purpoſe they are uſed; the feeding of cattle on them being leſs practiſed than formerly, as being found hurtful to the ſheep;—they lie in the very centre of the country; and are croſſed from ſouth to north by three or four great and convenient roads. The water of Devon riſes in the weſt end, and runs for ten miles eaſt through the heart of them. The variety of this verdant ſcene is beautiful;—the ſhelter to be always found on ſome ſide, is never wanting; and the conveniency for paſturage, eſpecially as heath is to be found here and there near the tops, in ſome places, cannot be exceeded.

With theſe natural advantages, ſheep feeding has long been followed here; and at preſent there cannot be under 50,000 in the above extent of this county alone, beſides what may be in Stirling, Clackmannan, Kinroſs, and Fife, ſhires on the ſouth ſide.

Above 40 years ago, the breed or kind of ſheep almoſt univerſally along theſe hills, was a ſmall, white or grey faced, coarſe woolled ſheep, of ſmall value, either as to carcaſe or fleece. But at that time the ſheep-holders were perſuaded to make trial of a larger boned ſtronger ſheep of the black faced, and black legged kind, with a heavier fleece; and rams of that kind were firſt got from Tweed-dale, and ſome

of

of the grey faced kind from Crawford Muir and other places; and a good deal of pains was taken thereby to improve the breed, and raiſe the ſize of the carcaſe and quantity, though not much the quality of the wool. Inveterate prejudice for old habits, and their not being in uſe, or not having ſufficient ſtocks and knowledge to rear as many as they needed, or finding it difficult, made the change go on ſlowly; but in time it became the general practice rather to go to Linton and the ſouth country to buy lambs and hogs* of the black faced kind, even at ſo high a price as 5s. the lambs, and 10s. the hogs a head, than to raiſe them from their own flocks, which might have been done at 2 or 3s. cheaper, beſides being leſs liable to fail, from being bred on the ground; and further, beſides giving them an opportunity of always ſelecting out of thoſe they bred themſelves, ſuch as they found moſt valuable for their different qualities, and thereby ſtill more to amend their ſtocks, a thing which will ever be found of the higheſt importance.

In this way, they have chiefly gone on; and at an expence of ſeveral thouſand pounds every year, ſupplied themſelves with young ſheep, which they might have raiſed much better at home, and which might have been more ſpeedily and effectually improven in various qualities, by getting better rams into their poſſeſſion, and by degrees increaſing their own flock, with proper attention.

Mr Haldane has long endeavoured to combat the prejudices, and ſome of the practices of theſe people. And has in ſome inſtances, among his own tenants, prevailed with them to breed a number of their own ſheep, and to be more attentive to their rams; and their ſheep are certainly improved, being a well boned, ſtout, hardy ſheep, and give a higher price. The beſt of their wedders, the carcaſe weighing

* Sheep of one year old.

ing about 60 lb. or more, ſelling ſometimes at 3 and a half years old, ſo high as 17s. and 17s. 6d, and their picked ewes at 13s. and 14s. though theſe are rather above their ordinary prices.

But they are ſtill far behind, and have many errors and defects in their management, which their rooted averſion to change prevents them, as in other places, from altering;—though the advantage they have actually received by the above mentioned change of their breed, between the years 1750 and 1595, might ſerve as a leſſon to them, and ſhew them, that by again adopting by degrees a farther improvement in their breed, and getting into a better carcaſed and finer woolled kind, a great benefit might ariſe to them.

Their wool at preſent is moſtly coarſe, and the fleece from $1\frac{1}{2}$ to $2\frac{1}{2}$ lbs, weight, and ſometimes their heavieſt wedders a little more—And ſells the ſmeared kind at 7s. or 8s. per ſtone; and their white wool from 8s. to 10s. and ſometimes 12s. per ſtone of 22 ounces to the pound, and 16 pounds to the ſtone.

About 20 years ago, Mr Haldane having been favoured with a very fine young ram from the late Marquis of Rockingham in Yorkſhire, out of a croſs between a famous breed of the Marquis's, and Mr Bakewell's, brought him down to that country, with a view to mend their ſheep. He turned out a beautiful animal, and certainly of a very valuable kind. He was broad and ſtraight in the back and particularly well turned and broad behind, and thicker in the ſhoulder than our common kind—polled—high noſed—white faced—and white legged—with large, clear eyes, and fine thin ears—an open countenance, and a thick ruff of fine wool about the neck and ſhoulders; and a broad long tail, and rather ſmaller in the bone than might have been expected from his

ſize. He was gentle and quiet, and not given to leap, or wander out, and when clipped the ſecond year, had a great deal of fine wool in his fleece, which weighed between 7 and 8 lb. and the third year more. He was fed in very fine graſs incloſures, long uſed for ſheep, in common with the other country kind, commonly picked ſheep, kept there for two or three years; and as he throve remarkably well, and never had any diſeaſe, his appearance and quantity of wool was far beyond the others. In a few years, he produced a number of his kind, reſembling him, from the beſt picked ewes could be got. But his progeny, tho' ſome of them very handſome large ſheep, with fleeces of 5 lb. weight, were hardly any of them ſo fine, or pleaſing in ſhape or look, nor was their wool ſo very fine as his—yet the difference was not great—and ſome of his gets were killed at $4\frac{1}{2}$ years old, weighing full 18 lb. the hind leg, and 16 lb. the fore, as excellent mutton as could be eat, in ſo much that it was taken by ſome of the beſt judges for very old large fed mutton of the beſt country kind. And ſome of them were ſold at four years old for from 20s. to 25s. which were rather too fat, ſo that when you cut the loin, you could hardly get lean enough to go round a table.

This ram was kept for 8 or 9 years, but his teeth beginning to fail, and his wool to grow leſs, and even not quite ſo fine all over as formerly, he was ſold fat for 28s.

It cannot fail to appear as a ſtrange inſtance of ſtupid obſtinacy, and almoſt unconquerable prejudice, that although all the beſt and moſt experienced ſtore-maſters around, in other reſpects very good and very intelligent men, were frequently invited to ſee this ſheep, and all admired him very much, and confeſſed there never had been any thing like him in the country, and that even his lambs were far before theirs, and

and fold much higher and the wool greatly more valuable; yet they could not be prevailed on, even to make a trial, how the kind might do on their ſheep farms.—Mr Haldane again and again preſſed them only to ſend down half a ſcore each of their beſt woolled picked ewes of the beſt ſhape and ſize to his park at the proper ſeaſon, and offered to have them covered by his ram for nothing.

Their anſwer always was "The kind will do very well in your parks but not in our hills, and we will not riſk changing our breed which now anſwers with us—Such large heavy woolled ſheep cannot travel over our high and diſtant grounds to ſeek their food, or make their way through the ſnows in winter—or ſtand our ſtorms—and muſt certainly require to be fed and kept in winter, which is an expence we cannot afford; and their lambs muſt be more tender and more of them die in the ſpring—Our high rough paſture is too coarſe for them; and if we ſave or allot for them our beſt low lying and kindlieſt fields, we will injure and ſpoil the flock;—And in ſhort we cannot venture to keep different flocks and herds."

It was in vain, that he ventured to ſay "You may at leaſt make a ſmall trial on your loweſt grounds which can never hurt you; theſe ills you fear moſt probably will not happen, and without a fair experiment you cannot judge.—You ſee how well the kind has anſwered with me, and how much more reaſonable it is in itſelf than yours; how much you were beneſited by the laſt change againſt which you were equally and groundleſsly obſtinate for a long time; and may obſerve how much more thick and cloſe a fleece my ſheep have than yours, which muſt enable them to ſtand out againſt the rain, ſnow and ſtorms, and lying wet, better than yours, with open thin ſhaggy fleeces can poſſibly do—Even if you ſhould give them

a little meal to help them in the ſtreſs of ſtorm of winter, or *hain** ground for them, it is only what prudence, and the many and heavy loſſes you ſuffer yearly both in ſheep and lambs, ſhould lead you to do at preſent for the flock you have; for nothing can evidently be more abſurd, or more cruel, or actually againſt your real and eſſential intereſt, than what you now do, by turning your flocks adrift, through the ſnows and ſevere ſtorms of winter, to the moſt expoſed and higheſt places of your hills, without giving them any thing to eat, except what they can, in ſome few places ſcrape with their feet below the ſnow, or pick *from the leavings of their bare eaten ſummer paſture.*—It is marvellous, that more of them do not die, and that your loſſes are not greater. Even where they do ſurvive, they are ſo ſtarved, and beat down, and weakened, that they become more liable to many diſeaſes, and are ſo late of fattening or coming into order again, that the ſeaſon and catching the beſt markets are loſt, and you thereby ſuffer in the ſheep and wool much more than three times the food you need give them would coſt to preſerve them. The carcaſe and wool of one of my ſheep together is worth double of yours, and were it but a third better, it would do much more than defray all the expence in feeding you can want, and you can never do any thing more wiſe and profitable, than to be at ſome little trouble and expence in providing food for the whole of your flocks,—ſuch as various early and luxuriant graſſes,—turnips,—cabbages,—tares,—colefeed,—potatoes, and even whins, of all which ſheep are remarkably fond, and feed greedily upon them, eſpecially when there is no graſs to be found;—and all theſe you have it eaſily in your power to cultivate to an extent perfectly ſufficient for your purpoſe, and to ſupply your ſheep at that time

* Save graſs.

time of the year, when you have nothing now to give them."

