The farmer's new-years gift to his countrymen, Heritors, and Farmers, for the Year 1757

T H F A R M R's NEW-YEARS GIFT To his COUNTRYMEN, ,HERITORS, and,FARMERS, for the Year I757.,, . . \_ '" i, , 1' Pater ipfe colendi aud facilem effe viam voluit, primurque per artem Movit agros, curis acuens mortalia corda; Nec torpere gravi pashs fua regna veterno. Vizl . GcorgLi. t' varias ufus meditando etunderat artes Paulatim, Id.,Labor omnia vincit Improbos, et duris urgens in rebus egetas. Prima Cres ferro mortales vertere terrai Inltituit:-- d. Rurfus in obliquum verso perrumpit aratro, Exercetque frequens tellurem, atque imperat arvis. Id. ' Hcu, magnum alterius fnifira fpeCabis acervum; Concufaquc famen in fylvis folalere quercu. Id.,ABERDE EN: Printed and fold by F. DOUGLAS S aid W. MURRAY.,M,DCC,LVII.

THE FARMER'S N E W-Y E A R's G I F T To his Countrymen, Heritors and Farmers, for,the rear 1757. IN there long nights, and weather which interrupts the operation,in the field, I thought, I could not be better employed than to give a few hours, from more personal concerns, to endeavour to rouze my countrymen, to think somewhat more seriously of their own and countries interest; and tho' I should not communicate any thing new or inftruding to all, the refreshing their memories in an easy and cheap way, at a time when they have leisure to think and converse, and form their plans for the active season, might be of some 'use.,Every man of business, should form for himself a set of approved useful maxims adapted to his situation, which should be always in his view, and influence all his conduct; because, human frailties and worldly diltractions, obflruct their being otherways so often be- fore him as they ought to be, and they cannot be too frequently under confideratton, for at one time or other they will incite to acion,,Some of those proper for the farmer, might be such as follow, to which he should add others as they occafionaly occur.,Husbandry was the moll antient employ, and antiently esteemed the most honourable. All the great ones of antiquity, not only loved but pratifed it.; and certainly it is the most useful employ for the society; and of all occupations affords the praftifcr the moit agreeable vairety; therefore, it is honourable and comfortable to fludy and pursue it.,A learned author juflly fays, the greatest heroes of antiquity, weilded the liare as well as the sword, and the fairelt hands did not more disdain to hold a crook than a scepter.,Stria virtue which -will assec all parts of condut, will always be found the best policy, both in refpea to comfort and interefi; being always efleemed, even by those who do not praaife it, and extensive credit to all words and afions, is the certain conlequence. Also true morality, will produce industry; and prosperity, will certainly follow ftri& truth; and puntuality of performance will always have its reward.,In all countries, heritors and tenents are found to be rich in pro- portion, as good husbandry is known and pradtifcd; this holds inva-,A riably

[ 2 riably, independent of climate, foil or situation ; for each place hath its advantages, and according to circumstances hath its proper hus. bandry; therefore, it is of importance for every one to examine by serious thought, and all manner of enquiries, free from all pre- undices of the customs, &c. of his own country, if he could not do better. And a frequent confiderttion of this certain truth, excites, to the proper enquiries and a suitable condut.,A man even of knowledge in any science or business, improves much by converse on the subjec, altho' with persons of much inferior knowledge.-He profits, not only from what may be told or suggested by others, but from what he himself fays and thinks upon such occa- lions , and therefore, clubs of farmers, would be extremely useful; and at lead in moonlights and long nights would be easy and no ex- pence.,Where farmers are poor, it will be always found upon enquiry whatever their situation be, that they are ignorant or negligent, except in special cafes of uncommon calamities.,The learned Cltniella observes justly, in his preface to his excellent book upon husbandry, the groundleflnefs of very common complaints, ofthe badness of the foil or climate, or the seasons, or inconveniencies of situation; whereas the true cause of want of success, is our ig- norance or neglets.-And the learned Pliny in his natural hiltory fays, that the true cause of the former plenty in his country, beyond what they then experienced, was, that the ground was at first culti- vated by the hands of generals, consuls, tribunes, and senators: But in his time, by fIves and criminals, who did not cultivate it so care- fully as those men of honour and virtue. And the famous and learned Varro expreffeth the like sentiment.,It is recipTocally the interest of heritor and tenent, to promote each others advantage, and thereby cultivate the proper friendships, which should be betwixt such connections; therefore oppreflfve rents or services should nor be imposed, nor reasonable ones refused · and all prudent encouragements flould be given and taken for all reasonable improvements.,Tho' bad h;bi:s are luborn, and will not easily yield to reason, perseverance and discretion, will get the better of them; therefore heritors ihould not be discouraged, tho' they meet with muletlh dif- pofi.ions, and their labour will be rewarded, by both comfort and increase of fortune.,The riches and firength of any country don't depend upon the numbers of its people, but evidently so upon the people's being in- duRfrious. This truth, is too little regarded, in the choice of crofters, graffien, &c. and employments ofthe poor.- Therefore, all should concur, to make all industrious; or procure people that are -fo.-Evcn young ones, may be brought to gain their bread at very,early

early years. Numbers of industrious people, improve any country; they are a ready market without carriage, and will always consume in proportion as they gain; and they promote better culture and ma- nure, &c. Any country will be rich in proportion to its iilduitry, even preferable to those countries, which produce the richest mines; gold or silver don't remain in Plortugal or Spain; and preferable to these countries of the most luxuriant natural produce witness the poverty and weakness of Asia, &c.,Shelter, would be very beneficial in all northern countries; cold degenerats cattle and and all vegetables, and hurts the foil, if flelter is by planting, it also accommodates with fewel and all need- ful timber, without carriage or purchase. If by inclosing, it also drains and cleans the ground. And much of it might be easily got in the' North, by sowing French whins in many places and elpecially on foundr'of fold dvkes which don't hurt and would also save the expence of time, &c in the yearly building, be fewel, and is the befl winter meat for horses and flieep.,Good tools, are elfential in all hulbandry; and they are the belt, which perform the work molt effedualy, and with the least charge of time, men or cattle. It is therefore of importance to enquire after such, and how to obtain them the belt and cheapest.,All ceconomy of time and goods, is also essential, and in confe- quence, the most effeCtual carriages, are equally so; therefore it is every one's material interest, to Itudy this in every article; and a- mong(t other things, to have proper carriages and be at pains and expence for good roads for them. A prudent man, will pay two pence to gain or save three pence; a good road will soon accompliffl this, by saving time, additional quantity transported, and preventing damage to his cattle and machines.,A farmer's endeavour to be quickly rich, by unreasonable impa- tience or greed, is the furef way to be quickly poor, or to remain so; this is as certain as if Solomon had said it; and will pretty ge- nerally hold true, amongit all ranks of men.,Proper manure, and plenty of it, useful and easily to be had in all situations; is beneficial for grass and hay as well as tillage land. There are vafl varieties of it, besides what cattle, &c. produce; all forts of marles, water, lime, salt, Ihells, sea weed, water or sand, alhes from turff, clay, cc. ferns and all vegetables, and ledd of ditches, &c. bottoms of stacks of corn or hay, and where floods or rains bring foil. But mixing of foils as hereafter direted, and every one's reason wiill suggest, is in the power of every one in every situation.,In all forts of farms or Ihufbandry, a small parcel of land well ma- naged,. will yield more profit and pleasure, than double that quantity of the like natural quality, with more superficial management. All,A 2 cattle

4 cattle and-vegetables should not only live but thrive with the farmer; for which purpose, he must affit and improve his land; and the change of brood and feeds; contributes also to prevent their decline or degenerating in size or quality. Take all from a worse or more ftuborn foil if possible. but all feed Ihould be full ripe, the greater the perfetion of the feed, the-better the produce,In tillage, that culture which molt refembres the garden culture, is both irom reason and experience, found to be the belt; and good culture, will in some degree in all foils supply the want of manure, .becides deitroying weeds, which confunme manure and destroy the intended crop.,Horses, at leaf mixed with oxen, move quicker than oxen by themlelves; so do mure work, of-the fame quality, in the fame time; therefore right choice of cattle and tools, saves expence of time, forage and every thing; and enables to do useful work, and keep other uleful cattle by such ravings. And plow deep where the un- der foil is good, and shallow where bad and not proper for mixture.,It is both private and public loss, that the people of the North, so generally eat so much of pure oat meal withont mixture; oats are the flaple of the northern produce, and the more is consumed, there is the less for sale: the more expence the farmer's family is, there is the less for his increase of fortune, or for the heritor. Rye, bear, and pease, are julfly called the poor man's boll; because, be. fdes the great benefit of their firaw for houses and horses, they render much more meal than oats, and equal quantities feed fur- ther: nmixed bread is wholefomelt; and even where clean oat meal is used, there is great saving by being better dried and ground roun- der. Mluch might be saved by thcfe articles, which therefore merit the serious consideration of heritor and tenent; and molt of all, the poor labourer hath need to think of them.,A prudent farmer, whatever his situation be, will keep a due pro- portion betwixt his tillage and palture land; that is, not to plow more than he can procure plenty of manure to enrich; and he will fnd it his advantage to exceed rather in having less than more. With- out due attention to this, the goodness of foil, climate and other accommodations, tho' extraordinary, and although accompanyed with induffry and frugality, will not make him rich; and with proper at- tention to this, tho' with inferior advantages in other refpecs, he will have more success.,A very learned antient author gives us thefollowing just observation, worthy to be kept always in remembrance, viz. That there are two Iburces only, from whence men can derive useful rules of condula, our own experience and that of others; the firIt is molt generally followed, and often the molt effetual, but is very dangerous, coflly ad painful; therefore prudence will prefer the latter, which will,enable

