

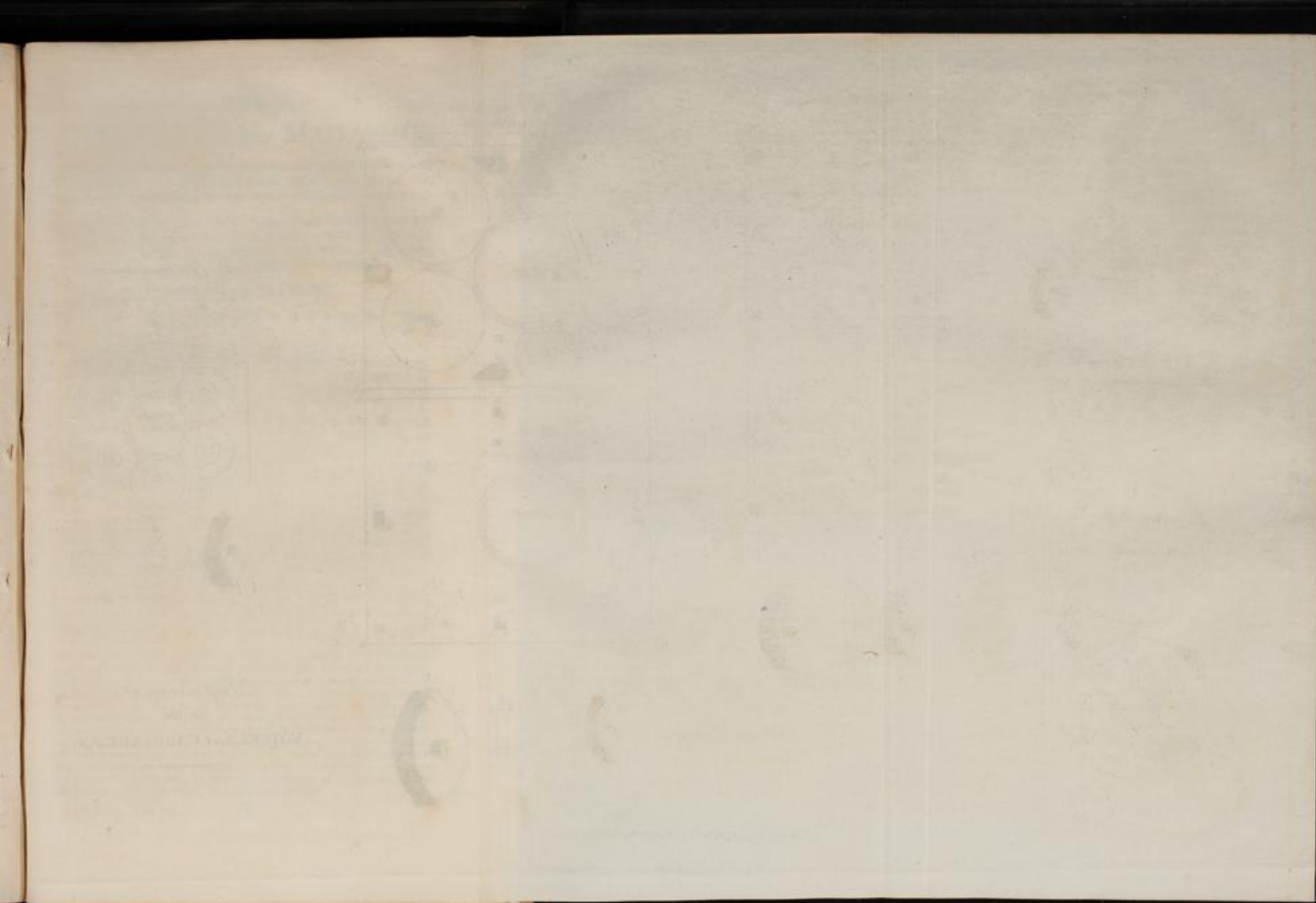


Fig. 1. For Wheels of Carriages of every description.