All this, and more was loſt upon them—and not one man among them ever ſent a ewe to the ram.—The breed however has been kept up;—and is ſtill in Mr Haldane's poſſeſſion, and thrives in his encloſures, which are low and ſheltered grounds.—He has indeed diſperſed ſome of them, both ewes and rams, to ſundry people with whom they have thriven well, and encreaſed the ſize, and quantity, and quality of the wool. But there is a very general indolence, indifference, or want of active attention through the country, and it is with the greateſt difficulty any one can be induced to make experiments, *or purſue them*, if they are to coſt the leaſt trouble or expence.

When Mr Haldane became a member of the Britiſh Wool Society, he ſo much approved of their plan, and ſaw ſo great advantages to the country in its ſucceſs, that he determined to give it every ſupport in his power, and to contribute all he could to carry on their views, and make the faireſt and fulleſt experiments for that purpoſe—with that view, he was at a good deal of pains, and at ſome expence to provide the beſt rams and ewes of different kinds that could be procured; and allotted about 100 acres of his encloſures almoſt ſolely to that end.—It is ground at the foot of the green hills above mentioned, as much ſuited for ſheep paſture, as any can well be; dry, light, ſound land, much varied and ſheltered in the ſurface by plantations, but producing naturally great abundance of fine ſweet ſhort graſs, having been laid down at different periods, within theſe 25 years, in the higheſt order with many of the fineſt graſs ſeeds, and paſtured on ever ſince, and often with ſheep.

He had two very fine rams of his own, of the Rockingham

ham breed above deſcribed,—two Spaniſh ones from Lord Hopeton,—three Cheviot ones, two of them from the ſociety's flock,—three Ryeland ones, two ſent him by a friend directly from Herefordſhire; and one of them from the ſociety,—two Southdown ones from the ſociety, and one very fine Cheviot one from another hand—In all 13—many more than was needed for any ſmall private flock, had it not been for the uſe of the country.

His ewes conſiſted of Rockingham		17
	Cheviot	8
	Ryeland	5
	Southdown	2
And picked ewes from the Ochill flocks around, the moſt remarkable for their ſhape and quality of their wool about		60
	In all	92

With this ſtock he ſet out in October 1790—And has bred from them, and other ewes ſince got in, with all the ſucceſs he could wiſh, having hardly, or very ſeldom loſt a ſheep, excepting a very few weak lambs, and one of the Spaniſh rams which was drowned in a large drain.—They have all been remarkably healthy, and had no diſeaſe or diſorder among them, and a good many, perhaps 6 or 8 of the ewes have had annually two lambs.

In three years the ſtock encreaſed ſo faſt, that the ground alotted for them could not longer hold them, and he thought the beſt way of diſpoſing them, and diſperſing the beſt kind through the country, was by a roup, or public ſale by auction, which was made in the end of July 1794, after adverti-ſing it in the Edinburgh newſpapers, and anxiouſly through the country—when he ſold off about ſix ſcore of wedder

wedder hogs and lambs, and a few young rams and ewes to his own and other tenants around, all of them of the kinds of the different rams above named—the roup was not well attended; but what ſold were at tolerable prices, a good deal beyond the ordinary prices of ſheep in that part of the country; and the higheſt price was given to thoſe of the Cheviot breed, *which is the favourite of the country.*

The opportunity that was given here to the whole country to ſee and examine cloſely this ſmall flock, which was in excellent order, and the ſuperior fineneſs of their ſhape and wool, perhaps did more good to ſatisfy men's minds, than many diſcourſes might have done, and their ſeeing, that ſheep of a kind they thought too tender, as being brought from a milder climate, would thrive even in the Ochill hills, or in glens adjoining, ſerved to reconcile them to the idea of making trials.—And poſſibly if others would try the like experiments and ſupply the country at hand, with ſheep, of theſe kinds, carefully reared, *and at reaſonable rates*, it might be one of the beſt ways of introducing and ſpreading theſe breeds and forwarding the views of the ſociety.—With this view another roup was tried here in July, with nearly the ſame ſucceſs as the former, and about five ſcore were ſold; ſome of the lambs at 16s.—and of the ſheep at 29s.—But ſtill ſuch is the obſtinate adherence to old practices, and a ſettled courſe of management, and ſuch the inattention or ſupine negligence of the country, and their averſion to make even probable experiments, that the ſpirit intended to be raiſed, hardly ſeems to be diffuſed or encouraged, though in a matter ſurely of the higheſt moment to the intereſt of the country.—It was with ſome regret ſeen, that the chief buyers were the Butchers for the fleſh markets, as the ſheep were in fine order.

Beſides

Beſides the 32 ſtranger ewes of the different kinds Mr Haldane began with, as above enumerated, he had recourſe to three ſcore picked Ochill-hill ewes, in order to try the croſs between them and the rams he had procured.—In general this has anſwered very well—and they have produced very fine lambs, which have moſtly taken after *one or other of the rams*—they have moſtly white faces, and legs, and their wool is a great deal finer than that of their mothers, which have all black or grey faces; and their ſize and figure is plainly larger and better than their mothers—Some of them however have taken from their mothers and reſemble them—excepting that their wool is finer.—Of the young rams which have been pick'd out and kept, two or three being now two and three years old, of ſome of the new kinds by both ſides, are very handſome, with large fine fleeces and promiſe to be very fit to breed out of, being exactly of the kind of the beſt Southdown, Ryeland, and Cheviot rams.

The Spaniſh ram was a long bodied, long legged, horned ſheep, not ſo handſome, or well ſhaped as ſome of the others, his back not being ſtraight from neck to tail, but convex, or riſing a little upwards, and his hind quarters rather narrow, and drooping a little to the tail. But his wool ſuperior to any of the reſt in fineneſs and cloſeneſs, and he has ſtood the winters as well as any of them. The only diſorder he fell into was a too quick growing of the hoofs, which plaited under his feet and made him lame: But by paring them now and then with a knife be recovered. Not above three or four of the lambs ſeem to have taken after him.

The wool of theſe new ſheep is a great deal finer, than that of the Ochill ſheep, and has been ſold at a progreſſive encreaſing rate ever ſince Mr Haldane has had them. The

firſt

firſt Rockingham wool commonly ſold at 16s. per ſtone, and ſome could have been picked out of it worth more, but would have leſſened the value of the reſt. Since he got the other new rams and ewes, and his number has increaſed, their wool, and that of their breed has been ſold at 18s. 22s. 24s. And laſt year he got 26s. and 28s. for ſome of it. And he has annually made a piece of fine and very handſome cloth for his own wear, and ſome coarſer for the uſe of his family, ſamples of which were ſhown to the ſociety, and have been valued at from 7s. up to 15s. 16s. and even 17s. per yard, 7 quarters wide. Theſe cloths were ſpun in the neighbourhood, and wrought, dreſſed and dyed in the beſt manner by John Wilſon manufacturer in Alloa, a very knowing and induſtrious clothier, who deſerves every encouragement.

The wool of the croſs between theſe rams and the country ewes is not ſo fine, as that of the entire new breed, yet conſiderably finer than that of the country. And has been commonly ſold from 16s. to 18s. or even 20s. per ſtone. It makes exceeding good 2d cloths at from 9s. to 12s. the yard. And when narrow at from 5s. to 7s.

It is evident therefore that good cloth can be made in this country from *our own wool;* and that our breed of ſheep may be improved, ſo as to afford it; *which is the very point aimed at by the laudable endeavours of the Society.* And which he is happy in having thus helped in ſome meaſure to decide. Mr Haldane has alſo tried, as far as he could to carry this matter farther and to ſpread the breed of theſe rams among the ſheep-holders around him. With this view he let them know that they ſhould be welcome to have their ewes covered *gratis.* And deſired each of them to ſend down a ſcore, or more or leſs, of the beſt ewes they could pick out,

to his parks, where they ſhould be allowed to run with the rams for a fortnight, upon paying a triffle to the ſhepherd for taking care of them. But ſo ſtrong are their prejudices, that many of them otherwiſe very ſenſible experienced men, would not even embrace this kind offer. Betwixt 7 and 8 ſcore however were ſent down about Martinmas 1792, and were covered; and many of them had lambs of that kind next ſeaſon, which were kept in common with their own lambs, and from theſe ſome of them have reared young tups, and kept them among their flocks for covering in November laſt, along with their other rams, although only a year and a half old. From ſome ſtrange jealouſy, caprice or want of method and accuracy, Mr Haldane never could get from any of them an exact account of what number of lambs of that kind any of them had from the ewes they ſent down. Some of them ſaid they had thriven very well with them, and ſtood the following winter 1793-4 better than the lambs of their own flock, while others pretended that they had loſt many of the lambs, and were afraid they would not do on their hills.

But in the firſt place, it will be obſerved, that the ſpring of 1793, eſpecially after the lambing ſeaſon, was very ſevere for ſome weeks, and a great number of lambs, and even ſheep of all ſorts were loſt; and they acknowledged, they had not loſt more of them than of the commn kind in proportion to their numbers. And 2dly, it is plain, they were not at bottom ſo averſe to the new kind, becauſe they carefully preſerved ſome of the young tups, and reared them for covering even *prematurely*, or too young; and at the roup they bought them up with keenneſs for the uſe of laſt ſeaſon, and choſe rather to do ſo than bring down their ewes again to the parks to be covered, or to keep and ſhow an exact account of

of the produce. In ſhort they are like all other ſheep-holders averſe to have numbers counted, or to let their management be known, *eſpecially by the laird*; and were unwilling to have it thought that they had been miſtaken in their opinions, or arguments, or had yielded to conviction in a matter which in its conſequences might lead to raiſing of their rents, *as they thought*, in caſe theſe breeds ſhall thrive with them. They are men, and like others, wiſh to keep their trade and ſecrets to themſelves. So it is however, that this part of the plan has made leſs progreſs than was wiſhed; and time and patience, which bring about many things, muſt, it is ſuppoſed, be alſo truſted to in this, till men clearly ſee their intereſt in it, and the beſt way of getting at it. But this is ſtated, as a ſpecimen of the obſtacles with which the introduction of any new thing has to ſtruggle, even where every ſoft and inſinuating method is taken to perſuade men,—where the evidence of their own eyes is appealed to—and where the kindneſs and weight of conviction and authority is added;—and the goodneſs of the intention towards them is acknowledged.