enable us to discern at all times, what is mod fit and mos useful, -whout equal hazard, expcnce or rifquiet. Happy those who are so wife as to follow the lalt, but with this caution, not so confine it to the cufloms of one's own or any , articular country, but exert enquiry and reason, sot the pattern from which we would learn.,Having thus laid bctore you fo'nie general !m.sinms, to which you can make proper additions, arnd upon a,!l which, you cannot too often employ your thoughts, efpeci.dll at ilch ifeafons which afford leisure; I fhail proceed to give you foine extracts fiom the Syltem of His- bandry lately published. s hich h:ath heen generally elleemed; with such observes or alterations as pre:ittly occur to nl., may he ufciul to you. ?lany of you have itot access to lfich a book; and fuc!:, these extrats, may both entertain ,iid iniitrudt; and such of you. as have access to the book, they bring in (liort compass and at small ex- pence, some articles to your review ad conlideration. The only valu. able purpose of having or reading books, is to make them useful,The author's method is good, and when compleatly executed, which a proper appendix may perform, it would indeed make a corn- pleat Syltem of Husbandry, tho' in some inlfances it is too verbose, and hath some unneteffary repetitions.,He begins, with the confideration'of all forts of foils, and their - most proper uses and mariagement; he then proceeds to all forts of manures, their qualities and molt proper uses; he then treats of all fences and various forts of trees for shelter, &c. then of Itocking the farm; all feeds, tools, catile, poultry, &c. Then of good hus- bandry, paRture and culture, through the vafl variety to which it is applicable in all situations and circumstances; then treats of the acci- dents to which the cattle or crops are liable, with the most approved methods of preventing or cure, which includes all weeds, &c- and in all, purpofcs to give the farmer the advantage of others expe- rience.- Lucky for him, if he makes use of it.,I shall follow this method in the proposed extra&s and observes, tho' I cannot, nor is it needful for my present purpose, to enter into all particulars, and at prcfent, can make but a frnall progreis. But I mull explain one term, very proper and often used by him and all writers on husbandry,. viz Drcfig--- which means, both proper culture, where it is apply d, and lcfs or more of it, as suitable to the foil and circumntances, and fuFisciency of the proper manures, for either grass or grain.,He fays, " A pure foil is a fine mellow mould, without anv mix. " tre of other matter; but this is rarely found, all other foils are,composed of this mould, with natural additions of one or more less fertile ingredients, fich as sands, !ione's, clays and the like. " And according as these are in a greater or lesser quantity, the foil," is

6 ] " is wc.rf or better, and takes its name from that fort of the mix-,ture, which chiefly prevails." It is not material, whether the above definition of a pure foil, gives compleat fatisfacion; but I apprehend, the above composition of foils. if we add moss to it, will be comprehensive of all. And it is very material to attend carefully to the composition, and degrees of each fort, for a prudent judgment of their use and management.,The under-layer or bed of the foil, may sometimes improve and sometimes hurt it; therefore the farmer should confider this, and plow deep or fna'low accordingly.,When the foil is thin and the bed till or clay, or any tuff clay which holds water, it is very injurious by Irarving and chilling the roots of vegetables; therefore in Hartfordjhire, &c. severals cut many deep narrow drains, cover them with wood, and then with the foil, from which they reap great benefit; but this is very expen- lire, and in some places cost from eight to twelve. pounds per Ecglilh acre.,Every farmer Ihould digg sundry pitts, for rial of several layers or beds, from which valuable discoveries of marles and other useful matters have arose; and ditching deep, beides making fences or drains, is very useful in this respect; redd of these, present and future, besides what is taken from pitts, will be manure for some fort of foil.,When the foil is puret, it is always richest, and moot tracable: Pure mould, is known by its blackish colour with white freaks at firil openening, and mellow softness; it is tender; pliant, Ihort and easily crumbled or mouldered to pieces. It is often called the heart of the land, and live earth, because ir is the belt of the ground, and chief fufenance of all vegetables, and needs less dung or dressing. A prudent farmer will before he fix, examine his farm, and not be catched by quantity, so much as quality; as his labours fIould be direc'ed, to bring his foil by mistures, manures and tillage, as much as pofible to that quality-- the proper mixtures and culture for that purpose, will afterwards appear. He rejecs clay as a rich earth but allows it is capable to be made so.,Some judgment may be made of the foil, by the aspec of the fiLrface.,Generally the level vales are the richest, because the pure mould is i;hr, 2rd washed from higher grounds, and subsides here.,Strong and healthy grass or corn or any vegetable in these circum- flacces, unless occalioned by uncommon manure, and even luxurious growth of weeds, except the female fern, rushes, &c. the known children of barren foils,. are indications of what is good. Care will destroy the weeds, and the fame heart of land which nursed them, will give fuflenance to an nfcful crop.,Where

7 Where a firall fern which is called the male is found, which corn. manly flourihles under a (hade of trees, it shews that foil is suited to the growth of trees.,Where rushes are not in bunches and more dispersed, and some yellow short flag leaves amonglt them, it commonly assures of peat underneath. In the isle of Ely a farmer from these indications with- out bpening the ground, will purchase a liberty of digging peats,,If such weeds are found strong and plenty in the land, as are found in the mellow beds of a well cultivated garden, he may be fore the foil is fruitful and fine. Cowslips plenty and' frong, are clear proof of land proper for good grass, and thililes are so of its tending to clay and in good heart.,The corn-marigold, is a proof of light and sandy foil, more fit for rye then any other thing, but the fumitory, a low weed, with divided leaves and purple flowers will be plenty or strong only in rich land.,Plenty of blue bottle of a good colour, or cockle, are indications of a light but good foil fit for barley and wheat. Wild garlick loves clay; and wild camomile, and wild parsnip or swine root love a loamy foil, which is amongst the bell mixtures.,The weeds which generally betoken a Sandy or chalky foil, are low; and are poor and firagling in a firong land, but all that grow rampant and strong in good foil,The improvement of all foils, depends in a great measure upon the breaking them, by which their parts. are more exposed to the fun and air, and more fit to nourish the different kinds of feeds.,Clay foils of all colours, are tough weat and cold. The red, is the motd fIiff and cold: the yellow is next; the black is less so; and white least of all; but the quantity in a foil will ballance with qua- lity; viz, much white is worse than a small degree of red. Some different managements, and uses, are proper for-the different fcils.,The fun and air, tho' they require more time than fire, will remove the cold and tuff quality of clay; and frequent plowing meliorates, by helping to break, and turning up the clods in different pofitionis to the fun and air When there bad qualities are conquered by in- duftry, it is amongl 'the befl of lands, and yeilds large crops; and when well dressed and enriched, lasts long.,When it is pure clay, plow deep; but where a different or mixed foil is thin about it; plow (hallow, least ybu bring up too much clay.,Clay takes well with all manures except marles; but all mull be well mixed, and without good tillage, often and deep, any is of small avail; but chalk, lime, sand or light mould from ditches or waters, or ashes or foot, also saw dul, or decayed stalks of any plants, or small brufli wood or leaves of any vegetable, even of heather or broom or whins, and nothing better than sea land or Sea,,weed

Ir 8 ] weed-and burning of clays lhould not be neglecied, for themselves, or light lands, ninh or withlout iJun,, are good mixturcs.,If coil and labour be largely hc!iowed, clays are grateful and will make returr;s. A ight frofit atli n't penetrate it so much as other earth, but when fciere it lalis k.-ncr and Is more hurtful, especially atezr rain. If vwe; : rought an u untged, wheat succeeds excelicntly upon it, and tli;s iakes the bce rctanh to the tarmer, if straw and all is coi idered. If the fcafa:, i, diy,-bar!y will do well. But it is the mo:t adapied for beans, iwhich need strength and love moiiture. It is aifo excellent for corver, and when well wrought ror turneps. The misfortunes vhich happen to its crops, are ge- nerally from a failere of dreflng. And when it is got into good or-de by induStry and expence, don't let its heart be broken by cove- toufnefs, which is foily; -for moderarion in numbers of crops, is the best rule of all, except in palltu;, for a farmer. This holds in all foils and fituat;cns.,I'aitlre upJ.n clay, where a good sward by sown graffes, alters and meliorates its nature. in a large degree; when ldid down in heart, :.s produce is pec-liarly Itrong when flooded by rivers; or lying un- der higher light foils, it will produce any thing without manure, be- cause the light mould front either is a rich drefling. But it is peculiarly useful for pallure, because, that retains it near the furiace; there. fore, paltures will be found moll profitable, and are used by-the most judicious; preserving a reasonable proportion of tillage, which is not with fucb, and ought not to be with any. one fourth of the whole, and yet they will have more grain, N. B. This will hold in all foils and situations, and is proved both by reason and experience of the belt and most successful farmers.,Rain and water is very ufefui in' this or any foil, where, from itR quantity or situation, it don't a i away the rich fine mould, because all water contains some quantity of this vegetable mould.,Clay foils if not very tough, arc'found excellent for.oak plantations, tho' the growth may at firlt be fljwer than in other foils: this seem-. ing lois at first, it will recover, and the timber be better and more- apt to grow ireight and lofty; but it is not fit for the orchard, which ihou!d be in a deep or light foil. Seedling nurseries of all kinds do well in clays, because they are free from frofi, and when moved to lighter foils take large growths, &c. J.. B. Oak by pudiung its root deep, don't hurt the adjoining vege-,tables, wnere; s hose trees whose roots Ipread near the surface, greatly flarve and injure their neighbours And it fliould also be observed, that the maxim, ,he who maries clay, throws his cost away) is not so universally juit; for the better forts as above, are much improved by a rich crumbling narle, and- yellow black ad white loams, which will be noticed hereafter, muR in several,refpcts