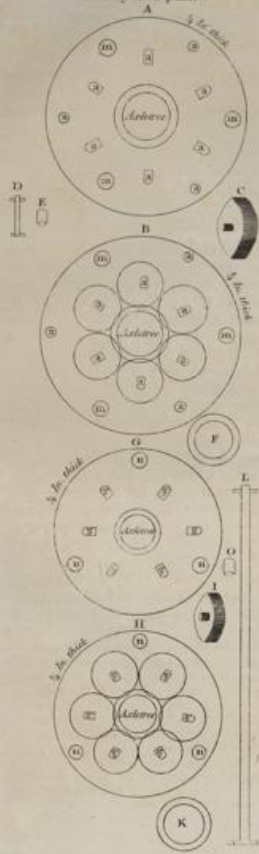


Fig. 2. For Windmills.

Scale of one Foot.

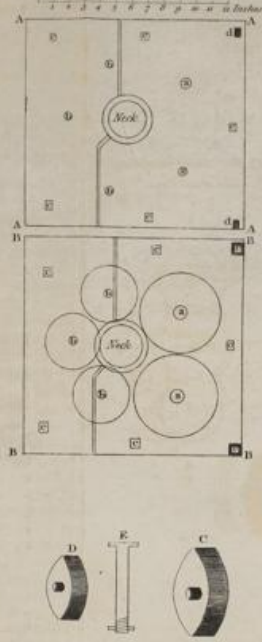


Fig. 3. For Capstans.

Scale of Five Feet.

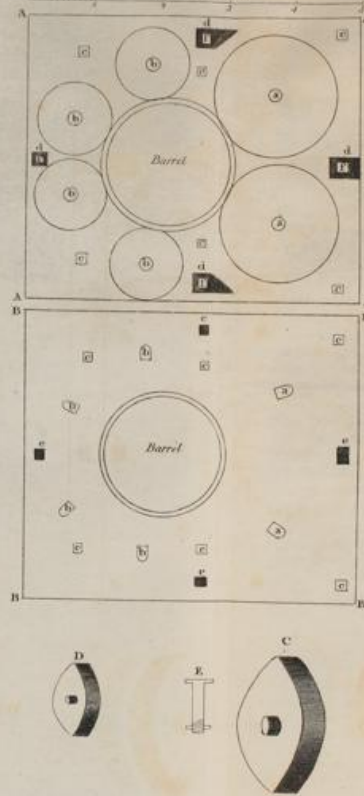
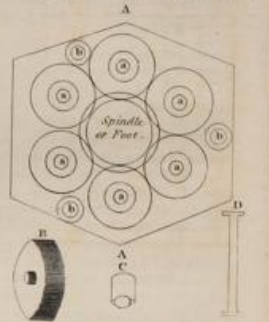


Fig. 4. For Small Capstans.

Scale of one Foot.



Improvements
in the
WHEELS of CARRIAGES, &c.

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[VOL. XI.]

SPECIFICATION OF THE PATENT GRANTED TO JOHN BROWN OF POOLE, IN THE COUNTY OF DORSET, MERCHANT, FOR IMPROVEMENTS APPLICABLE TO THE WHEELS OF CARRIAGES, AND TO VARIOUS OTHER USEFUL PURPOSES*.

[WITH A PLATE ANNEXED.]

TO all to whom these presents shall come, &c. Now know ye, that in compliance with the said proviso, I the said John Brown do hereby declare, that my said invention is applicable to the wheels of carriages, to windlasses, and capstans, either on board of ship, or on shore, and to the hawse hole of ships, and to all other purposes, where the same rotatory motion is required, as follows: Figure 1. for wheels of carriages, reference being had to the annexed drawings. This is a substitute for the nave. Four plates, as A B G H, are required to each wheel of a carriage. A B are two metal plates, C is a metal wheel with a fixed iron pin. There are six of these wheels put between the plates A B, and their pins, b, move round in the holes in the plates a a a a a. These plates, with the six wheels between them, are kept together by three small bolts, as D, which pass through the holes in the plates d d d, and on these bolts are placed stops, as E, which keep the plates separate for the wheels to move round freely: F is a very thin piece of metal, placed in the axle-tree between the wheels and the plates, to prevent the water, &c. from getting in. G H are two small plates. I is a wheel, of which there are six, whose pins move round in the holes in the plates, g g g g g g. K is a very thin