It may be obſerved, that it has been all along thought neceſſary to give the flock here in winter and hard weather additional food, ſuch as turnips, cabbages, and a ſmall hack full of fine hay, which they greedily eat up, and attend regularly to get it at the uſual time of carrying it to them. But the quantity was ſmall,—never exceeding in 24 hours a ſmall cart full of the green food,—or ſix or eight ſtone of hay. If more is given, they ſeem to grow lazy, and wait for it, and do not uſe any exertion to ſeek for themſelves. But a very little ſeems right, and does them much good; and ſeems only neceſſary (where their paſture is proper, and and kept light as it ſhould be), in ſevere froſt and depth of

ſnow, that entirely covers the ground. The expence of thus preſerving and keeping in better order, a ſmall flock of ſuch ſheep, will not at an average of ordinary years, exceed 1s. or at moſt 1s. 6d. per head through the winter. And many years it will be done for much leſs, when the winter is very mild, and when plenty of green vegetables are provided. Indeed they prefer graſs their natural paſture to every thing elſe, and it is chiefly when they cannot get at it, that they will taſte the other, unleſs conſtrained to it, and intended to be kept fat for the butcher. It has been found that throwing a handful, or more of ſalt upon their hay, or on the vegetables, makes them more fond of them, or even laying them upon ſome tiles in the park, and it probably tends to keep them in better order, eſpecially if the weather continues long wet, or any part of their paſture ſhould at all become ſo.

If it ſhould be aſked, how ſtands the accounts as to profit and loſs, on keeping ſuch a flock of theſe ſheep? It may be readily anſwered, Mr. Haldane has certainly hitherto gained nothing, in point of profit. This was truly not ſo much his object, as to find out, whether this breed of ſheep could eaſily be reared and would thrive on, or near the hills in this country. The purchaſe of ſheep bought, and expence of bringing them, and of maintaining them, at rather more trouble and charge than will or can be commonly beſtowed, and not having in view to make the moſt of them in every ſhape, certainly enflamed the reckoning; and not having had yet time, or ſold ſo many, or ſo regularly, or at ſuch prices, as might have been according to intrific value, perhaps has prevented profit, and it may even in ſome degree be doubted, whether ground at 25s. per acre can profitably be uſed in that way, unleſs upon a larger and more eſtabliſhed

bliſhed ſcale, with a more ready market, and a moſt œconomical plan of management. The grounds might without doubt have been more profitably employed in tillage, or in grazing cattle, and this muſt continue to be the caſe, till a more perfect ſyſtem ſhall take place, and till the prices of ſuch ſheep, and of the fine wool they produce, ſhall riſe nearer their real worth, and to the prices got in many parts of England, where ground of even ſuperior value is profitably employed in that way: But let us begin, and go on by degrees; without attempting at once to carry flocks of theſe ſheep to the tops of our ſtormy or bare hills; there is an immenſe quantity of ground every where through this country, in our ſwelling and uneven but ſheltered ſurface, which at preſent does not yield near the half of that rent, and only approaching to, or half way up our hills, much more fitted for feeding ſheep of that kind than for any other uſe: and if once the demand for finer wool comes to take place, and larger mutton ſhall be found to be more profitable in the common market, or for the conſumption of the lower orders and manufacturers, as it moſt undoubtedly is, it ſeems perfectly clear, that theſe ſheep muſt be introduced and prevail. And that the landholders, farmers, and ſheepholders and the country in general, muſt therefrom derive great benefit. It is ſufficient for Mr Haldane that under the auſpices of the ſociety, he has endeavoured to contribute his mite towards that good end. And as for profit, he is contented at preſent to forego it, or that he has not loſt, till the gradual improvements of the country, in this and other reſpects, ſhall happily arrive, and amply repay to him, or to thoſe who may come after him, what he may have laid out from laudable motives, for the good of the country.

Upon the whole, this concluſion may ſafely be drawn from what

what Mr Haldane has thus endeavoured to do, That the breed of theſe fine woolled ſheep may eaſily be reared in this country, particularly in low midland encloſures, where there is good ſhort fine graſs, dry ground, and paſture, and accommodation fitted for them; and that *there*, they will be more valuable both as to carcaſe and wool than the common breeds of the country, and as fattening ſooner, and being ſaleable at three years old: and if every landed proprietor, who has, or might eaſily obtain ſuch encloſures, eſpecially of a large ſize, would keep ſome of theſe fine woolled kinds, a large quantity of fine wool might be profitably produced, and a great deal of money ſaved that annually goes out of the country for wool and fine cloth;—And thus a beginning might be given to woolen manufactories amongſt us; which being the ſource of much induſtry and employment for young and old, and of much wealth, and affording uſe for what now is, and may be more a native and plentiful material, produced in the country, ought ever to be conſidered as a ſtaple commodity deſerving our utmoſt attention and encouragement; and we might flatter ourſelves in time not only to furniſh cloth for our own conſumption; but to ſee two, or three millions of money brought into this country annually, as happens at this moment *in Yorkſhire alone*, the reward of their ſuperior induſtry and attention. We have many advantages to tempt wealthy, ſkilful, and adventurous manufacturers to ſettle among us, where they will find low wages,—all the neceſſaries, and comforts of life in plenty, as well as coal and command of water for every ſort of machinery, and the moſt convenient both land and water carriage, if we will only do ſo much juſtice to ourſelves as to produce the material wanted, which it is entirely and eaſily in our power to do.

All

All the attempts hitherto made in this country to eſtabliſh woolen manufacturies have hitherto failed, becauſe we had neither proper ſtock or ſkill, or the neceſſary material of finer wool, without a due mixture of which, no cloth of any conſequence can be made. And if it is clearly for our intereſt to renew theſe attempts, on a more ſure footing, it can only be done by introducing and propogating the fine wooled ſheep among us. (Signed)

GEO. HALDANE.

No. 6.

Auchtertyre 10*th. Oct.* 1795.

AGRICULTURAL OBSERVATIONS on the ſpeedieſt return of Lands in the Highlands, by Mr ROBERTSON of Lude.

IN order to bring land from the worſt ſtate of cultivation by the ſhorteſt and moſt effectual means to the higheſt ſtate of improvement, at the leaſt expence of labour and outlay of money, the following practice has been followed by Mr Robertſon of Lude for ſeveral years. But firſt it may be neceſſary to mention that he has the advantages of a large ſtock of ſheep, a conſiderable quantity of the beſt ſhell marl, and a dry ſharp ſoil to work upon moſtly covering lime rock.

When any portion of land on the above eſtate falls into the proprietors hands from the management of the late tenants, he has found that for the arable land alone on an average, 10s. per acre could not have been produced by letting it in the former plan; and therefore conſidering the means he had of improvement at an eaſy rate the following ſimple mode has for ſeveral years been ſucceſsfully purſued.

1ſt.

1ſt. In ſome inſtances when entering to the arable land at Whitſunday, artificial graſſes were ſown with the tenant's infield crop and a crop of hay, at once produced worth L 3. per acre. When paſtured for two years and a top-dreſſing of marl it has been ſince let at 30s. in paſture from Whitſunday to Martinmas, and part of the foggage and ſpring graſs reſerved for the ſheep. But the general mode which is found moſt profitable has reſulted by taking the land immediately from the tenants, when the graſs is entered to at Whitſunday and the arable at Martinmas, the foggage of both produce a conſiderable fore hand rent—or the arable part may be ploughed in order to prepare it for turnips next year, which is the great object. Next year at the proper ſeaſon (July) the turnips are ſown with no other manure than about 80 bolls of marl—They are ſown in drills and regularly weeded. In the months of Oct. and Nov. the marl appears to have an effect on their growth; ſo that they continue to improve till the ſevereſt froſt ſets in. In the mean time, as the hogs* of the flock begin to be affected by the braxy, an immediate check is put to that deſtructive diſorder by putting them on the above turnips—hurdled in different diviſions—with a hack of hay placed on the pooreſt part of the incloſed ground, within each diviſion of the field ſet off by the hurdles, to which they reſort, when overſatisfied with the turnips. At the ſame time they chooſe the heights and pooreſt parts of the land to lie upon, which has the immediate effect of making thoſe the richeſt parts of the field.

In ſome parts, in the proſecution of this plan, the expence is very conſiderably increaſed by the prodigious quantities of ſtones which muſt be removed, even after the marl is put on and the turnips ſown, but in the ſpring following the hurdling

* Sheep between 6 and 12 months old.

ling, the land is found in the beſt ſtate for the production of a crop of barley and graſs ſeeds; which ſhould be ſown ſomething earlier than uſual on account of the luxuriancy of the expected crop: And this for many years from the extent of from 5 to 12 acres has been found to prove the beſt crop on Mr Robertſon's farm. While the hay-crop the three following years is worth L. 5 per acre, and afterwards in paſture will let at L. 2. per acre. Thus from run-rig and unproductive land, hardly (if ever) repaying above the ſeed and labour, it is turned in the proprietor's hands from foggage to turnips, from turnips to graſs, in the courſe of two years; by which the land is at once quadrupled in its value; and by a fair calculation of one year with another, all expences are paid by the 2d or 3d crop: Becauſe the advantage to the ſtore farm in ſaving ſo many ſheep, and raiſing them to a larger ſize, ſhould be conſidered. Beſides many improvements on this plan may ſtill be adopted, by following the modes purſued by the growers of rape-ſeed, which would produce excellent provender not only during the winter but in ſpring at a time when the ſheep ſtock is in the greateſt neceſſity—eſpecially in the preſent inſtance where the greateſt diſadvantage which has yet been found to attend ſheep farming, in the Highlands proceeds from the backwardneſs of the ſpring, when in the months of April and May the whole flock is ſeen to ſuffer; whereas were any production found to ſucceed by which the ewes could be properly ſupported at the time of lambing, the greateſt benefit to the whole ſtock would reſult. By ſuch a crop another very lucrative branch of ſheep farming would be obtained, by carrying on the hill ſtock of wedders till the common hill mutton be fit for the market, when mutton is at the higheſt price and hardly to be procured in the markets.