- 9 ] be diflinguilhed from clays. These are tough, but loams black or free, having more sand. What they call hazel mould; is a mixture of yellow clay, with blackish mellow earth; is a good foil, very fit for wheat and rye, more so than for other grains.,The praiaice of allowing dung to be long upon the surface of this or any foil, before it be brought under furrow, is generally thought to weaken the dung. In many counties in England they with great success dung their fallows of clays after firlt plowing, and immediately plow in the dung, and after two or three months, plow it up and it goes down again with the fourth or feed furr for wheat. This makes the weeds grow, and mixes the dung and prepares all for the crop. With such drefllings. especially with a light crumbly marle, they will have good grals by grass feeds, after seven or eight crops. They sow bear after wheat, and then such successions as they please. But this practice of so many crops, without new dre!ling, is not approved by the befl farmers; and where the clay is very Itiff, they find summer fallow each third year, both necessary and profitable, unless from special situation, they have plenty of dung or chalk or light marles, and bellow it,,Mr. Evelyn, tho' in molt things extremely judicious and ingenious, his observes of clays that some are so obltinate that no culture will subdue them, and some so voracious, that no manures will satiate them, is not jufR; for all forts may be made pliable, free and fertile. And as sand is recommended for molt of them, it should be obfer. ved, that talk, or what the country people call flieep silver, is by the eye, upon first view often taken for sand, both in clays and marle. This if not attended to, may mislead, for the talk hath a fructifying quality, which the sand bath not.,if the clay is white or black, it is generally more tender and brittle, and don't need fu many plowings; foot and all rich manures are bell for it; about twenty firlots of foot will sow an acre; so if it can be got, the small carriage makes it cheaper manure Turf and dang, if well mixed and ly long, is proper drefling. Pidgeon or any poultry dung is excelent for black clay, sowen by the hand how soon barly is sown,,Red, clay which is a brownifn colour with redifh tinge or cafl, is the bell to hold water in ponds or water courses, and it ramned and covered with stones, vii! last for ages, tho' the under bed be sand or gravel. It is also belt to cover ale Larrels, and it it should crack that is remedied, by beating it with brine, mixed',with horse dung, it is belt for grafting; and with chopt straw, for hraules. outer or inner walls, when burnt, it is a good manure for alnofl any foil; the yellow is next to the red. for all thole puipofes, but is more liable to crack asunder and waite when wet. Both do for good,B bricks

[. 10 ] bricks when tempered, but more difficult to make, than the other forts. Both red and yellow, are used for potteries ; but yellow the moit. It often happens, where there is a tender clay on the surface, there is a firmer underneath, the mixture of which, makes a firm foil. The bluilh black clay, is the bell for tyies. A black clay in .Nrtianptfair;, they use for tobacco pipes, tor it burns white; it is hard and heavy; it is rarely in a continued bed, but in large cakes, and is valuable, It is ;lfo used in potteries in IAottimhaJ/hire, and carried a long way over land for it. There arc other black days, which burn red, and are excellent for potteries. There is a deep gray clay, which burns white for tobacco pipes. And some of a dulky lead colour much uscd for Stafordj7iree fine whitiih earthen ,ware; it is a pale yellow when burnt. There is a black clay, which burns to a pale gray, which is good against purging. The common tobacco pipe clay is white. The finelt, is at Po0l in Dor/etfJire, and isle of Iifght, and is a valuable commodity; it is a clean white, not heavy, and almost as tender as marle, but mul be mixed with some tougner. There is also of adull white colour, mixed with a good deal of yellow, which is excellent for potteries. Mofl of the pipe days are used by fugir bakers for refining.,I have beea the more p.rticular, upon clays, &c. that my coun- trymen may be more attentive to what they poflefs, or may posiess. It is not the quantity, but the quality of land which will make rich, and many poflefs treasures, of which they are ignorant. When by the plow or ditches, any uncommon earths or mixtures turn up ; the possessor should examine and try them with water and fire, and if en- couraged, dig pits, for tho' foul near the surface, it is often pure and firm underneath. And he who negleds there, and particularly clays, neglccts treafjres. This ihould also encourage to ditching, which makes discoveres,Wiere there is pure fine clay, there are seldom beds of find near; but it is the reverse with loams'; but clinkers, or the hardell bricks, for bottoms of ovens or pa-ement, are made of tough clay with little or no sand ; but mufl be dearer as more difficult to mould, and needs much labour to work and prepare it. The fine yellow bricks used in fine buildings, is made of yellowish white clay, with small mixture of sand. And the bright red brick, for ornaments about doors and windows, &c. is made of a piece unmixed loam, containing 'or re- ceiving a large proportion of hard sharp sand, but a brownilh loam, is mo'til used for bricks, and will be valuable in that way, when too poor for cultivation. A yellowish loam, will often burn to a high red, and ferve'for the fine red bricks. Some brown loams, burn blue, and make very fIrong and uncommon coloured bricks. And some loams are valuable for colouring potters ware, when the sand is fepa. rated from them by water, A gray earth, with lumps of yellow,,when

when land is separated, and the clay mixed with water to the confi. fence of a syrup. gives the deep yellow to all their earthen ware. And they use a bluilh loam in some manner, for a paler yellow; and a dusky redilh loam, for a black colour.,But there is a brownilh yellow loam, which by fire turns to a firong red, which would be an ellare where dilco..erd. They have only found it in England, in !erkihire near Windsor whence called \\ ind- for loam, and fells at a (hilli:g per buihcl. It tfands fire better than any other materials; therefore is ulfd in glafsshoufcs &c. & uffibly, such might be compounded, and thereby gain a valuable commodity for export, &c. the materials being a yellow teugb clay, and a flarp hard large sand, of a pale brownilh yellow colour. This would anwver cost, though not found near each other; and some trials with lire, would prove it, L'hey make red bricks of a hard nature, the other red bricks are randy. Loamy foils, tho' the bell, except pure earth, when properly dressed, and very plyable to culture and manures, ate the moit sub- jet to weeds, because they nurse all natural to clay, or sand, or mould, or the different degrees of mixtures; but when these are conquered, such foil rewards the labour and cost.,There are great variety of loams, and should have, and generally re- ceive their names from that part of the mixture which predominates; therefore, in his management of there as to culture, manures or crops, the farmer mutt adapt to each fort, those in a discreet degree, which is moll propet for the article of the mixture which prevails, and when dressed, it is kindly to all vegetables. There is much of this fort in Aberdeenshire, which should encourage and rouse the farmer to industry ; and many of the loams are the bell materials for brick,Sandy foils of which there are variety, and of different names and natures according to colour, of which the black is the best, called so and approved so, by the black mould mixed with it; all of them when they receive proper mixture and dreflings, ale grateful to the farmer in a degree, not difpicable nor discouraging. It is said, some of the finell pastures in the world, are to be seen in OxfordJhire upon a yellow Land, with a large proportion of earth where the farmers keep it rich by frequent dr:flings. In general, the grafsor any ve- getables, are sweetest upon sand lands, and fonmetimes sturdy crops, when 'pains is taken. They are in drought liable to be burnt, but soon recover by the rain; and where there is command of water, they may be managed to good purpose.,They agree very well with turneps, potatoes, rye, buckwheat, carots, parsnips, pease, 'vetches; ar.n finall clover, St. foin and lucern. These latl, are early and rich graffes; but require the ground to be clean froni weeds, and rich by proper drcffings. All,B 2 marls,

[ 12 3 arles. and even common clay, are good, also any'richer and finer earths; mud irom dircles. &c. The beech, hazzle, and holly, are the trees which thiive belt in sandy foils.-,Gravelly foils. have a mixture; pure gravel cannot be called a foil. Thefc aifo vary in name and quality, according to their mixtures. day is a proper drefiing for all luch, because it gives a binding to hold marle or any manure. Round flinty peebles, is the worRf fort; but more irrcgu;ir or rough itones. or limeltone will do pretty well, Barley, small clover and st. foin, lucceed very well upon& luch, 'hen well diefred with clay and dung, and it holds the drefling pretty well . hen naturally much clay with the grvel, light marle does well, when the larger tfloes are removed. These lands are often early and fertile, -,hen well managed; but when neglected, often produce large crops of small weeds, and but slender crops of corn. Such fbils don't require mucih firring with the plow: even in fal- low. it often fucccLs, with two plowings only. The folding of sheep upon them, hath a good cffc9, but not durable; chalk is found to lall longer than any other manure v ith such. Where it is fndy, mud from ditches, will do well. \\ hen richly, dressed even wileat will grow vell. 1 hefe are less liable to be burnt in drought than sand. for the (tones shade some ot the land, and pre(erve moiflure. The beech often grows well in this foil, funitirnes the afli and elm when the under layers are good. .nd if trees are planted in such, they wont hurt corn or gras!, for they seek and find nourilhment at a greater depth',There is a fnall deep yellow sand, which feels like fine powder, that is much valued and used, for moulds for calting of metals. And a pure whi'e sand is useJ, and serves the purporf of chryflal for make- ing fine glass. River sand Ihould be examired and being well wafled, is often pre:erable to pitfand Sea sand can scarcely be separated from the ihells; but where these abound, it is a fine manure and often better than lime.,sand or gravel of a bluish red colour, is not good fJr walks, be- cause it dont bind ; but when compored of irregular peebles, with a yellow marly loam, this binds, and makes fine walks, and prevents the sand rilng in dry leafons; and mixtures may be made to pro. duce this, in like manner as f tgeired to make fine foiis &c. and by screening, may be had at an) desired finer-efs. If natural mixtures is not found for w,,lks, and proper loam is deficient, riix tough clay with w ater, and throw it upon the sand; but do not exceed irn this ncr allow too much loam, beciufe it is clarty when wet and promotes weeds.,When sand cannot be had. even gravei is a good mixture for frong clay; and the rcaundeic of it, is e:cclelnt for high roads.,When