* We have before signified our intention to notice every important patent obtained, connected with the subject of agriculture, and in compliance with our designs in this respect, we have given a copy of Mr. Brown's Specification, and the drawings explanatory of it. But we shall not content ourselves here; we shall in our next, make some remarks on the important objects in husbandry to which it may be applied; and every future specification we insert, we propose to illustrate in the same way, with the assistance of the ingenious inventor. It is of little use to have a mere dry detail of the form and circumstances of the discovery, and of the geometrical figures to which it bears reference, without an elucidation of the various situations and particulars in the arts, by which the advantages of the invention may either be correctly understood, or intelligibly implied.

piece of metal, to keep out the water and dirt, as before. The larger plates, A B, &c. are let into the large end of the nave, or stock of the wheel, and the plates, G H, into the small end, so that the plates may be even with the wood. There must be a small hoop let into the stock for the edges of the plates to rest on, but when the wood of the nave or stock is not large enough, that the plates should be let into the wood; then the thickness of the plates, with the wheels, &c. between them, must be cut off the wood, and a strong broad hoop driven on, and projected out, so that the plates, &c. may fit into it. The plates are held firmly into the nave by three bolts, as L, which pass through the plates A B, in the holes m m m, and passing through the nave, go through the plates G H, in the holes n n n. On the top of the three bolts, between the plates G H, must be placed three stops, as I, to keep the plates separate at proper distance for the wheels to move round freely. On the outside plate, at each end of the nave, there must be a thin piece of metal over the holes a a a a a, in the plate A, and over the holes g g g g g, in the plate G, to keep out water, &c. This size in the drawing will suit any small carriage, whose axle-tree at the shoulder is one and a quarter inch, and at the small end one inch, and where the axle-tree is larger, the plates, wheels, bolts, &c. must be made proportionably larger and stronger.

Figure 2, for windlasses. A A A A and B B B B, are two iron or metal plates for a windlass. There are five wheels, with fixed iron pins between the two plates, round the neck of the windlass. The two foremost ones are larger, as C, and their pins move round in the holes a a. The lesser three are, as D, and their pins move round in the holes b b b. The plates take in two parts, where the white is marked; the larger part is let into the bits, and the smaller into the cheek; so that the windlass may be taken down when required. The plates are firmly held into the bits and cheek of the windlass by five bolts, as E, which pass through the holes in the plates c c c c c. On to the plates A A A A, must be cast two square pieces, as d d, which fit into the holes e e, in the plates B B B B, so as to keep the plates true with each other; these plates, if made of cast iron, must be about one and a quarter inch thick, but if wrought iron, about seven-eighths of an inch. This improvement will answer equally well for windlasses used on shore.

Figure 3, for the capstans of large ships. A A A A and B B B B, are two iron or metal plates, between which are placed six wheels round the barrel of the capstan. The two foremost are larger, as C, and their pins move round in the

holes a a. The lesser four wheels are, as D, and their pins move round in the holes b b b b. These plates are firmly held into the deck by six bolts, as E, which pass through the holes c c c c c c. On the plate A A A A, is cast four pieces, as d d d d, which project up a little more than the thickness of the wheels, and on the plate B B B B must be cast four pieces of metal, as e e e e, to fit into the holes f f f f, to keep the plates at equal distances, and true with each other. There must be little vertical wheels, or balls, moving in a groove under the large horizontal wheel to facilitate their motion. These plates, made of cast iron, must be about two inches thick, but if of wrought iron, one and a quarter thick. This improvement will answer equally well for capstans used on shore.