N. B. Theſe practical obſervations are mentioned with a view of bringing a practice into more general uſe in Scotland, which has long been productive of the greateſt benefit to ſeveral counties in England.—And it is ſatisfactory to obſerve that when in one of the higheſt ſituations of the Highlands this profitable mode can be attended with ſucceſs, there is every reaſon to expect it in a ſuperior degree in lower and more fertile ſituations, by climate and ſituation.

W. R.

No 7.

A PROPOSAL for RECRUITING the ARMY and NAVY without much expence to government, ſo far as it extends; and at the ſame time, a check to leſſer crimes.

NOTICE has been taken, in the foregoing report, of the extenſion of the juriſdiction, conferred by a late act of the legiſlature, on his Majeſty's Juſtices of the peace; and the ſalutary effects of that act have been pointed out. When the full benefit of this ſtatute is properly underſtood, there is little doubt of their authority being farther extended even in pecuniary tranſactions. But there is a matter of police equally needful, congenial to the original inſtitution of theſe magiſtrates, which, in the preſent circumſtances of the country, might be committed, with the utmoſt propriety, to their charge. It is no leſs evident than lamentable, that a licentiouſneſs in principle and practice has gone forth, which ſpurns at all legal reſtraint, which is becoming uncommonly audacious and is making ſuch wide ſtrides that it threatens to level with the ground, the moſt venerable inſtitutions of our

our fathers, that have hitherto been the pride of our country.—This monſter was deemed ſuch a foe not only to the welfare but to the very exiſtence of ſociety, that he was accuſtomed to love concealment; but now he ſhows his face in open day. Such practices affected darkneſs and ſecrecy; but now they are daring and avowed. So few were infected by this contagion, that they were either aſhamed or afraid: and the ordinary courſe of the law was ſufficient to preſerve the peace of ſociety and the police of the country.—But theſe times are gone. The mildneſs of the law is inſulted; and an ungovernable ſpirit has ariſen, which tramples upon order and upon morality. Our affluence has engendered a train of evils.

In ſuch caſes, the gentlemen of the country are the natural guardians of its internal peace and proſperity, acting under a commiſſion from the chief magiſtrate. The infection is not univerſal, nor the diſeaſe incurable, otherways we were undone. But the diſtemper is ſo alarming and the ſymptoms of its progreſs ſo ſtrong, that it requires a remedy which ought to be both ſpeedy and effectual.

There is a gradation of guilt and a variety in the aggravations of crimes, undeſcribed in any code of laws, which is indefinite, if not almoſt infinite; therefore juſtice and ſound policy dictates that there ought to be a gradation of puniſhment correſponding to the various ſhades of depravity, in the tranſgreſſion. Death or tranſportation correſpond not to this variety; in ſome inſtances, either of them may be too high; in others the laſt may be too low: the firſt can hardly be called a degree, becauſe no puniſhment can be higher; and by the laſt, the public loſe at leaſt all the redreſs, to which they are entitled from tranſgreſſors. Impriſonment for a limited time or the pillory have only a tendency to baniſh

all ſhame, if any remains, and to harden culprits in wickedneſs. And they know, as well as their judge, that for want of ſufficient funds to ſupport them in jail, they muſt ſoon be liberated, and allowed to go about their buſineſs. Baniſhment from the liberties of a city or from the limits of a county is not only nugatory, but prejudicial to the body politic. Solitary confinement and being put to hard labour is by far preferable to this puerile and ſhort-ſighted kind of exile. But Bridewells are not frequent; And can nothing be done in the mean time, to ſupply their place, in ſupporting the police of the country? There certainly can. Are we to ſit with our hands acroſs, till infection deluge the land, and chaos reign without controul? Enlarge the powers of the juſtices of the peace. They have firmneſs; they have integrity; they have a ſoundneſs of underſtanding equal to the taſk; they know the ſituation of the country and the character of individuals; and they have the intereſt of the community at heart. Their own ſtake is great in the general proſperity. If the powers, they already poſſeſs, are ſufficient for the purpoſe, (for they are not accurately defined in ſome reſpects) ſo much the better. Let theſe gentlemen be inſtructed to act in a *cenſorial* capacity, in their provincial meetings of which there are nine in this county, that are already eſtabliſhed by law and held regularly once every month. In their judicial capacity, their decrees are much reſpected and have been the means of a great ſaving to the public ſo far as their authority is extended; and it is the general wiſh that their powers were extended beyond 3 l. 6s. 8d. Let their cenſorial juriſdiction have reſpect to the morals of the people within their reſpective diſtricts. Let all the variety of petty treſpaſſes, which never do come to the knowledge of the public proſecutor, as deſerving exile or the deprivation of life, nor even to the knowledge of the judge ordinary of the bounds,

come

come under their cognizance: Such treſpaſſes, as the law has provided no other remedy againſt, except impriſonment or ſome arbitrary puniſhment of that nature. Regular liſts of the perſons guilty of theſe petty crimes may be tranſmitted once a year to the head courts in the different county towns: and if cauſe cannot be ſhown, why ſuch names ought *not* to be regiſtered in the general county-liſt; there they ought to remain until there be occaſion for men to recruit the Army or Navy.

By this expedient ſeveral thouſands of recruits might be got in a few days. Perſons who were not only uſeleſs, but a nuiſance to the community, in one capacity, would be rendered ſerviceable in another: and thoſe who make a ſport of the lenity of the civil law, would be brought under the ſtricter diſcipline of military inſtitutions. A vaſt ſum might be ſaved by government, which otherways would be iſſued for bounty money. The awe of ſuch a regulation, if vigorouſly executed, would tend to check licentiouſneſs. The laſh would be conſtantly held over the head of evil doers. Every induſtrious man, who wiſhes to earn his bread in peace and ſecurity would ſit undiſturbed. Juſtice would run down our ſtreets as a ſtream and the happy effects of a well regulated police be univerſally felt and applauded by all good men.

The minute particulars of ſuch a regulation it is unneceſſary at preſent to point out. If the hint is taken and the plan adopted, the detail of theſe may be eaſily made by profeſſional men. There ſeems to be but one objection of any weight againſt this ſcheme: viz. that it may ſeem to trench on the liberty of individuals. This objection is more ſpecious than ſolid. The plan propoſed is much milder, becauſe it is ſlower in its effects, than a comprehending act, which is ſometimes adopted

adopted in the ſpur of the occaſion, and leſs partial in its operation, by being ſlowly executed: And theſe individuals to be affected by it, are the gangrened members of ſociety, and ſuch as have forfeited the protection of the law, by being hoſtile to it, by their evil practices.

No 8.

A LETTER by Mr James Wright Smith and Ferrier at Crieff, concerning the GLANDERS in horſes, addreſſed to the Reverend Dr Robertſon at Callander.

Crieff 23d April, 1796.

SIR,

ACCORDING to your deſire, I ſend you the following obſervations, extracted from a copy which I ſent to Sir John Sinclair, along with the certificates relative to the mares, horſes and foals which I have cured of the glanders; which certificates I hope will be an evidence that few perſons have hitherto ever had it in their power to ſet forth. Whether the board will reward me according to the merit of the diſcovery, I do not know; but I am determined without a proper recompence not to make the cure public.

Your inſerting the letter into your report will in a great meaſure make known to the public where they may have a cure performed, if taken in proper time.

Many perſons of ſkill have written upon the diſeaſes incident to horſes, but differ greatly in their opinions, and in none more than in the ſeat and cure of the glanders. Some perſons

perſons allege that there are ſeven kinds of this diſeaſe; but if there are, it is more than ever I obſerved.

This diſtemper in horſes originates from the following cauſes: by riding or working them exceſſively; by infection (as it is epidemical), ſuch as by feeding with foul horſes, either in ſtables or at graſs; by changing them from warm to cold, comfortleſs or damp ſtables; ſome times by removing them from cold houſes to warm ones. A ſurfeit in feeding has been known to bring on this diſeaſe.

The way in which horſes are as ready as any, to be infected with it, is, when they are feeding with a foul horſe at graſs: when the horſes not infected happen to be fond of the foul horſe, ſmelling often at his noſtrils and catching ſome of the glandered matter which he diſcharges. In ſuch a ſituation few horſes will eſcape the infection.

The firſt ſymptoms of the glanders are commonly obſerved by a hard dry cough, the horſes diſcharging clear water from the noſe; afterwards they diſcharge white or yellow matter; and if it be of a malignant kind, they will diſcharge matter, ſtreaked with black and blue mixed, and alſo a gluey ſubſtance, that ſticks all round the noſtrils. All theſe laſt mentioned are bad ſymptoms of the diſtemper, not eaſily removed, unleſs, the cure be taken in time; and the diſeaſe generally proves fatal, if it has corroded the ſpongy bone, which lines the noſtrils, or if it has been of ſuch a long continuance as to have affected the lungs. It is not common however that they are thus affected, except when the diſeaſe has come to a great height, and that the malignant matter has been allowed to breed ulcers, which affect the noſe. When this happens to be the caſe, there is little hope of recovering the horſe.