[ T3 ] When the gravel hath loam with it. which is commonly of a marly quality it s'ill do good upon light hoavhil lands.,tialky lolls are very rarell found in North Iritain they may easily by known from white clay, by it grrafy afpedt and, many differences; but efpecialy after rain, the clay is more dark and chalk more white, then when dry. ' here is great variety of chalk; some is as soft and light as any marle, and this fort is better than the rock or hard unlcfs made into lime.,Chalk when used for marking or whitening, is made by pounding the hard rock vhalk and mixing it with water, whicb when ir fublides is more pure, and forms into cakes. Pure chalk is often with fuc- ceis used as medicine. for foarnels in the ltomach, and belchings &c. It allo fottens hard water in pits or wells. And red black and o- ther chalks, are fometimcs found in lumps among(t the white, and will pay wel! so' being preserved being uled by painters &c.,This soft fort is often mixed with a grayllh clay, which makes it an exceilent foil; deep but few plowings, and little manure do with it, and produce weighty crops C:halky foils. are happy in being little subjet to weeds. Ioppies, Xlay weed, and some other flight-rooted anuals. The bhrd kind needs rotten dung ; but the softer fort, doth well with mud: Iheep folding, doth well with both. And it should be otvlerved, that folding on there or any light foil, when done after tilling, gives by the treading, a firmness to the ground which it naturaly wants. \\hen chalk hath a mixture of clay, it is very binding ; and then much culture is necelfary, and pit sand is use- ful, wheat barley, and rye and pease anfwver well upon there foils well drefled ; but all Ihould be sown when fettled fair; because rain after Cowing, fometihnes binds the surface so much, that the feed can- not rife. And tares and lentils, will grow upon the poorelt. St. Foin answers well, clover donkt answer, they produce sweet palt- ure, but not proper tor hay or trees. Such and all light foils, are conimonly found molt in hilly countries.,Iellow mould or earth, the lichelt foil in its own nature, and needs the leait drefllng, is moitly found in vales, and molt proper f 'r, and yeild the molt by grailes, for its tender quality will scarce in many place, fupportcorn. The gardeners seek for this earth when old without culture, for hot-beds, wall trees, &c. They call it virgin earth. They often find what is excellent, about old de- cayed willows and otner decayed trees. it comes the nearest of any totpure vegetable earth above described, and is often met witlh under the turff in fen'v or low countries, being probably the fine, earth brought from highir grounds, or what subsides fiom rains &c. It is light loose and black, with very -little sand in it, it is fpungy when wet,, and cafily falls to powder when dry ; but very different,from

1: 4 3 from peatland, which is rotten foil, and rotten wood, with some bituminous matter that holds them together.,This foil is the moll tertile, and molt tra&able for all vegetables, and at leaf expence, if not too wet, which hurts it; therefore in whatever situation it be found, the charge of draining is well belowed. It is some times mixed with a blackihb blue clay, aid sometimes with sand, when it is excellent for palture with easy drefllngs but, when it hath day, it afwvers then beit for corn; but where wet, it feeds the leaf and 'falk more than grain, therefore fitter for grass.,This foil is often found, where rivers frequently overflow; and the mud they leave upon it, is a richer drefling, than the toll and in. genuity of the farmer can otherwise give.,A prudent firmer, will diligently seek for such land, and not spare rent to obtain it, nor colt to enclose and manage it, for it will if he is net impatient, return all ten fold. When whitish fircaks are found in this foil, it is often the spawn of mushrooms, and in the pafiares of such, many mulhrooms will be found.,When such foil needs manure, the bell is rich or old rotten dung. But according to the composition of the foil, if it hath large sensible mixtures, as clay or sand, &c. it mud be used accordingly, which reason will diltate, from what is mod proper for such ingredients, and that in proportion to their quantity-and where too wet, if turffed and burnt. it answers well; and this practice if carefully exe. cuted, would do good and no hurt. It may be performed by fhailow plowing with a feathered fock, but both to burn it and pre- vent burning too much of foil, itlhould be put into heaps, and attended, not to los the alhes by wind, &c.,The molt mellow of there lands. especially if wet and burnt, will answer exceedingly for cole or kail feed, which makes a very rich pafure or the feed valuable for oil, and refuse of oil to feed cattle, arndnext to that or after the cole, oats, or any grain, aniwers the bell, and rye grass sown, with lait crop of oats--many in Eng- land. manage in this way with great success'; and when fix years in grass, turff, and burn, and go the like round again; and so contin- ualy. Upon there, the white poplar tree thrives extremely, and is valuable wood; in Chefbcire, &c. they use it for floors and lining of room;s and other uses, for which we use the fir dale, and it grows much qaucker.,The proprietor or farmer may by search, or even by careful exa- rmarition of what ufual!v turns up, find in his land, many materials more valuab!e than crops, and at smaller expence or labour. There- fore all poieflb-os of land should be attentive to all the mixtures and stratas he meets with. The negle& of which, deprives us of many commercial articles, and manufactures which we might have, which would both improve the land and conlume its produce.,By

E I ] By the attention recommended, many valuable, discoveries might arise, and amongfl others, fullers earth, which as yet is but rare in England, almoR all from Bedfo/dJhire, tho' of such importance in' all woolen manufactures. It is a genuine unmixed pure marle; very soft and mellow, and soon falls to powder by water. It is too va- luable tor manure, as there would be sale for vail quantities, and the price allow diflant carriage. But where foul, and not pure for the manutature, it is the richest marle and manure. Sometimes it is found in fm all mixtures in gravel pits, and elfcwhere which would render even gravel ufcful manure. It appears in this situation some. times in lumps of a gravili earthy fubfiance, as big as one's fill; and sometimes a finall Rtreak lomewhat perpendicular. It contains a (harp sand some clay, with a very soapy softness. When such is put into water, it forms three settlements, however often you fir it, viz. a (harp sand at bottom; then a yellow or brown clay; 'and at top, a loose covering of an olive coloured, light, crumbly, mouldring mat. ter; which lalt is fullers earth. Therefore'wherever such is found, it well deserves a reasonable search or digging for more, and what is more pure, at leali for some diltance or deepth, when lumps or firings lead. There is found in ofme places, an earth of an irregular mixed colour, yellowih in fume places, and bluish in others, which- breaks in water, and takes spots out of cloaths; but is not so pure, nor of such a scouring penetrating nature as fullers earth. As blue and yellow, makes green; possibly, if those different earths were pro- perly mixed, they might produce the olive colour, and improve the quality; or where such are found, the purer may be found deeper, as is usual in clays and other foils. Such things are extremely rare near the surface pure and perfect.,Also ochre, a' very valuable earth for painters, glovers, leather dressers, &c. is found in many places of England. It is an ellate where found. It is found yellow and red, sometimes separate and sometimes mixed, but the yellow becomes red by fire. Thereis also, of a purple, an afln, and a dulky dIraw colour. It is all light, brittle, dusky, and fine betwixt the fingers. The induflrious Dutch get it from the Shotcver hills near Oxford, and besides what they use and fend elsewhere, return large quantities to us, after fome-cookery' of it, This flews its value and demand: and doubtleis it might be found in many places. It often, especially the yellow, lyes under beds of clay and sand, or in lumps among those and in gravel beds. 1 he (lone ochre, is usually fine, nd ready for use; but what they call clay ochre, is usually foul. fiomn which they purge the sand by water, and make the pure into cakes. Many tradefilen use it; among(t others, besides painters, m.irking flieep, all potters, plo- vers, buff'makers, &c. There is a corier red fluff, called reddle, much of it found in Dr'tyjirc, and yet font to Ln.t'iJ above a,hurid'ed

[ 16 ] hundred miles overland; it is more properly a marle, but drefled and used to many of those purpoles.,Even peat so well known in molt countries of North Britait. th!o! much wanted in f.me, is valuable tot many purposes besides fewel for the countrv. itis reckoned the bell fcwel tor the nicelt operations of chymilts, and goldsmiths, and some essays of mettals. It may be found in many places, under swampy meadows. where at pr sent they have'no notion of it, a black mould under the sward is com- monly over it. 'Its ashes. to be had in great plenty in many coun- tries, is excellent manure; cfpecially for all clays or siss or wet or four lands, for common grass An ingenious gentlemen in Dum. friesirire, and many others, value it so much, for dressings for all grain, especially barly that they are at great expence to prepare it. It is to be hoped, that gentleman, and others who praflif it, will favour the public, with their experiments and directions, as to foils, crops, quantities to be used, nanufaFturing. and seasons of laying them on land, &c. But in Berkflire. the county of Eng. land of the belt husbandry, they are valued f> much, that 1 knew a proprietor near Reading, who luckily had some peat ground, who fold to the farmers, at from eighty to a hundred pound fIerL per acre, the privilege to cut and burn the peat, for fake of its ashes for ma- nure, and tei property of the bottom, which was as it is molt fre- quently good clay remained with the feller. I mention these things, that all my countrymen may avail themselves of their refpeclive si- tuations and discoveries, and may be active and observing, to make discoveries. By ditches for fences or drains, peat and other things, may be discovered and made at the fame time.,I have known, excellent potatoes. and rich crops, by lazy beds on mols land, especially by Irilhmnn, without any mninure. but crops of heather and broom, &c In LancafiJ, e, which produces im- mense quantities.ot potatoes, so that from Liverfool oily they fend about twenty ships loading annually to Dublin; betides what they fend to Gibraltar and many diidant parts beyond sea; they value black, and peat ground for it: and for several miles about OrmJkirk, where they are allowed to have the belt poratoes. it is all peat land. VWhere they get at red or white land at the bottom of the peat land, they bring it to the fuitace in such quantities, to weigh the land which hoaves; a traveller at firdt trom its white iurtace takes it for rich limeing. They Iett such. land to poor people, at frc m two to three pound Rerl per acre, for potatoes, and they have rich crops of barley,. &c. after them.,The practice of burntland, which is ufuallv of peat ground, is ex. tremely injurious to the country, as it is commonly pradifed. They firthe furs, and leave to accident and the weather, to- burn or cx- tinguila them. By which some are sometimes not warmed, whilst,others

r 7 3 others are reduced to ashes sometimes to the channel, and often' to such depth as will not produce any thing. This practice, besides consuming much fewel. where it would be valuable, and which pro- bably had occasioned the scarcity where-it is now felt, often disappoints the very design; for either extreams of deep ashes or ufburnt peat will produce nothing. In Lanca/hire and alLwife coun- tries, they turff all such lands, and burn all in heaps; by which there is small if any waRe of land, all parts hath supply of ashes, and none too much.,The ammendment of a foil depending wholly upon the breaking the land with the plow, &c. and altering or inriching it by proper dreflings; I shall offer a few further hints as to manures, and so con- clude for at least this year.,A foil may be rendered worse than it naturaly is, by bad mannge- ment, as certainly as it may be improved by good. Therefore, what is offered as rational, and confirmed by the success of others expe- rience, Ihould in juRice to one's self and country, receive a fair and patient trial.,Manures are natural or artificial, each of these have great variety, and each may do hurt or good, as properly or improperly applied. I shall avoid as much as poflible repetitions,--but in things of this nature, and efpceially when following another's method, these can- not be so much avoided, nor such connection or regularity in other refpes retained, as might be, if the composition was wholly new, and more studied; which in these refpe&s, things of this nature don't require, if materially right in the essential parts.,The mofa general and most valuable manure is marle: Providence hath been so bountiful, that few places are without it; and yet far- mers, tho' laborious in other articles, have in general been remarkably negligent in their search for this valuable commodity, a treasure when found and applied with judgment, Many countries, and especially the counties of Norfolk and Lancaster, were in my memory, re- markably proverbial, for bad grain and grass, poor tenants, and low rents; and by marle and good husbandry, all these have been im- proved, to be at leaf equal to any county in England. And people Ihould not be discouraged by even the miscarriage of first trials.,The deeper marle lyes, it is usually the more pure and rich, which is some comfort and ballance, for the expence of removing a deep cover.,Pure marle, is a fubfRance, not unlike in many refpeas to fullers earth; it is fatty to the touch, of a tender fine nature, will'fall to powder id water, unlike other earths; not tough like clay, nor dulky like ochre, nor sandy like loam. The harder and more compact kinds, wll be flower in difolving by water. In general the whitilh is the fofefR, the bluish the hardest, and red, yellow, or blackih of,C a