Figure 4, for small capstans which ship on a spindle. A A represents a plate of metal, of which there must be two exactly to correspond with each other. Between the two plates are placed six wheels, as B, whose pins move round in the holes a a a a a a. The plates must be let into the foot of the capstan, and firmly held in by three bolts, as D, passing through the holes in the plates b b b, and screwing up into three nuts, which must be let into the body of the capstan between the welps. On the bolts, between the plates, must be placed three stops, as C, to keep the plate separate, from the wheels to move round freely. This will answer equally well for capstans used on shore. This same apparatus may be made use of for the foot of a large barrel capstan, as Figure 3, by being let into the deck for the foot of the capstan to step in, only in this case the lower plate must have no hole through it.

Figure 5, for the hawse hole. A is a metal roller with a fixed pin. B B B is a metal plate, of which there must be two at each end of the roller, to exactly correspond with each other: between these two plates are to be placed three wheels, one larger, as C, and two smaller, as D: the pin of the wheel C, moves round in the holes b b. E E E E represents the roller A, with the two plates at each end. F is a flat piece of metal, on which the plates rest: there must be another flat piece of metal the length of E, to stand up two-thirds the height of the plate, to keep the work in the hawse hole. G is a metal roller, with a fixed pin. H H are two metal plates, between which are to be placed three wheels, one larger, as I, whose pin moves round in the holes c, and two smaller, as K, whose pin moves round in the holes a a, and the pin of the roller acts on these wheels. There must be two of the plates, &c. at each end of the rollers, but the bottom plate, at the lower end, must be without the hole through the centre of it, that the pin may

not rest on the bottom plate, the two metal plates at each end of the roller, must be let into the hawse piece, outside of the hawse hole, on the off side, as far as the catch marked in the plates at e. The roller standing nearly perpendicular. L is a metal cap, whose lower part M covers over the two plates, with the wheels, &c. and prevents dirt, &c. from getting in. N N represents the roller, with the cap at each end: it is held firmly to the ship's bows, by two bolts through each cap in the holes n n n n. In witness whereof, &c.

ON WOOL, SHEEP, &c.

To the Editor of the Agricultural Magazine.

SIR,

LONG since I have frequently heard Doctor Parry express himself in the most decisive terms, that in his flock he had noticed unequivocal appearances of progressive improvement, especially in the mixture and fineness of the wool. At that time I was less sanguine, satisfied in the moderate persuasion that no symptoms of decline were discernible. At present, however, I cannot but entertain the more flattering opinion, strengthened as it is by a crowd of concurring evidence, combined with subsequent observation and reflection, that by *due attention in uniformly providing the sheep, particularly in the winter and spring months, with a suitable supply of wholesome food, and by carefully selecting the most promising individuals for continuing the breed*, our Anglo-Merino wool may be found to exceed the native Spanish, and produced in quantity to answer the demand of our finer manufactories, independent of foreign markets. Were we destitute of facts whereon to ground this opinion, even then it would seem fairly to be inferred, from the consideration, that the Spanish shepherds, in their general practice, are not much regardful of either of *those circumstances*. With respect to the *latter*, it is said by Lesteyrie, that in some instances, they castrate on the moment of *production* by far the greater part of the male sheep, destroy them in others—and again, that they suffer their rams indiscriminately to herd with the ewes of the flocks! Under a system like this, would Mr. Bakewell have expected improvement in *his* flock, or progressive degeneracy? It ought, however, to be recollected, in honour to the memory of Mr. Bakewell, that to him our *best breeders*, for the most part, are indebted for a superior mode of management—and in justice it ought to be noticed, that the Spaniards are not altogether unmindful of the value of selection, as may reasonably be concluded from the prices occasionally given for certain individual rams, i. e. of 100 to 200 ducats.

If not anticipated, it is my intention at some future opportunity to detail more at length the reasons which impel me to believe, that the islands of Great Britain and Ireland, are calculated to preserve the race of Merino sheep, not only in the *existing* degree of Spanish purity, but so, as to be more than rival to Spain.