There are few I believe, who are in the practice of curing

or

or even of attempting to cure this diſeaſe, therefore moſt men do not know much about it; but from the long experience and ſucceſs, which I have had in the buſineſs, I have no difficulty at firſt ſight of knowing this diſeaſe, or the ſlighteſt appearance of it.

I was deſired by Sir John Sinclair to ſend him a few certificates of the cures which I have performed upon horſes, afflicted with this diſeaſe, which accordingly I have done. They may be about the number of 130 or 140 horſes, mares and foals, which I had the ſatisfaction of curing of that fatal diſeaſe within theſe 20 years. Many more I could have produced, had the gentlemen and others, I was employed by, been in life at this time.

The above certificates prove that I have cured of the glanders the number mentioned of horſes, mares and foals, of all kinds and ages; alſo mares with foal, and the foals themſelves, after the mares had dropt them, even before they were a month old.

I can alſo certify that all the horſes, mares and foals, which were cured by me, will neither communicate the diſeaſe to others, nor be in the leaſt danger, ſo far as I have learned, of being themſelves infected a ſecond time, although they ſhould be paſturing, feeding or working with the moſt corrupt, rotten, glandered horſes in the world.—It is like the ſmall pox, they cannot take it twice, if cured.

I apply medicines both externally and internally, before the diſeaſe or corrupt glander be removed with ſafety. And it is worthy of remark, that horſes thus cured have ſeldom or never afterwards been known to have any diſeaſe incident to horſes. The cure is commonly completed in a few weeks, and all the medicines uſed for that purpoſe can be bought at a very trifling expence; and during the time that the horſe

horſe is under cure, there is no neceſſity for keeping him idle, except for a few days.

After the certificates which I have ſent to the Board of Agriculture, it is unneceſſary to ſay, that I have been in the habit of curing the glanders for ſeveral years; and it is a fact, known over all this part of the country, that the curing of that diſeaſe has not been tried ſucceſsfully by any other perſon that I know of.

This diſtemper is not near ſo frequent here, as it was 20 years ago; becauſe, in my opinion, the farmers in general have got a breed of horſes more equal to their work; the horſes are better fed and kept clean, and the ſtables are more comfortable; which do all contribute to the health of horſes.

I am,

SIR,

Your moſt obedient ſervant,

JAMES WRIGHT.

No. 9.

Heads of a bill for aboliſhing THIRLAGE, *Drawn up by a gentleman in the county of Perth and preſented to the Board of Agriculture.*

SIR,

YOUR public ſpirit, and the important ſervices you have already done your country, are beyond my praiſe. As preſident of the Board of Agriculture you will have it in your power ſtill further to execute your laudable undertakings, and I reckon it the duty of every individual not only to thank, but to ſuggeſt to you what may occur to him.

Among the liſt of enquiries to be made, by the ſurveyors of the different counties in Scotland, for the Board of Agriculture, I obſerve one, upon which I beg leave to trouble you. It is the 34th: " Are there any obſtacles to improvements, and in what manner can they beſt be removed?"

One great obſtacle to improvements in agriculture is the Servitude of Thirlage. It influences farmers to follow improper rotations of crops, is a great diſcouragement to the improvement of muirs and waſte lands, as perhaps the 12th part of the produce will go to the mill of a ſtranger, who pays nothing for the improvements, beſides it is a perpetual ſource of law-ſuits. I am proprietor of ſome lands in Perth-ſhire, every inch of which is thirled to two different mills. The trouble and law-ſuits in which this thirlage has involved me and my tenants I have felt to my coſt. Many different parts of Scotland groan under the weight of this ſervitude, as I make no doubt you will be informed of, when the different Surveys are completed.

The remedy I would humbly ſuggeſt (you will pardon me for doing it) is, that the Board of Agriculture ſhould propoſe and recommend a bill for Scotland, ſomewhat in terms of the imperfect heads of one, which I take the liberty to incloſe. I do not think that any perſon could reaſonably oppoſe it, and thouſands would feel the benefit of it. If you favour me with an anſwer, pleaſe direct to me, *of Murray's-hall* by Perth. I am,

SIR,

Your moſt obedient,
Humble Servant,
JOHN MURRAY.

Murray's-hall,
Jan. 8th 1794.

Sir John Sinclair Bart.

Some

Some Heads of a Bill reſpecting Thirlage.

Whereas the ſervitude of thirlage, or the aſtricting the the corns produced on one proprietor's land to be grinded at the mill of another proprietor, is a practice that has been found to have very bad conſequences in Scotland, being productive of innumerable frauds and law-ſuits, and a great hinderance to improvements in agriculture, and ought to be aboliſhed, Be it therefore enacted, that from and after the day of any proprietors of land ſo aſtricted are hereby empowered to purchaſe ſuch thirlage from the proprietors of the mills. And where the mill ſhall happen to be under an entail, the money got by ſuch ſale to be laid out for the uſes of the entail.

In caſe the proprietor of the mill, ſhall not be ſatisfied with the price offered to him, or ſhall refuſe to treat; the proprietor of the lands aſtricted ſhall apply to the ſheriff of the county, who upon ſuch application is hereby authoriſed and required to ſummon a competent number of diſcreet ſubſtantial and diſintereſted perſons not leſs than thirty, nor more than forty, to come and appear before him at ſuch time and place, as by his warrant and precept ſhall be directed, and out of ſuch perſons ſo ſummoned to name and appoint a jury of fifteen perſons, and to receive ſuch evidence as ſhall be brought before him and them, which evidence ſhall be examined upon oath, and ſuch jury ſhall determine the price to be paid by the proprietor of the lands aſtricted.

In caſe the mill ſhall happen to be under leaſe, the jury are to determine what deduction the tackſman is to have out of his rent for the thirlage ſo ſold. And if the purchaſer of the thirlage ſhall have his lands under leaſe, the jury are

to determine what additional rent his tenants are to pay for their freedom from the thirlage.

And it is hereby expreſsly declared that this enactment ſhall in no way apply to the thirlage eſtabliſhed in royal burghs, which is reſerved to them entire as formerly.

No. 10.

ROMAN ANTIQUITIES in Perthſhire.

ARDOCH. The Roman camp at Ardoch was probably eſtabliſhed during the fourth campaign of Agricola in the year 48. It could contain 26,000 men, according to the ordinary diſtribution of Roman ſoldiers in their encampments; the contents being 1060 feet in length, and 900 in breadth.

From Ardoch to Strathgeath at the diſtance of five miles the Roman road was directed north-eaſt. The works, which the Romans erected at this place, have been demoliſhed by the progreſs of cultivation. Here they croſſed the Earn. At Strathgeath and not in the neighbourhood of Kinroſs, as is generally ſuppoſed, did the Caledonians ſurprize the Romans, whom they would have defeated, had it not been for the ſeaſonable arrival of Agricola, with the ninth legion, by break of day from Ardoch, upon receiving intelligence of the critical ſituation of that detachment.

The Roman road ſtretches eaſtward from Strathgeath behind the houſe of Gaſk, being regularly 20 feet wide, viſible where the ground has not been cultivated, and having circular poſts for centinels at proper diſtances and a ſtation at Gaſk. In this direction it reaches Bertha, which is ſituated on a point of land, formed by the confluence of the

the Tay and Almond, and about 14 miles from Strathgeath. At Bertha the remains of a timber bridge are to be ſeen, conſiſting of ſtones and beams, on which the Romans paſſed over the Tay to Strathmore.

About 3 miles north of Perth and on the eaſt ſide of the river, they eſtabliſhed another ſtation at a place called Graſſy-walls, ſo named from the remains of the mound, within which it is ſituated. Graſſy-walls is about twenty miles from Ardoch. The road then paſſes a place called Rome and is continued through St Martins, of the ſame breadth as it is at Gaſk. In the ſame line of march is the Roman camp at Lintroſe near Cupar of Angus, which is 1900 feet long and 1220 feet broad.

From thence they ſeem to have proſecuted their rout, in the bottom of Strathmore, by Meigle, nearly at an equal diſtance from the Seedlaws on the right and from the Grampians on the left, to a place called Battle-dykes eaſt of Kirrimuir. Both this ſtation and Graſſy-walls and Lintroſe ſeem, by their extent, to have been capable of containing the ſame army, as the camp at Ardoch. The probable ſcene of Agricola's famous engagement with Galgacus and his Caledonians appears to be near Fettercairn: and this probability is ſupported by a variety of circumſtances, which are applicable to no other ſtation.

Different hypotheſes have been adopted relative to the place, in which this obſtinate and bloody battle was fought. Some inſiſt that it took place at Dalganroſs, about a mile ſouth from the church of Comrie, and eight miles from Ardoch. This encampment is 1020 feet long and 900 broad, and evidently Roman. But Agricola engaged in ſight of his fleet, and after the action, retired to the country of the Horeſti, which was Forfar-ſhire.

Others

Others contend that it was fought near Inchtuthil, eleven miles north of Perth and a little weſt of Blairgowrie. This place was probably inſulated at that period, by the Tay, a circumſtance which would not have been omitted by ſuch an accurate hiſtorian as Tacitus. The Roman camp in this place could hardly have contained Agricola's army; and although it be nearer to Forfar-ſhire than Dalganroſs, it is equally hid from the ſea. Inchtuthil ſeems to have been, either one of the out-poſts of Agricola, during a war, which required all his vigilance and excerciſed all his military ſkill; or it was conſtructed by ſome Roman general, poſterior to Agricola, probably by Lollius Urbicus. The appearance of circular works in this place ſhows that either the Picts or Danes may have ſettled here after the Romans.