C .18 1 a middle degree. The harder it is, the more early Ihould it be put on the land, for corn or grass, that it may have suitable time to mel- low and. soak into the foil. In Lanca/ljire, &c. they marle in June and July for the subsequent sowing.,It is lamentable, but certain truth, that marle hath been an- tiently uscd in many countries, where it is not now known; as in others, 'there are visible proofs of antient indutfry in moving (tones from their land into bawks and cairns beyond the latter pratlice, Hath this generation jus ground of complaint, when- their poverty is plainly owing to their own negle&s ?,If the farmer hath choice of marles, and his tillage and pasture land be of the fame nature and proper for marle, let him use the white for the palture because it incorporates molf easily; and the blue for the tillage as the plow helps to break and mix it. Tho' some are so hard. that they with difficulty break by a hammer and mufd ly at leaf a whole winter, before they will break. These often, are the mofl durable, as the (hell light marles have the moRt immediate effect.,there is in many places, marle of a mixed colour, blue and red; the blue being in streaks or veins through the red. Some of this very fat And in Chejhire. they have of all colours, what they call lte marle, because it tiles in fleaks as fate doth. There is also dice marle. which breaks into square stones.,Chalk and some binding marle, if put into too large quantities, which the farmer's greed for corn crops, sometimes occasions, hath in some inflances, rendered the land compleatly barren, until well tirred by fallow. In Stafl'rdJfire and Che/hire, there is found a grayish or afi colour sand flone, which if it break by the weather and crakle in the fire, is and may be used with benefit Also another of a dusky colour and tough fubflance, which do well for sandy foils; also another fort of a yellow colour and more tough; also the paper marle, which fepa- rates in thin fleaks or leaves, is much esteemed. There is also the fleel marle, of a dusky colour, sometimes spotted with red, some. times with blue, it is very hard when broken, falls into square bitts, and upon the ground, lefns its size in fucceflive crops, until at las it is not diflinguilhed, when it hath its Itrongeft and very good effects.,If discoveries are not made by careful observation of the furr by plow or water, or dirches or ponds, or pitts the industrious farmer lhauld bore several parts of his land with the augre, or an inftru- ment. which every proprietor of land lhould have for his own and tencnts anj country's benefit. It may be tried by the instrument, at lea fix feet deepth, at finall expence of time or any kind. Under clay. .'larlc is often found, as also under black mellow earth in low lands, where the redih kind molt frequently occurs; it will some-,timcs

[ '9 3 times appear small or thin, but if followed, often thickens. It is cafily traced by the agre. Sometimes it is found under sand or gra. vel, but these are rn frequently the clayey forts.,In some parts of CheJhire, but it is too much, they will lay from- seven to nine hundred cart-loads of marle upon one Engli.h acre, when it is found in the corner of the field, which it often is in that country which will coit them from five to eight pound lterl. per acre, but by good management, they will take twenty fucctflivc crops, without intermission alter it. They plow (hallow at first, not above one inch of the foil and deeper gradually, and give some flight dtef- sings of other manure during that time.,Sandy and all light foils are the mol: sensibly enriched by marles of the clay brownilh or yellowifl kinds: but the fat and tender marles, would loon subside below the sand, &c. This dire&s to proper mixtures of foil and marle according to their refpeaive na-- tures, also in proportion to their refpeeive natures as to quantity. In Chelhire, they exceed as above, and in Safford/flire they fall into the opposite extreme, giving only about twenty loads per acre; the bell mean or medium, from experience, is in the general for tillage land, one hundred loads of a cart and two middling horses per acre ; grass land takes less. But to vary this reasonably, according to marle and foil; viz. if foil is very sandy. or gravel with little mould, and the marle not a pure clay, but of the mixed kind, with sand gravel or loam, more must be given; but if the sand or light foil have alarge lhare of mould or clay, or loam and marle be pure a lesser quantity than the hundred loads is proper; but if burnt which'fome prafife, the half is sufficient; and in like manner for all other foils and marles. And the time of laying on mutl be attended to according to their different natures as before. But if clayey (hould not be laid out in the beginning early in winter, leaf the rains make it too tough, and obltrut its usefulness. Therefore rummer for tough marles, and spring for tender, is bell, and the sooner it have some mixture with the foil its effecs are quicker and better.,The bell way of sowing upon marle land is found from experience to be under furrow; but plowing as abovementioned in Chejhire.,If the farmer fees his land in fair weather, look like-a hoar frost, itis some proof of the due quantity, and goodnels of marlc, and its agreement with the land; and its crops will be better even from a bad foil than the bell dung'd lands, and commonly answers in all lea- font wet or dry when others often fail.,If by unexpeced much wet, his surface be cruRed or tough by the marle, some\_ of it burnt, or some lime with the rotten dung, - will break it and improve the whole.,C If

C 20 ] If the land marled is upon the defeept, the marle Should be thickell at top, and sparingly at bottom, for the rain will convoy sup- plys from the upper parts.,If eight or ten crops of grain, are takenaftcr the marle, if the marle be a pure clay, the land mhould have a dressing of lime and dung whether for grass or corn, otherways it may retain the binding quality, when it hath lofi much of its richness.,Mud is a valuable manure of earth, being the fine mellow, parts, brought by water from other places; and found sometimes in rivers, &c. of fnall current, ponds and ditches and low lands, where there are higher near them. That of rivers is efleemed the befl, it is all very fertile when properly applied, but not near so durable as marle, tho' it is good for tillage land, it is best for grass.,Mud if from clay, will give-a solidity to light foil, and if from find, will break and open tough ones; and river mud is the nearest that can be to virgin earth; therefore very proper for gardeners, &c. All mud is an excellent mixture with dung and litter.,As the barrenness of most foils, proceed from the superabundance of some one ingredient, not in its nature very fertile, in the general nixture; there is scarce any one kind, that may not serve as an use- ful mixture and manure for some other.,Clay is a manure to sandy and gravelly .laods, when well mixed, it brings these to a loamy foil, which is a good one. And clay from pits, is better for this purpose, than from the surface; being proba- bly more pure, and more of the nature of virgin earth. The red or yellow ciays, are belt for such- lands, unless they contain a large mixture of earth, when the blue clays will answer. Once manuring with such clay, will las for life, about eighty loads to an acre, to be cncreafed or leffiened, as directed about marles, is the prudent medium. And tho' it mofuld notfeem to anfiver the firfl or second cropt, the farmer ihould not be discouraged, because it would certainly answer and reward all coif and trouble; but it needs being well mixed, which when tough may require time. Such lands are not at their belt till the 3d, 4th and Sth-year.,But the calcining or burning clay for manure, gains ground and esteem daily The fire breaks the compact texture, which obltru&s its fertility in its natural state. It is excellent for dry or loose lands for tillage. ' here is a black clay found in coal pits, naturally crumbly, which mixes well with any foil, it usually lys immediately over ot near the coal; and may if found, prove tome indication of coal.,A red loam or good brick earth,,will answer upon gravel land, of smooth round peebles, better than pure clay. And this will also hold with a dry hard iand, if not much sand in the loam. And it answers for chalky lands, and likcwifce or allloofc mellow foils; .and loamy,foils

[ 21 ] foils are found almost every where, and receive and keep dung well, which are thrown away upon hungry and loose foils.,Even sand is an excellent manure in some cafes, where used with judgment. River or the cleanest sand, is belt for a tough clay. Pit sand or surface of roads, do well with what is less tough ; and when the clay is poor and cold,' if sea find cannot be had, if hogg or poul. trey, or Iheep's dung is mixed with the sand, it will enrich as well as open, and where there are Riff lands, a layer of sand in Iheep cotes of houses, every now and then, enlarges and enriches the manure. In like manner in hoggs flys, and pigeon and poultry houses; but in all use of sand, frequent and careful plowings, are needful to mix well, and prevent clots of sand.,Tho' clear sand is molt fit for clays as above, sea sand tho' without {hells, hath by its salts, a fertile influence upon almofl all lands, ex- cept hard sand and gravel, and when much mixed with {hells, hath almo{t an universal good influence wherever used. The largest grained sand is the befi for clays ; and sea sand from the (horc, 'where daily flooded is better, if equally impregnated with fhels, than from deep water, even if it could be cafily had, about ten loads per acre is a good medium.,Where Tea sand is ueed and well mixed wheat may be the first crop; but if other sand, or marle, or clay, oats is generally fbund belt for the first crop. Grass for paflure after sea sand, is ofall the sweetest and most fatning, and the fame after salt water, about three tons per acre, or made salt about four bushels per acre, and some less or more accciing to strength or ftifTnefs of land.,The sea sand from creeks and cavities of rocks, is the richest, having more salts, and the fine fubflance of sea weeds and dung of lea fowls, and five load per acre of this will answer. Barley from this and all sea sand, will have flort firaw but remarkable long ears, and the grain firmer and finer than from other manures. Shell sand is richer than any lime, for, beAdes being of the fame quality, and having the addition of salts, they partake of an animal body, the richest of all manures. But all sea sand agrees excellently with ba- ron heathy land, where a clay bottom.,Even gravel for a cold tough land, is a good mixture; moot wet lands are so; it warms and breaks them, and gives way to the wet, and roots of Plants: The rough and rugged is better than the fimooth; and all large (sones (hould be picked, or icreen'd from it; none Ihould exceed the size of a walnut. It may be used with success, where there is not proper sands or other better fluff upon all clays, and even loamy foils, which rife in great clots by the plow; which indi- cates much clay in it.,Also, the chippings of bones from quarries, &c. do great good iq all the cafes mentioned in the preceeding paragraph; and such ma.,nures