Lesteyrie appears to have had much experience in Spain, in the north of Europe, and various other countries on the continent as to the Merino sheep, particularly as to the Rambouillet, or national flock in France, adverted to by your correspondent, No. 61, page 97, and I imagine his observations would be interesting to many of your readers. Had time allowed the opportunity, I meant to have requested your permission for inserting a few translated extracts from that indefatigable and judicious author, by which I presume it may be fairly deducible, that in Spain, as well as in other countries, the race of Merino sheep, with the requisite attention, would be susceptible of attaining to a much higher state of perfection. But as I apprehend the book hath not yet been turned into English, I beg leave to submit to your consideration, how far an entire translation, occasionally to form part of your useful Publication, might consist with primary arrangements.

In the course of our correspondence I have stated it to have been my opinion, that Merino sheep produce more and better mutton, and more and better wool, than our native sheep. I still continue to be of the same opinion. The certainty of the two latter points have been abundantly demonstrated. As to quantity of mutton pasture, I could wish it were precisely ascertained by comparative experiment; with *larger* sheep, I mean; *smaller*, the Welch mountaineers, for instance, I incline to think, would produce still more mutton per acre; the only objection I know to them, is the difficulty of confining them to inclosures. Merino sheep, on the contrary, are remarkably docile and temperate, alike indifferent to *our* mountains or plains. But in respect to a superior degree of quality and flavour, I appeal with confidence to the unbiassed testimony of many competent judges, members of the Bath Agricultural Society; also to Mr. Brooke, a butcher in Bath, of first-rate eminence.

In another part of our correspondence, I mentioned that I was about to make trial of the cross with Welch ewes; and have now to state, that a shearling ewe of the *first* cross, got by one of Lord Somerville's rams, produced a fleece weighing upwards of 6 lb. unwashed, which scoured, would be full 3 lb. worth, perhaps, 6s. per lb. or 18s. much

more than the value* of its carcase, as a store sheep. Its dam, fattened, would not exceed 8 or 9 lb. per quarter, carrying a fleece of about 1½ lb. The offspring is now the property of an intelligent member of the Bath Society; and this breed is so much a favourite with him, that he has lately purchased some additional ewes, to constitute part of his interbreeding flock.

I rather regret that hitherto I have had no opportunity of making trial with very large sheep, such as the Lincoln, &c. but conjecture the fleece of the first cross would greatly exceed that of the ewe; and am persuaded, the value of the wool would be nearly doubled, still preserving, perhaps, a suitable staple as combing wool.

Bath, I remain, Sir, your obedient servant,
12 Sept. 1804. NEHEMIAH BARTLEY.

BLIGHT IN WHEAT.

To the Editor of the Agricultural Magazine.

SIR,

THE blight in wheat has been this year so generally destructive, that I cannot avoid noticing an expedient first employed in Yorkshire, to which great success has been attributed. An ounce of arsenic, cautiously pulverized, is put into four pints of pure water, with an equal quantity of urine. The seed wheat is immersed in this preparation, until the downy substance, at the extremity of the grain, is saturated with the liquid. The principal objection to this process, is the poisonous substance concerned in the mixture, and I am sometimes inclined to think, however effectual the remedy, it ought not on this account to be resorted to.

As I am on this subject, notwithstanding the multiplication of these sort of recipes, I will not omit to notice another, which I believe is entitled to peculiar attention, and which is objectionable for the same reason, although not to the same degree with the former. It is a compound of two parts of allum, and one of blue vitriol.

I have seen a letter from Sussex, mentioning, that an ingenious husbandman in the neighbourhood of Lewes, has discovered the means of avoiding this destructive principle, by the use of which he proposes to secure the wheat, at a small premium, from this noxious enemy†.

Nottingham,
10th Sept. 1804.

I am, Sir, yours, &c.

K. Y.

* Wool of the first cross is somewhat less yolky than that of the subsequent ones

† In a letter from our correspondent Mr. E. Dowlen, introduced into the last number, our readers will find that the intelligence of our Nottingham friend has some foundation, although he is not made accurately acquainted with the particulars.

RECENT REPORT ON THE SUBJECT OF AGRICULTURE, DELIVERED AT THE PUBLIC SITTING OF THE SOCIETY OF ARTS IN THE DEPARTMENT OF LA SARTHE.