There is an intrenchment at Fortingal in a plain betwixt the houſe of Glenlyon and the bridge, which contains 80 acres of ground, and has all the appearance of being Roman, if we can ſuppoſe, that they would have ventured ſo far into theſe narrow defiles of the Grampians, ſurrounded on all hands with thick foreſts and rapid ſtreams in the face of an intrepid and enterprizing enemy.

At Callander there is a place nearly of a ſemicircular form, called a Roman camp, the area of which conſiſts of about 5 acres of ground. The diameter is formed by the river Teath and the curve by a ſerpentine bank of uncommon beauty, adorned with a variety of trees. Whether the natural ſtrength of this place might have induced the Romans to have fixed a temporary ſtation there cannot be determined with certainty, but the agger is evidently a luſus naturæ or any thing rather than an intrenchment of the Romans.

No. II.

Ecclesiastical Antiquities of Perthshire.

INCHMAHOME, in the Loch of Monteath or Loch of Inchmahome, was an Abbey, said to have been founded by Murdoch Earl of Monteath, who was killed at the battle of Duplin in 1332; but it was founded before that period; for the Prior of the Abbey swore fealty to Edward I. in the year 1296.

This abbey belonged to the Canons of Cambus-kenneth. It was united by James IV. to his royal chapel at Stirling; but was disjoined therefrom by James V. and bestowed on John Lord Erskine, who was for some time Commendator thereof, and afterwards created Earl of Mar by Queen Mary and chosen Regent in 1571, after the death of the Earl of Lennox.

INCHAFFRAY was an Abbey founded by Gilbert Earl of Strathearn in 1200; the Canons whereof were brought from Scoone. Mauritius (Maurice) abbot of this place, was present with Robert Bruce, at the battle of Bannockburn, in the quality of chaplain; to which he brought the arm of St Fillan. The Scottish army kneeled down to receive his benediction, whilst he walked barefooted along the ranks, bearing a crucifix in his hand. Whereupon Edward cried out, "They implore mercy." Umfraville replied "They do, but not ours: On that field they will be victorious or die."

This monastery was erected by James VI. in the year 1607 into a temporal lordship, in favour of James Drummond,

son

ſon of Lord Drummond, by the title of Lord Maderty. Srathfillan and Abernethy in this county and Scarinch in the Iſle of Lewis were cells or priories, belonging to Inchaffray.

STRATHFILLAN, in the weſtern extremity of Perth-ſhire, was a priory, founded by Robert Bruce and conſecrated to Saint Fillan, in gratitude for the aſſiſtance, which he had from that ſaint at the battle of Bannockburn in 1314. This priory, with all its revenues, was given at the Reformation to Campbell of Glenorchy anceſtor to the Earl of Breadalbane, in whoſe poſſeſſion it ſtill remains.

ISLE OF LOCHTAY, near the eaſt end of the lake, was a cell or priory belonging to Scoone, founded by King Alexander I. in 1122, where Sybilla his Queen, daughter of Henry Beauclerk king of England, died and lies interred. At this place, there is fine fruit of the various kinds, common in thoſe days, which were imported from the Continent by the eccleſiaſtics, into this country, wherever they got ſettlements. Remains of theſe fruit trees are ſtill growing both here and at Inchmahome and many of the other ancient religious eſtabliſhments in Scotland.

SCOONE was an abbey founded by King Alexander I. in 1114, which had formerly belonged to the Culdees, according to Buchanan.

ABERNETHY is ſuppoſed to have been built and endowed by Garnard Macdampnach. It was firſt a retreat for St Bridget and other nine virgins, into which they were introduced by Saint Patrick, and at the ſame time the metropolis of the Pictiſh kings.

Abernethy was a biſhopric and the reſidence of the metropolitan, if not of all Scotland, at leaſt of that part of it which was ſubject to the Pictiſh kings, during the exiſtence

of

of that power: but Kenneth III. tranſlated both to St Andrews in the year 840. At Abernethy was alſo a convent of Culdees, which was changed in 1272 to a priory of regular canons.

It was remarked in the preceding work, that there is only one other round tower, of a conſtruction ſimilar to that at Abernethy, in Scotland; although they abound in Ireland. Various conjectures have been offered concerning their uſe; but the moſt probable is, that they were penitentiary towers, the reſidence of hermits. The door of this tower, which fronts the north, is 8½ feet high and 2½ wide. It has four windows near the top. The whole height is 75 feet; the circumference at the baſe is 48; and the thickneſs of the wall 3½ feet.

Elcho was a nunnery belonging to the Ciſtertians ſituated on the river Tay below Perth, which was founded by David Lindſay of Gleneſk and his mother. Madoch earl of Strathearn, gave the lands of Kinnaird in Fife to this nunnery.

Perth. A monaſtery of Dominicans or Black Friars was founded at this town in 1231, by Alexander II, who, together with Robert Bruce granted them conſiderable revenues ariſing from the imports of Perth and Dundee and from other ſources. James I. was murdered in this convent and buried in the Carthuſian monaſtery founded by himſelf near the city.

The Obſervantines, a claſs of Franciſcans or Gray Friars, had alſo a religious houſe ſituated contiguous to the walls of Perth, which was founded by Lord Oliphant in 1460. Buchanan acquaints us that this houſe was deſtroyed in 1559, and adds with his uſual acrimony "Inventa eſt apud Franciſcos ſuppellex quidem, non ſolum copioſa, ſed etiam admodum lauta, et quæ decuplo tot, quot ipſi erant, abundè ſatisfuiſ-

ſet. Dominicanis nequaquam eadem erat opulentia; ſed certè tanta, ut mendicitatis profeſſionem facile redargueret: adeo ut non inſcitè quidam, non fratres mendicantes, ſed manducantes eos appellaret." John Knox narrates the different articles of their ſtores and furniture in his ſecond book, and concludes by ſaying "That no Earl of Scotland had better."

COUPAR was an abbey of Ciſtertians founded by Malcolm IV. in the year 1164. Theſe monks were called Ciſtertians from Ciſtertium in Burgundy: they were called White Monks, becauſe all their dreſs was white, except their coul and ſcapular: and Bernardines, from St Bernard, a native of Burgundy, who is ſaid to have founded 160 monaſteries of that order.

Next to our kings, the Hays of Errol were the principal benefactors of this monaſtery, who at different periods annexed large grants of land to its revenues. After the reformation James VI. created the ſecond ſon of Secretary Elphiſton Lord Coupar in the year 1607; but he dying without iſſue, the honour devolved on Lord Balmerino.

ST LEONARDS AT PERTH was an ancient priory founded, according to Prynne, before the year 1296. It was ſuppreſſed by James VI. and annexed to the charter houſe of Perth, which he founded near that city, together with the Magdalens lands.

FOULIS EASTER was a prebendary founded on the confines of Angus-ſhire, by Sir Andrew Gray of Foulis, anceſtor to Lord Gray, in the reign of James II.

METHVEN was a collegiate church, founded in 1433, for a Provoſt and ſeveral prebendaries by Walter Stewart Earl of Athol, one of the younger ſons of Robert II.

TULLYBARDIN was an eſtabliſhment of the ſame kind, founded

founded in 1446 by Sir David Murray of Tullybardin, anceſtor to the Duke of Athol.

Culross was a Ciſtertian Abbey, founded by Malcolm Earl of Fife, in 1217, dedicated to the Virgin Mary, and to Saint Servanus the confeſſor, whoſe feſtival, on the firſt day of July, was kept long after the reformation; men and women marching early in the morning round the town with green boughs and ſpending the reſt of the day in feſtivity.

The earls of Argyle who lived at Caſtle Campbell, were heritable bailies of this abbey, which office they diſpoſed of to the Colvilles of Ochiltree, in whoſe hands it was, until the heritable juriſdictions were aboliſhed.

Dunblane. The Cathedral of this place is ſituated on the eaſtern bank of the Allan and overlooks the town. It was founded by king David in 1142. To this ſee were annexed conſiderable revenues in Scotland, beſides lands which it poſſeſſed in England. The cathedral is unroofed, and going to decay, yet venerably grand, becauſe much of theſe ruins remain. The weſt door is a ſingular piece of maſonry, the grooves in the ſtone being wider within than without. The choir is kept in repair as a parochial church, in which are ſeveral oaken ſeats for the prebends, with groteſque figures carved upon them, particularly a cat, a fox and an owl; which were probably emblematical of the peculiar qualities of theſe animals, like the ancient hieroglyphics of Egypt.

At the weſt end of the choir are thirty two of the prebendary ſtalls; and on the north of the entrance from the cathedral, the Biſhop's ſeat, the Dean's, both of oak, handſomely carved. Several graves of Biſhops and Deans, are in the area covered with coarſe blue marble ſtones. Behind a mo-

dern ſeat is a niche in the wall, in which is placed the figure of a biſhop, as large as the life, dreſſed in his pontificals, with the mitre on his head. The three ſteps to the altar remain. The length of the building is 216 feet, the breadth 76, the height of the walls 50 and of the tower 128.

DUNKELD. Conſtantine III. king of the Picts, inſtituted a monaſtery of Culdees at Dunkeld, about the year 729, in honour of St Columba, the tutelary ſaint of the nation, and after the building of the church of Abernethy 227 years, according to ſome accounts, but according to others 244. Theſe Culdees*, (colentes Deum) were not enjoined to obſerve celibacy, but followed the cuſtom of the eaſtern church in that reſpect, as was afterwards the manner of the church of St Regulus at St Andrews.