C 22 aures are from their nature very lading, and found so in experience; and even any flones, not very large, and of ragged Ihape will have simular effets, in iome degree, where better cannot be had.,But there is a caution needful as to all natural manures, except the rich marles and lime. water and Ihells; that, they mud not always expef their good effeAs immediately, nor always depend upon them alone; for altho, they do great good, and will operate greatly by thcmfelves, as hath been noticed; yet in some cafes, their chief, at lead their durable excellency is, to prepare the foil for, and ren- der it capable of benefit from other proper dreflings. For inflance, cold tough clays, would not yield properly to dung without other mixtures, nor would dry sand or gravel, &c. retain it. And this ob- serve, includes chalk which hath this peculiarity, that it meliorates foils of the moa extreme opposite natures, viz. Stiff cold clays and hard sand; for the firn, soft or burnt is belt, and unburnt-for the last. But some flone chalk is so hard and obdurate, that it will not fall and fcparate by weather, but mufl have fire. The softest and bed kinds are usually found under yellow marlifh clay. Chalk and frong sower clays, 'are hard and are the Itronged inflances of any, and a convincing proof, of the great benefit o. judicious mixtures; for these are na- turally barren, and by such judicious mixtures, become exceeding fertile.,When chalk or chalky fubfIance can be had, it makes an admir. able mixture with one load of it, and one of river- or other mud, and two or three loads of dung. When used alone, about twenty loads per acre is proper; to be laid out on theground before, or early in winter if the chalk is hard, and in the spring if soft. This ladl fort, is very good for pafure, and makes the grass richer for milk or feeding tho' its quantity wont appear increased.,Salt and salt water, either from the sea or fait springs, is excellent manure, if properly used, some use only two bushels or meal firlots of salt for an acre, but if land is barren three or four may be safely given, and bay salt is befl; also steeping all grain to be sown in brine (a thing of fmal! expence) is very useful, from fix to twenty four hours according to age, flrength and firmness of the grain. It is to- lerable brine, when an egg swims. An cxccfs of salt or steeping feed, will do hurt.,Tho' the use of sea weed, is confined to those parts near the sea, yet its use is too much ncgleced. It hath the advantage of salt and vegetables jointly; and all vegetables even weeds if rotted, are good manure: but thcfe are so in a special degree by the concurrence of fait, and some imagine, they have also the animal qualities, having at lead numbers of infects in their leaves and cavities, if not made for or by them, as the coral and other sea nrodulions are sup- posed to be. The sea weed lads longed, when put on as taken,from

[ 23] from the sea, unless its continuance be sacrificed to a more Immediate cffect. Sea shells are also too much negleced; but they hould be broke or bruised by proper instruments before they be used. If large or stubborn as some oyster lhells are, half an hour of fire, will make them break with ease; but even this fine manure, and fpaven or intrails, &c. of sis, which is fill more rich, as all animal manure is the richest, may do hurt by excess in quantity. Twenty loads of uncalcined shells per acre, is a large allowance; and according to their, or other manures, richnels, the quantities Ihould be proportioned.,I have said above, all vegetables are good manure; but the mold juicy is the bell; if weeds are used, they should be cut before they run to feed; and all the vegetable kind are the better for early effec that they be well rotted. All rotten wood that will easily crumble, is good, and all leaves and small branches, and even old flumps or roots, if but near rotten, should be collected carefully for this pur. pose, by the prudent farmer, Ferns are excellent, and crops of almost any vegetable, even heather itself is valuable; all may with judgement be used alone; but are much better when mixed with earth and dung to ferment. Malt dull, the refuse of tanners pits, ditto of butchers slaughter houses, and flelh markets, and of all dressers of leather, or hoofs or horns, all animals hair; all rags, and those bell which are improper for or least valuable to paper milns; all refuse of dyvers, or cloath manufactories, or taylors, Ihoemakers, &c. saw dufl, small chips and shavings; human and cattle urine- sudd fromt bleach houses, wash houses, and refuse of dairy and kitchen, when not applied to better purposes, and many other particulars hlould as much as pollible be collcted and used by the farmer. All these will answer any foil, and pay for long carriage, as small quantities go far upon the land; for many of their farmers in England will pay from seven to ten fhilings ftcrl. per bushel and at fame time put thirty bulhels to an acre and yet they make profitable returns.,But as dung is the molt general manure, some few further hints concerning it is not improper; 'because as the farmers success for grain or grafs.depends much upon proper manures, his success from dung, depends upon a careful judgement of its proper compositions, quan- tities and applications; for mistakes in these, may do hurt in place of doing good, besides the loss of his labour and colt. The dung of different creatures, are rich in different degrees, and suited to different purposes,,For the propagation of vegetables, the roots mull have free accers through the foil to get nourishment, the foil nrull be free from too clofs contact, which might ob(truet their paftage, and at fame time, free from too great loofnefs,- which would prevent the roots touching it, which is nccelfary to receive its nourifhmcnt, and a certain firm-,ness

C 24 3 -ael to flpport the plant, that the roots may not be dillurbed; and thirdly mull contain a certain richness and warmth, suited to the nature of the plant.,For grain and many other plants, which require frequent sowing or planting, culture by tillage or otherways and all proper manures, which includes dung, feparatly and jointly operate for. all those three purposes; for grass, trees, and other vegetables;. which don't require frequent culture, manure by itself, hath these effects. A ju- dicious underflanding and application of this, comprehends all good huibandry.,We know all dung is naturally disposed to ferment; and we know from experience, that what of itself is liable to ferment, will ser- ment and work up a large quantity'of any proper matter amongst which it is mixed. A little yeast or leaven, will ferment, lighten, and warm a large lump of dough; and thus dung works upon land, and hath successful effecs, when judicious quantities and qualities are used.,Mlr. Tull and many other ingenious people who trust entirely to culture, and rejec dung for tillage or cultured land, are too partial to their own system and experiments; for from experience and rea- son, bot are best; therefore the prudent farmer thould carefully use both, and in this and almof every thing avoid all extremes, and judiioufly adopt and proportion all to the natures of things. This ciution, upon which his whole success depends, cannot be too much impressed, and should be conflantly kept in view.,From the manner in which dung operates,' as above mentioned, it is evident that it is not so needful or proper in equal quantities or richness, upon foils which are hot and loose already, as upon theef which are cold and compac or tough. And if rotten dung, be too long upon the surface of the ground, before its effe& is wanted, the fun, wind and rain will exhaust much of its virtue, and if it be bu- ried too fresh, or in too large quantities in rich foils, it will occasion weeds. Also the dung differs much in its quality, according to the different creature, and what it eats, and the mixtures put to it. The matter digested, the degree of digeflion, and mixtures must make a difference; also the degree of fermentatation it is in. A judicious consideration of these, will lead to the proper mixtures and use of it. - The mixtures, Ihould be adapted to its intended use; and its application according to its nature. For stiff foils there should be mixtures to make them free and open, and free foils that which contributes to bind and fliffen. Cold foils should have the hottelt manure, and.hot foils the coolest. And mixtures and stirring, pro- motes fermentation. All urine brought amongit the dung is a great advantage to it.,Pure

C253 Pure horIe dung, and the smaller without litter, the better, is bes for paflure lands, andif preserved from the weather will go far; cfpccially if urine be mixed with it, and even earth and mud mixed with it do well. The paring of the roads, especially at Rfations where horses stand, is excellent for Rtiff lands. For culture land, except to force things early in a garden, a proper mixture of earth, both increases quality, and takes off any canker rankefs.,All dung,. as hath been observed before, may be enriched, by all animal and vegetable mixtures; also by being covered from the wea- ther. And it is properly advised by many, to carry all refuse of kitchen, warte beef, broath, brine, blood, soap sudds, all from the dairy, and all refute from the house, and all such things, to the dung hill. Especially if the dung ponds be well paved to retain the moifure for which it must have a clay bottom, or flones laid in clay, and if it be covered, to prevent exhalations, All drainings from lables or byres, which commonly run to wate, (hould run into these pitts; and in countries where wood ana heather, proper covers can not be expensive; and by the common country cover and build- ing, it is fill much cheaper. But too much rain, should be prevented running into the pitts, for they should have ino more moisture, then is needful to promote the ferment. And all forts of dung and ashes, &c. may be mixed altogether, unless there be fpe- cial occasions for them separate, and sufficient quantities to deserve being keeped so. Old Markham fays, that one load of such mixed covered dung, is worth five. If so, it is a cheap purchafc of rich manure. And by a double or triple quantity of earth, all well mixed with it, the whole will be equally good and thereby a great addi- tional cheap purchase. Such compofR, when rotten, may breed some worms, but will produce much fewer weeds, which are more hurtful.,In paflures, where not too bare, but a roughness left, which should always be preserved, the dung is somewhat prote&ed from being exhaled and wafted by the weather, and small dung is soon imbibed and covered; but to let it ly upon tillage ground any long time before plowing, is certainly a wafleful practice.,Where three plowings is given to land, the best time to lay it on, is before the second plowing, and plowed soon after spread; it is thereby better mixed, and hath time to ferment the earth, and hath more immediate effec, for twice the quantity of land is by this un- der its influence, than by any other way.,If weeds or worms are apprehended, the dung may be allowed to cool a little before plowed; but when its utmoR warmth and fRrength is wanted, it should not ly uncover'd; so discretion must govern ac- cording to circumstances; but well rotten dung produces few weeds. However some think, that when moR rotten it is weakest, the heat and acion being much gone; but others think it hath a more extensive,D operation