IN fifty communications that have been made to this Society on Agriculture, the most important of all the arts, and the great source of national opulence, we discover all the details that are either necessary or desirable. They contain observations on every different soil prevailing in the department, on the culture most adapted to each, and on the means of bringing them to a state of perfect fertility. A particular account is given of the successful experiments which have been made on the various kinds of foreign grain, and among these, on the wheat of Spain and Siberia, and on the rye of Russia. The resources of the department for the public subsistence, and the projects most beneficial for rural establishments, have neither of them been neglected. Vines have been particularly attended to, and not less, the art of converting their produce into that generous juice, so conducive to the health, comfort, and enjoyment of man. The cultivation of hemp has been deemed a desideratum of peculiar consequence, and numerous trials have been made on a small scale, to obtain from this vegetable two harvests in the same year. The Society is so fully convinced of the magnitude of this object, that it has determined to renew the experiments on an extensive scale. But the application of their funds will not be confined to these: the members are sensible, that the forests of the country have been neglected, and wish to adorn the provinces by plantations of wood suited to the respective soils, and they are constantly desirous of rendering the produce of France equal to its own consumption, not only in the essential articles of human subsistence, but in every variety of vegetable growth at all congenial to the climate.

As the knowledge of nature very much depends upon the appropriate names or signs she receives, the appellations of exotic trees and plants cultivated by the Society, with their qualities in medicine, and for the purposes of the arts, have been distinguished in Latin, French, and in the language of which the productions are native. Those have been commented upon which are capable of being cultivated on French ground, either in a less perfect state, or with all the force, vigour, and luxuriance of their original climate. Nor has political arithmetic on this subject been forgotten; its principles have been correctly applied, in order to convince government of the large expence that will be avoided by preferring interior cultivation to foreign importation under such circumstances.

The advantages of the pine tree, and the numerous purposes to which it may be applied, were material subjects of enquiry in a department where it prevails in such great abundance.

This tree is called by naturalists the Sea Pine, and is the same as the Pignola, in Les Landes of Gascony, from which is extracted in such large quantities resin, tar, and oil of turpentine. The method best suited to obtain these valuable commodities, after a series of trials, has been accurately ascertained, and is clearly pointed out, and particularly the mode of purging the tree, by an incision, of its superabundant sap. In the course of the examination of this subject, a matter which is rather curious, than immediately useful, has been explained: we mean the reason why this tree, and others of the same species, retain their verdure through every vicissitude of the seasons.

In agriculture, nothing is indifferent, every additional article of information increases the value of the former stock of knowledge; therefore objects comparatively inferior have been examined, such as the means of exterminating the race of caterpillars, and of the destruction of moles; the culture of the white poppy, from which the opium is extracted, has been attended to, the means of forming the apertures, and of expressing from the plant the narcotic oil with which it abounds.

Sheep constitute one of the most interesting branches of rural economy, and the subject has received that portion of regard from the society, which its importance demands. The members have been constantly occupied with trials on the mode of training, or on the attention they require in their progress from infancy to maturity, on the diseases to which they are subject, on the pharmaceutic assistance that may be given them, on the most rapid means for the multiplication of the species, and of bringing it to perfection, both in respect to the flesh and the fleece. Some specimens have been procured from the institution at Rambouillet, in order to procure in these districts a breed of the genuine Spanish race*.

The Society has published, the expedients pointed out by the Minister of State to obtain with the best advantage, either from the flock of Rambouillet, or from the other establishments of government the rams and ewes of this species.

Such are the exertions which have been made, and such are the talents which have been employed in the conduct of this institution. If the same spirit be exerted under equally beneficial circumstances in the other departments of France, she will no less be favoured by art than by nature, the latent treasure will be extracted from the earth, her vast provinces will be converted into an exuberant garden from which Europe may be supplied with all the necessaries, the comforts, and the blessings of existence.

* See an account of the celebrated institution at Rambouillet in our preceding Number, p. 97.

TAPLIN'S MEDICINES.

To the Editor of the Agricultural Magazine.