David king of Scotland expelled the Culdees from Dunkeld, and changed the monaſtery into a cathedral church about the year 1127. They are ſuppoſed to have continued near one hundred years longer at Dunblane.

This Cathedral was but ſmall, is ſituated in a beautiful little plain, on the north bank of the Tay, cloſe by that majeſtic ſmooth-flowing river, and is ſurrounded on all hands by hills; a ſituation delightfully grand and ſnugly warm in defiance of the diſadvantages of the climate. The choir is converted into a pariſh church; the principal building is in ruins and grown over in different parts of the wall with moſs.

No.

* Some derive their name from *Cuildich, retired perſons* or *Hermits*.

No 12.

BRITISH ANTIQUITIES in Perthſhire.

DUNSINAN HILL, (very aptly called by Sir John Sinclair the *hill of ants*) ſix miles north eaſt of Perth, being one of the tops of the Seedlaw chain, is 1024 feet above half flood at Panbride, detached from the reſt of theſe hills by a deep valley. The conical ſummit is covered with graſs and the lower parts with heath. The aſcent is gradual, except on the ſouth and ſouth eaſt, where it is ſteep. It was well fortified, being defended by a ſtrong rampart which went quite round the upper part of the hill. The outer works were a foſsè on the eaſt, an eſplanade on the ſouth and a ledge of rocks on the north eaſt. The area within the rampart is of an oval form, 210 feet long, 130 broad, and a little lower than the ruins of the rampart which ſurrounds it. The original height of this rampart cannot be aſcertained; but from the immenſe maſs remaining that overtops the interior ſummit of the hill, it muſt have been conſiderable. This maſs conſiſts of whin and quarry ſtones, of mortar and ſlates.

A ſection was lately made acroſs the hill by Dr Playfair of Meigle; and flags, charcoal and bones of ſeveral ſpecies of animals were diſcovered, but no appearance of any building. At the ſouthern extremity of the ſection was found a pit, adjoining to the rampart, full of fat and moiſt earth, looſe ſtones, burnt wood and bones of black cattle, ſheep and hares, &c. but none of the human body.

Having penetrated ſeven yards horizontally into the heart

of

of the maſs of ſtones and rubbiſh, which had compoſed the fortreſs and ſurrounded the area, part of the wall of the rampart was diſcovered, quite entire. It is nicely built of large ſtones, bedded in clay or mortar. The entire part of the wall is 5 or 6 feet high. Upon making inciſions into other parts of the rampart, the wall was found in the ſame good preſervation, quite round the whole fortreſs, having been protected, ſince the middle of the eleventh century, from the injuries of the weather and the waſte of time, by ſeven yards of rubbiſh grown over with a green ſod; and the declivity of the hill prevented any ſtagnation of the rain water. Were this rubbiſh removed from the outſide of the rampart, all round, Macbeth's fortreſs on Dunſinnan hill would be one of the moſt remarkable monuments of antiquity in Britain.

Whether Macbeth was ſlain at Lumphanen in Aberdeenſhire, two miles weſt from the village of Kincardin o'Neil, where there are veſtiges of an ancient fortreſs of an oblong figure, nearly 100 yards long and 20 yards broad; or whether he threw himſelf, in deſpair, from the top of a rock, in the neighbourhood of his own fortification, according to the tradition of that country; or fell by the hands of Mac-Duff, whom he had greatly injured at Belli-duff, (probably bellum Duffi) a tumulus of earth near Belmont Caſtle, ſeveral miles eaſt from Dunſinnan, it is perhaps impoſſible to determine.—The Lang (long) Man's Grave is ſhown on the ſouth eaſt ſide of the fortreſs.—Near it, in the pariſh of Abernyte, is the King's Seat, which may have been a watch-tower, that commands a moſt extenſive proſpect in all directions.

Barry-hill near Alyth. On the ſummit of this hill are diſtinct traces of a Pictiſh fortification. The bridge acroſs the ditch is a great curioſity. The ſtratum of gravel on its top

muſt

muſt have been brought from the Iſla, as there is none in that neighbourhood. The vitrifications in this fort agree neither with the theory of Williams, nor with that of Tytler.

The tower at Abernethy has been mentioned under the article, Eccleſiaſtical Antiquities.

There are many *Druidical temples* or circles of ſtone. About a mile eaſt from the Caſtle of Taymouth, there is one very magnificent and entire, conſiſting wholly of ſingle blocks of ſtone, all ſet upon end. One of a ſimilar conſtruction, but of a leſs ſize is at Kinnell, the ſeat of Francis M'Nab of M'Nab, near the weſt end of Loch-tay. There is one at the village of Comrie: another at Inchbrakie, eaſt from Crieff.

In Strathardle and pariſh of Kirkmichael, there are ſeveral Druidical temples, on a heathy moor which are conſtructed differently from theſe. One of them conſiſts of two concentric circles of ſtones rudely built, and many of one circle conſtructed in the ſame manner. The outer circle of the firſt is 50 feet in diameter, the inner circle 32 feet: the laſt are of different dimenſions, from 32 to 36 feet in diameter, and ſome leſs.

At Coupar Grange two miles north of Coupar there was diſcovered ſome years ago a Druidical temple of a conſtruction ſimilar to the greateſt one at Kirkmichael, and nearly of the ſame dimenſions. The diameter of the inner circle was ſixty feet. The wall itſelf was five feet high. At the diſtance of nine feet, an outer wall of the ſame height was carried round. The ſpace between theſe concentric circular walls was filled with aſhes of wood and bones of different animals, particularly ſheep and oxen. A paved way led acroſs the area from weſt to eaſt, to a large free ſtone, ſtanding erect between the circles and riſing $4\frac{1}{2}$ feet above the pavement.

pavement. This ſtone, which ſeemed to have been the altar, was flat at top and 2 feet ſquare.

On the top of Benledi, a high mountain near Callander, the Druids celebrated an anniverſary every ſummer, of which there is ſome account given in the Statiſtical Account of the pariſh, vol. XI. but there are no circular walls nor circles of ſtones in that place.

Cairns. In the pariſh of Clunie there are Herculean works known by the name of *Hiers Cairns* (probably Heroes Cairns), concerning which there is no tradition, that I could meet with. There is a large cairn on the confines of this county in the road to Inverneſs. On the ſame moor in the pariſh of Kirkmichael, where the Druidical circles are, there is a cairn 90 feet in circumference, 25 feet high and 32 feet broad. A great number of ſmaller cairns are collected in different parts of this moor, which are generally in groups of eight or ten in one place. From the eaſt ſide of the great Cairn, two parallel ſtone fences or rude walls are carried, upwards of 100 yards ſouthward, both of which are bounded in that direction by ſmall Cairns, and ſeem to form an avenue to the great cairn.

Similar collections of field ſtones are met with in many parts of this county. In ſome inſtances they were gathered off the land, where it ſeemed to be fit for tillage: In other caſes they ſeem to have been monuments of ſome great event; which practice prevailed univerſally among rude nations, before the invention of written records. They were often the ſepulchral monuments of great men, raiſed by the piety of their friends, the ſize being in all caſes, in proportion to the reſpectful veneration of poſterity. A very ſtrong and laſting promiſe of friendſhip to this day from a Highlander is, "I will put a ſtone into your cairn."

Rock-

ROCKING STONES. The rocking ſtone of Dron is 10 feet long and 7 broad, ſtanding in an inclined poſition. When it is preſſed gently on the higher end, with the finger, it moves in an arch of betwixt one and two degrees: which motion continues for ſome time.

There is another ſtone of a ſimilar conſtruction at Balvaird, two or three miles eaſt from Dron, on the water of Farg, mentioned by Buchanan; but it does not now move.

Another of theſe ſtones is in the pariſh of Kirkmichael, ſituated on the moor abovementioned, which has a quadrangular ſhape, approaching to the figure of a Rhomb, of which the greateſt diameter is 7 feet, the leaſt 5 feet. By preſſing down either of the extreme angles, a rocking motion is produced, which may be increaſed to a whole foot: and after the preſſure is withdrawn, it performs 26 vibrations or more, before it reſts. Near to this rocking ſtone are a number of Druidical temples ſimilar to thoſe abovementioned, conſiſting of two concentric circles, with a ſingle circle of leſs dimenſions adjoining to each of them on the eaſt.

It is not improbable that the rocking ſtones were uſed either for the purpoſes of ſuperſtition, or for deciſion in judicial trials; and that the iſſue correſponded to the intention of the judges.

LOCH-TUMMEL FORTRESS. At the weſt end of this lake is a peninſula, which had been ſeparated from the main land by a deep ditch. This was the ſtrong hold of Duncan, who was anceſtor to Robertſon of Struan, and founder of the family. Here he received Bruce and his ſuite after the diſaſtrous battle of Methven, when few had the courage to eſpouſe his cauſe. Many veſtiges of temporary habitations and names of places in that neighbourhood allude to the king's having found an aſylum for himſelf and his followers

for ſome time under Duncan's protection. At Dalchoſnie, (the field of victory) Bruce's friends defeated the partizans of Edward.

In Athol, Breadalbane, Glenlyon, near Callander, and in many other places, there are veſtiges of watch towers to communicate intelligence, and alarm the country on the appearance of an enemy.

Doune Castle. The firſt mention that is made in any record of this caſtle, is by Sir James Stewart of Beath being appointed conſtable thereof by James V. The ſon of this Sir James obtained in 1565 a charter under the great ſeal, of certain lands, by the name of the barony of Doune. He was a ſteady friend to Queen Mary, during the civil wars; at which period this caſtle afforded a ſafe retreat to the loyaliſts. Before the abolition of heritable juriſdictions, courts were held in the great hall of the caſtle, which fronts the north. In the rebellion 1745, it was occupied for ſome time by the rebels, who planted a 12 pounder in one of the windows, and ſeveral ſwivels on the parapets, which had been taken from a merchant-ſhip.