E 26 3 operation on the ground by mixing and ating more extensively, and feeds the ear more than the Ilalk, and less produfive of weeds. But it is certainly less hot, and mol proper for warm foils, But then, the land subjec to many frong weeds, is generally pretty rich, and needs less of quantity and ltrength of dung.,Too much dung, if firong, unless the land be very tough and cold, is apt to make the firaw rank and of a ftong reed, but the car thin and light. Forty loads of good dung, are sufficient for a Scots acre of mellow land; and according to qualitys of land and dung to augment or leflcn the quantity; and better dress often, than too rich at once. But pasture is not so much hurt by any excess of manure. Dung is a medecine, of which an over dose may kill, when a moderate one will cure. Tho' it may be over done at once; yet the farmer cannot probably have too much of it, as his whole land paltures and for culture, will be the better of having it frequently.,Pure dung, and in the dlate of its firongeft ferment, answers for barly better than any other grain. And if fallowed after that crop, is an excellent preparation for wheat; the dung being thereby well mixed and the land having had time to ferment.,Cow dung not being so hot as horse dung, is fitter for hotter foils. All dry food of vegetables, produce hotter dung than green food. But cow or ox dung, doth better with mixtures than alone; and even improves by mixing with horse dung; its salts or fubflance, whatever its-nature or active quality be, evaporates sooner than other dung; therefore mixtures to imbibe or retain them is needful. We have not as yet certain knowledge of the true qualitys of dung in re- fpe& to their adtion upon, and rendering land fertile; but experience assures us of its effeits in the manner before mentioned.,When a compoll dunghill is made, wherever it is, in yard or field where there is not a fixed cover, let it be covered with green turf, to keep in the heat and mellow it. Such compolt, Ihould have at leaR two parts earth, and mud, and maril, &c. to one third dung. This is easily performed, by the layres or firatas of dung being thiner than the others. After lying some time to ferment and rot, they should be well mixed and flirred, and covered again, which the fame turff may do; and not carried out untill jut before plowing.,Sheep dung is amongst the mofl valuable; it hath a certain fuperi- our richness, arc yet i not thought very hot, like other small dungs of hogs orpoulry, &c. receiving its benefit by folding, is common and good; but much of its effeets are loft in that way, much of its richness evaporates: therefore, if so used, small folds by flaiks or hurdles, or other ways mhould be used, that the whole may be equally dunged, and such part may be soon done, which should be fbon plowed, This pratife some think, makes it go ten times fur-,ther

s 27 3 ther, to equal to ten times the number of sheep. Also, much dung might be saved by herds in their pastures, where it doth little good, and where too much about the entrance into folds, &c. that ihould be dug and dispersed. But what is preserved in cotes or houses, or if a covered fold was used, which some indufirious people do use, it would add quantity by proper mixtures, and save the whole ftrergih, There should be at the bottom of all cotes, a foot and a half thick of the proper mixture, to receive dung and urine, and weekly after to renew a layer of mixture, and take away for land or other dunghills, as is needful. The whole bulk will be a right manure; which is a proof of what we lose by neglects. A few flieep, will thereby do more good, than five times the number, and if wet, is apprehended from clay, or earth, where that is the proper mixture, a good coat offand or litter, or both over it, will prevent any bad consequence.,This dung suits all foils, but a cold clay receives mol benefit from it; and in this cafe, a mixture of sand or small ragged gravel is a proper mixture; and the mixture may be suited to the nature of the land for which this or any dung is intended, and should be varied accordingly, for much profit is gained, and much dung and expence saved, besides avoiding disappointments, by such discretion.,Hoggs dung is also very valuable, and they are so for the fake of their dung, if there was nothing clfe to recommend the breeding of them; but in a country which hath reputation for pork, and where there is encouragement for the exportation of it; and where there are so many meal mills to feed them, which, if they were not for- ced to breed, could feed at at least four times more ; a great loss to the country and millers; it is surprising that the farmers who have many offals about their barns, and would have their dung stirred and encreafed by them, should be so negligent, as not to have and breed them. But the management and other value of them, comes more properly under another article,,The objefcion to hogg and poultry and other frong dungs for grain, that they produce weeds, is a proof of their richness, for what will produce grain, -will produce weeds and all vegetables; for even fal- lowing produces them, but being renewed kills them.,The richness of hoggs dung is well known, one load of it is at leaf equal to two of belt horse dung, and is a proof of the observe above, that the richness of all dung depends in a great measure upon the food the creature eats; 'the dung of those which eat dry forrage, is richer than fhofe which eat green; and grain is richer than firaw, and animal food much more than vegetable, wherefore also, all be- longing to fish or animals, and many other dungs are richer than vegetable dung.,Hogg and poultry and pidgeon dung, may be increased in the fame manner as directed for sheep. And mixing all thete with other dung,,D 2 eljeoially

c 28 3 epecially for grain, greatly improves the whole, and moderates its ranknncs when by itftlf; but all these are excellent by themfclves for meadow grass, and all fruit trees; but as its flrength evaporates soon, it hould be soon mixed with the land, and when used for grass, the approach and time of rain, watched and taken; all weeds, bean firaw, cabbage roots and earth (hould be thrown into the hogg fly and poultry house or yard, to imbibe the mixture and mix with the dung, it may encreafe the quantity ten times more than 'otherways would be, and all equally good.,In many countries and in a special degree in Staford/hire they know the value of hoggs so much, that they sow land on purpose to feed them, pcafe, turnips, potatoes, spring and summer and winter kail, and clover and rape, and winter tares, add buck-wheat; all these are very well bestowed upon them, and afford a fucceflion of food; and their dung and culture is a good drefling of land and preparation forfuture crops of grain or glais. Slight manure, will prepare a crop for them, and they will prepare for a rich crop.,Pigeon and all poultry dung, promotes the fulness of the ear in wheat and barley and all grain. The firaw and blade will be small, but the car long and good. Farmers in HartfordJhire, will give ten pence per buflel or meal firlot, and fend fifteen or twenty miles for it. Forty bufhcls is elough for an acre; it hould be sown immedi- ately after the feed, and these harrowed together. It is fuperiour to all dungs for hops. Black earth put into their houses, is also an excellent mixture, and some mixtures besides for encreafe of quantity, are neceifary to make it separate and sow; also, receives the fermcn. tation, and promotes it in the land; the bottoms of hay and corn flacks are excellent, especially for grass. It richly pays your labour to renew the bottoms of your hay, corn and wood flacks yearly.,Rolling in dry weather, and when land is dry, is very proper and useful, with any of these rich dungs, but very hurtful when done in wet.,All rags are a valuable and durable manure, but such as are proper for paper, ought to be so employed, because such application is more valuable to the country and person that collefs them; and it is much -to be regreted, there is so little care. of there, but many of them burnt. And as rags are valuable, so is paper, which is also heedlefly dcltroyed. Judicious farmers find their account to bring them forty miles over land, for manure, and old rags, &c. for the fame pur- pofcs and reasons. Twenty-five bufSels of any of them will serve an acre.,Lime is a manure gencrally known, and doubtless very beneficial when used with judgment, but is useless, and even hurtful when in. difcrcctly made ucf of.,Limc

[E 29 Lime may be made of limeltone, chalk, marble, sea (hells of alt kinds. Some rich white marles which fermerit with acqua fortis, chippings of marble is excellent; and all (pars found .among(t all minerals: thee two.latl make the tiongeft kinds almost double.,Each is bet for the purposes to which each is suitable, and the materials and manner of burning, if there be choice, should be adap- ted to the purposes intended.,Lime-(lone is much more common than people imagine, besides the use of aqua fortis, which boils upon lime-fone as every one knows, it may be tried by a common or smith's fire, and that encreafed or continued according to the degree of hardness of the Rone; and as there are great variety of colours of lime-flone, both of one colour and mixed, persons are often deceived, when they don't find what they fee in neighbourhood; as also by not finding it at a certain depth; where as it is found at all depths down to forty or fifty feet, and worked to advantage notwithstanding, efpecialty if situation allow level for water and rubith. Augurs and hufl dams, may make discoveries. Also, there often occurs, useful lime for land, by en- creasing the quantity tho' involved with much refuse of earth or other sone, which will break and fall by the fire, tho' it be not proper for building; a huth dam is, water brought to, or penned up at a proper place, where there is a full or quick current, to cut the earth, &c, and lay the rock open to view.-If the fall hath not {trength, the earth mull be loosen'd from time to time.-Many minerals are difcoveted by this means at a small charge, Some indications of linie-ltone may be had from the surfaces or water which runs from it, which produces a sweet grass and fine verdure.,A wall of lime-fone is bell for the kiln. It may be square or round at pleasure or as ground favours. It should be wide at top and nar- row at bottom like a corn kiln, untill two thirds of the height, and gra- dually drawn in to about five feet wide, If.the feuel be coal or peat, and the quantity wanted large, what they call the perpetual kiln is best, which hath two branders of srong iron bars, eighteen inches from bottom, and the fame from each other, betwixt which the feuel is put and thereby hath air, and is not chocked by the allies. There is also a lair of strata: of feuel betwixt each thick lair of tone or other mate- rial, and these continued, as they fink when burnt ; for when well kindled there is no more occasion for feuel betwixt the branders; the fire of the kiln, when come near the top will burn what is above if not smothered by too thick coverings at once. Wood, broom, whin, &c. will also anfwcr for feuel, if dry and pretty thick. When burnt most of it will fall through the bars, which is taken out with iron rakes; but is at tome times chock'd by getting too close to- gether, some small spare doors or openings should be leit in sundry parts of the kiin wvhich can be ihut by loose lones, that it may be,tirred