Castle Campbell is built in a moſt romantic ſituation, above the village of Dollar, on the ſouth face of the Ochills, having vaſt mountains in the back ground and on either ſide. This venerable pile looks down on a vaſt tract of country, and ſtands on the point of a peninſulated rock, with deep glens on the right and on the left, ſhagged with bruſhwood where the ſhelves of the ravines have any ſoil. The naked rocks pointing out through the trees, the noiſe of the waters in the bottom of the chaſms, the depth and gloomineſs of the dens, conſpire to increaſe the horror of a ſpectator looking down from this wildly romantic place, and have given it the dolorous title of the *Caſtle of Gloom*, being bounded by the

the *Glen* of *Care*, and the *Water* of *Sorrow*, and looking down on Dollar (*darkneſs*).

From the Caſtle to the water, there was cut, in the ſolid ſtone, a ſubterraneous paſſage by an incredible number of ſteps, which is now viſible through the buſhes in the face of the rock, awfully dreary and terrible to behold. Caſtle Campbell was burnt by the famous marquis of Montroſe in 1645. It belongs to the Duke of Argyle, where the family has many ſuperiorities.

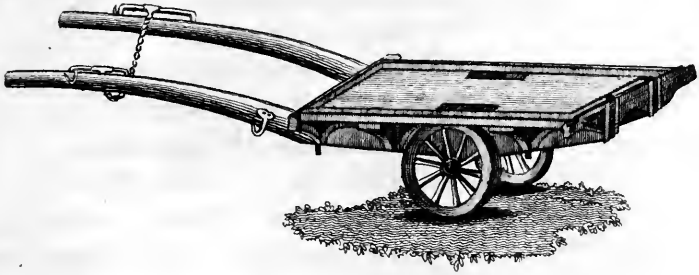
HUNTING TOWER was anciently called Ruthven (Rhua-vuin, the red ſtream) and was part of the eſtate of Gowrie, It is unknown when and by whom it was built. James VI. on his return from Athol, was confined here in 1582, by a diſcontented party of his nobility. Ruthven-caſtle conſiſts of two ancient ſquare towers, which are connected by buildings of a later date. It is the property of the Duke of Athol.

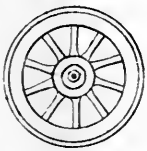
GOWRIE-HOUSE ſtands on the north-eaſt ſide of the town of Perth. There is neither record nor tradition by whom or when it was built. This houſe was the ſcene of Gowrie's conſpiracy, which it is ſo hard to unravel, in the hiſtory of Scotland. Upon the forfeiture, it was given to the magiſtrates of Perth; and they preſented it in 1746, together with the freedom of the town, to William duke of Cumberland. The Board of Ordnance procured it from him, and converted it into Barracks.

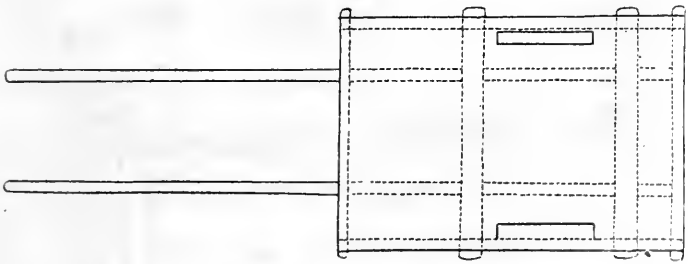
CORRIGENDA.

Page	13,	line 22, *for* Leekie,	*read* Leckie.
——	47,	—— 4, *for* bailiies,	*read* bailies.
——	131,	—— 11, *for* to be,	*read* when.
——	211,	—— 14, *for* Spring 1796,	*read* Spring following.
——	232,	—— 30, *for* moſt,	*read* moiſt.
——	292,	—— 9, *for* deptn.	*read* depth.
——	345,	—— 19, *for* town,	*read* towns.
——	348,	—— 11, *for* their,	*read* his.
——	352,	—— 13, *for* yearly,	*read* nearly.
——	371,	—— 11, *for* luxurious,	*read* luxuriant.
——	385,	—— 17, *for* there,	*read* their.
——	449,	—— 31, *for* triumpahli,	*read* triumphali.

Form of the Cart employed in the quarry of Kingoodie for carrying flags of greater breadth and length than are any where else raised in Scotland





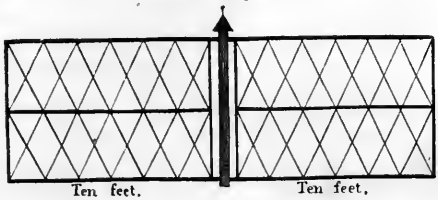


Scale of Feet.

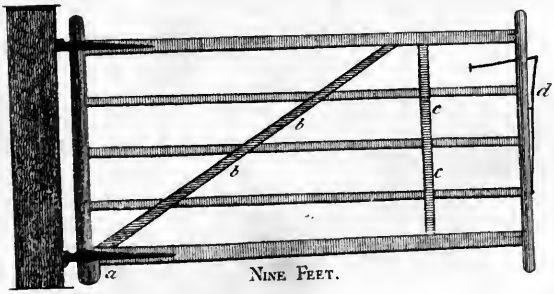
August 1810.

Model of a Gate moving on the Center,

referred to in page 121.

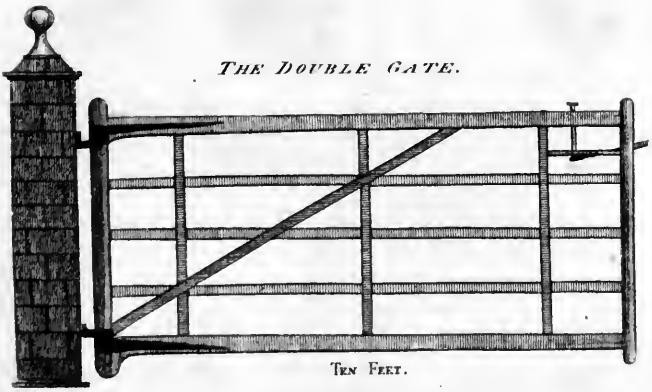


The Single Gate.



Nine Feet.

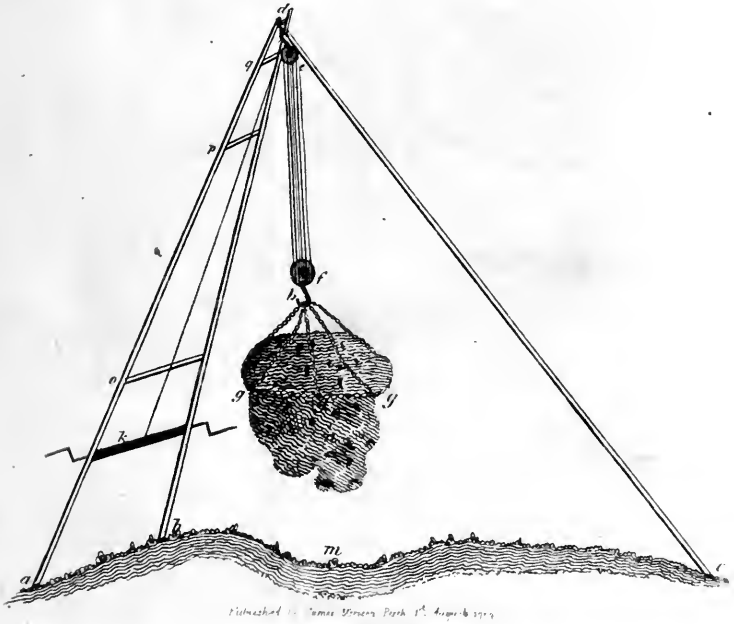
The Double Gate.



Ten Feet.

James Vernon Sculp. 1st August 1789

Machine for raising large Stones on Carts or Waggons to be carried off a field without being blown or broken.



Published by James Vincent, Perth 1st August 1794

Fig. 1.

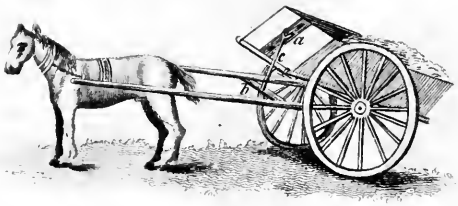


Fig. 2.

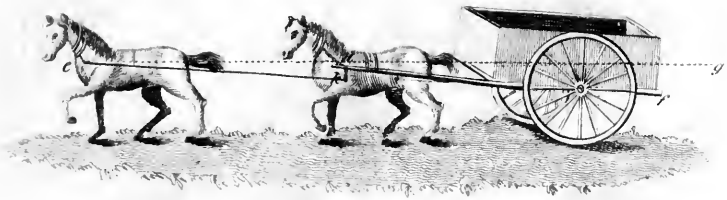
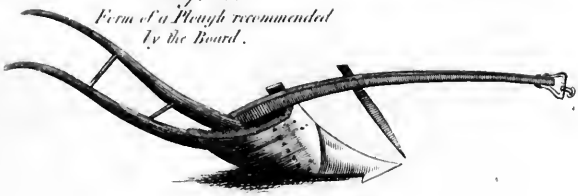


Fig. 3.
Form of a Plough recommended by the Board.



Published by James Morison Perth 1st August 1800.

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Of ſome of the Subjects treated of in this Survey of Perthſhire.

Eſtates,