C 30 ) stirred and opened by an iron pockeror flack iron, which will re; medy any inconveniencies of that kind, and also give wind and air when needful to blow the fire. But if wood, cfpecially brush wood, be the only feuel, the apperture at bottom of the kiln must be larger; and in place of iron branders, there may be arched bars with strong rough stone; in this cafe, the liae-lfone need not be broke in small, which is needful in the former, bccaufe the flame of the wood, will penetrate and difolve even a large lump, but in this cafe they mull be all built open, that the flame may get betwixt them, and lairs of wood intermixed, Aill continue the fire more effelually to the top, feuel Ihould be the last lair, the coarfelt fInall coal will answer, so it be got cheap.,One hundred of faggots, three feet long and round, wxill burn forty buflels of lime, and ten bushels of coals will do the fame, when the Itone is not hard, lime may be made in twentyfour.hours; but in proportion to the hardnefs.of the done, it takes more time and feuel; and all matterials fit for lime lores of weight, by burning from one third to ieis, according to its hardness; all sandy, stony, gravely and light lands, all of them supposed to contain a reasonable quantity of earth, are molt improved by lime. But it is belt for all lands, efpecialy cold, in shells or unflocked, and by many is esteemed bes by beingn mixed with other foils according to its destination, this lall may be done with the heaps upon the field where to be used, and save carriage, for poor sandy or gravel foils, two parts of cow dung and one part of earth is a proper mixture, and thereby the lime goes four times further, also black mould four times the quantity of lime, and dry mud three times the quartity anfwcrs the-like purpose. And for mossy land, aftes of the land itlff pair'd and burnt is a good compoll, about equal quantitys of ashes and lime, one hundred buihe!s each per acre, will probably enable the firfl crop to pay all expence ofinclofing, draining, tillage and manure. this hath been ofen experienced,,Lime by several writers, besides the- new Syflem of Husbandry is said to lass longer by proper mixtures, as above, than by it self alone; and that by the mixture of cow dung -i lafas two years longer than uith horse dung.,Lirme (one which ha.h lain sometime exposed to the weather, is thk:gh!t not to burn 1o easily or make such useful lime, as when fresh dug from the quarrie; also that a square stone of large size, will burn more easily than round lumps much smaller, aud where lime is ofed by it self for grass or leys, it is better any time before midfum- mer than atier, and spread it how soon laid on, tho' liae dont an- fwer well upon pure clays, and in a manner loll if used alone upon fich, yet foot and alhes tho' also produced by the fire, answer bell c:a all clayey foils; and foot in particular, doth for them what,lime

[---31 ] lime doth for other lands; but it answers with. all foils, when emi' ployed with discretion; it hath also a more sensible immediate effect than any other manure, for early sown upon the grain it will soon {hoot and have flrength to overcome any injuries from the season, forwards the ripening and improves the ear. Twenty bushels will do, but thirty is good allowance to an acre. It is equally ufefull to grass as grain, and alhes in great quantites, especially if suds and chamberlie be thrown upon them, answer the lame purposes about fifty bushels to an acre.,Six cart loads of alhes without mixture-and when to be plowed in are enough for an acre; but except for wet lands, some think they do better and go further by mixtures with dung, efpecialy from horses and foil suited to the land for which intended.,Burning of rank stubble, affords the mol equal and molt cheap, .tho' but a flight drefling by ashes; and somewhat dries, warms and crumbles the ground, and may delIroy some weeds; and if broom, whins, brushwood, or any dry vegetable be firowed over such field, it helps the ltubble to burn and increases the ashes. . All vegetables, produce useful ashes. In many low lands, and especially in Lanca. shire, they make much use of and benefit by afles from the pairings or surface of the grnund to the root of the vegetable, they do it by men with a breafl plow or faughter spade, but it may. be much cheaper performed by a horse plow, and a roller properly iron'd to cut it across. It is set up in frmall open heaps to dry, and hath ad- ditional feuel as the nature of the ground or leafon requires. They may be rendered useless by burning too much; when a dark, or red, or yellow gray, they (hould be extinguished, but never allowed to burn to be white; a flow and mouldering fire, is therefore the best; and tho' the outside be but well cracked by the fire, at least retains its shape without falling, it is not the worse. When cold, they are spread in a calm day, and under and all round the heaps, they Ihould be pair'd perhaps three or four inches deep, as the fire hath penetrated, and such pairing spread also. They commonly when they have liberty to choose, begin this operation the beginning of /May after whichby (hallow ploughing, they have fine crops of barly, and half the usual feed is fuflicient. Some sow wheat the firfl crop after burning, and sow late in O7ober or November, and it often answers very well.,This prascice of burning, (hou!d never be used upon rich foils, nor upon thin, or flony, gravely, or-chalky lands; upon heath and moss, and all deep fowcr lands it answers; but its fertility will not last longer to be worth plowing than three crops, and then commonly so po6r as not to be recruited by dung for ten or twelve years after, and the burning ought not to be renewed for many years after the firJf paring; therefore if the land is to be kept f;r tillage or grass, it,should

r. 3 3 Should be dunged by compoRs after the sirs} crop, which will put it in the condition with other land for crops and dung afterwards. Ex. peeting and- taking too much from good managements is a common miflake, and very prejudicial to the farmer. Marie and moderate quantity, will anfwcr the purpose of dung upon such lands.,Tho' rich foils Ihould never be burnt, as afhcs are good manure, and arc almoit of tenfold more use when burnt on the land, as thereby it hath the warmth of the fire besides the whole fubltance and effec of the ashes, it is prafifed with success in many countries, and remar. kably in the island of Ceylon in the EaJ?-Indies, and conflantly recommended by all antient authors, to bring brush and combuftable stuff upon the land and burn it, with the fIraw or Rfubble. If hay and draw were more plenty which good husbandry would easily pro. duce, a ranker Rubble left upon the ground, would be a beneficial pratice. In the said island of Ceylon and many other countries re- markable for uncommon fertility' they conltantly burn the Rubble of their harvel to prepare the ground for the subsequent crop; and in America, the natives spread dry wood upon their land for culture, and have rich crops from it. And many think this method much preferable in most cafes to turffing, as less wateful to the land, and equally effectual.,The pratice even of savages, when grounded on reason, and sup- ported by experience, is an example worthy of regard; tho' our want of such knowledge, is some imputation upon us, who are so apt to derpife these people in most things: and, often unhappily think our. Ilves, much. more knowing and wife. In cold wet lands, there are sedge, and ralmes which much obstruCt any grass, and what grass is produced, is commonly 1hort and four, and not nourishing; all these are usually yellow and in a decayed fate and somewhat dry in Offober, when by fire being set to a whole pro- per fide of the field in a dry day with a moderate wind, they will burn. If after the firfl hower upon the few ashes produced, hay feeds are sown, the grals will be much improved in qantity and qua- lity, at very small expence; and where the sward don't encourage burniig as above, -much being naked, potchcd, or fpungy; if turffed as before directed, and hay feeds sown without corn or tillage, it will have the above effet. If there is planting, wood, or hedges adjoining, the plowing previoufiy a ridge next them, will preserve from any hurt or danger, if care is taken to attend it, and the wind moderate. And where lime is to be bad with cafe, a sprinkling of it upon the ashes, is a further improvment, unless the land be a frong clay, when the lime would not be much service.,If in place of our manner of burning heather, which in the neigh- bourhood of woods and mofles have done much mischief, they wculd grub up the fluff upon such lands, with some of the earth, and burp,them

E 33 them in finall heaps, the effet would be much better, and mifchtcf prevented; nay much of our walles might be improved by this means for grass and corn. When heaps are wet by rain, they are to be spread in a calm day, and if for corn it is the better how soon they be plowed, but with a shallow furr. The great benefit of heating the land by burning any fluff upon it is evident from the observation of superior fertility from the spots where the heaps were burnt, com- pared-with the rell, tho' all have equal ashes or manure of any fort.,I cannot, confident with the good will I profess and truly have for my country, conclude this fubjeal of manures, without mentioning again, and earneflly recommending, the prafice of water being brought over the land, both by flooding and rilling, for both corn and grass. It is furprizing and unaccountable, how little this is praficed, when it is by much the cheapest manure and improve- ment of any, is equal to any; in its effect for corn or grass, will suit every foil, in almost every circumlfance, if not allowed to ly too long improperly upon it, and iay be used almost in every place, because even flat countries, and almont every field have their levels, and it can be conveyed by the help of the plow, many miles at small expence, and even where nothing clfe, small springs or rain water may be colleted, and easily darned or penn'd up at-proper. places, both to flood such parts, by which the sediment subsides and nouriihes, and it is thereby raised to heights to reach other grounds or parts, to which it could not otherways attain. It is also furpri- zing, that a people so wife and improved, as those in England and South parts of Scotland, mhould so little know or parctife these things; likewise that a fyltem of husbandry Ihould be concluded, which the new fytem lately published and julily applauded is,-without taking propor notice of this.,I Ihall now conclude, at leaf for this time,v'with one Observation, that as it hath pleased the Creator of the earth, to cover and itore it with different foils and materials, of different textures and natures, some foils more rich and some more barren, but all capable of being improved, and means to correct alm;ft every inconveniency to which any are liable, and to make a proper use of almost every material of which it confilts; and he having also indued mankind the polfelfors and proprietors of the earth, with reason, which exerted with a suitable practice, enables him to mix and compound theie foils useful- ly, and by various means some of which are suited to any circumflance or situation, to improve there foils and materials to his own great benefit; man himself is the only one to be blamed, if he is not prof- peroufly and well accommodated with all he can reasonably wish for. -And there is this further advantage from good husbandry, that the,. mon

iot obfare per, and the moi distant ituatSo, n' by hi ard raifc and the influence which that may have upon others, -be of real frvice to the community of which he is a member, at the fame time be is improving his own fortune, nay perhaps of much mote fcrvicc than many flately dignified consumers; and there is not any thing can give a bfciablc perfon'more pleafurc than to be of ufc to the society. And any faggcftions which may in any degree cohtribute to the improvement of our crops of grain mul be peculiarly foifonable, when corn is so dear in all parts of Europe, and the want of£it, and consequential special difrefs upon the poor, which ought to be every bcecvolent ma'\*s peculiar atttion,' is much dreodedin mofi pa' of Jitain and Ireand,,6 I N z S.