SIR,

I Have read with pleasure the eighth letter of your correspondent, Veterinarius, yet the design of my now writing is not to compliment him for his ability, or you for your judgment in introducing his communications, but to avail myself of his offer to inform your readers of the ingredients of Mr. Taplin's cathartics. He says, if your friends will signify their wish for this intelligence through the medium of your Magazine, he will not fail to comply with their desire.

I am induced to make this request principally from his own observation, on the attention necessary to the quality of the drugs which he expresses in the following forcible manner. "The importance of this precaution will immediately appear, when we recollect that the medicine is incarcerated in the body of the animal during the long period of twenty-two hours; that the principal channel through which it has to pass, is thirty yards long; and that this extensive vessel in horses, is much more delicate and irritable than in other animals. Hence violent and resinous drugs will carry off the very lining or mucus of the guts; will induce inflammatory diseases, and consequent mortification."

I have had the desire to make use of Mr. Taplin's medicines, in the full expectation, that any thing recommended from such a respectable authority would be beneficial. I was at first disappointed, and with some want of candour, attributed the ill success of my experiment, not to the mercenary disposition of the chemist, but to the deficiency of Mr. Taplin's talents. From your observation, I am very much inclined to think, the whole of my misfortune has originated in the coarseness of the ingredients, and I wish with the assistance of Veterinarius, to procure the medicaments in a perfect state, and to compound them in my own laboratory.

I am, Sir, your most humble servant,

Chelmsford, Sept. 10, 1804.

C. D.

For the Agricultural Magazine.

ON THE CULTIVATION OF THE BATATA. BY M. THOUIN.

I N the green-house of the Museum of Natural History, at Paris, they have long cultivated two varieties of the batata plant, not generally known. The one is white, the other red,

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The latter has been tried in the southern departments, and begins to be prevalent in the vicinity of Thoulouse.*

As this species of batata is a native of the hottest climates, and is therefore not found to vegetate at Paris without artificial assistance, it is presumed it will not flourish in the cold, or even in the temperate parts of France. The sort from Pennsylvania, (*convulvulus patatus angulosus*) appears more adapted to France, being from a country more resembling it in temperature. To ascertain this, the administrators of the Museum, have sent into the departments of La Drôme, Hérault, Deux-Nèthes, and Escaut, the larger part of the roots of this plant sent by M. Lormerie. The rest will be preserved to propagate in the gardens of the Museum, and in some of the central departments.

In order to learn the result of these experiments under favourable circumstances, it is intended to preserve the roots in vessels filled with a dry and fine sand. To keep them from all wet, and in a cold temperature. They are not to be planted until the snow and severe weather is no longer to be apprehended, nor until the earth approaches a state of fermentation from the warmth of the solar ray. They are to be put into a friable and rich soil, where they can be watered with convenience; they are to be carefully preserved from the north wind and exposed to a warm sun.

In this state, and with all these precautions, they will throw out stalks which will have shoots very soon eighteen inches long. It is necessary only to bend each stalk in the middle like the handle of a basket, and to plant it in a little drill made on purpose: the part thus inclined, should be covered with five or six inches of earth; and as each stalk will continue to lengthen, this operation may be repeated two or three times in the course of the summer, according to the vigour of the plants.

From these shoots, a great number of roots will protrude, which will propagate the species. The plants may be also multiplied by slips taken from the woody part of the plant, choosing fresh earth for the purpose, and selecting a time both moist and warm. It is in this way, that they multiply the sort in the Antilles during the rainy season. In the northern climates, and in the centre of France, it is absolutely necessary

* Some difference of opinion has arisen on the origin of this plant, which so nearly resembles the ordinary potatoe, both in substance and name. Sobrino has distinguished it under the vague description, "*Radicis Americance genus*;" pointing out, at least, as far as his authority may be respected, that it is a native of America, and we presume it is of South, or Spanish America of which he speaks, to which his attention was more peculiarly directed.

to take up at the end of Autumn or the beginning of Winter, all the batata roots, and to preserve those that are intended for the propagation of future plants.

ON THE COMPARATIVE TALENT OF THE ARTIZAN AND HUSBANDMAN.

To the Editor of the Agricultural Magazine.

SIR,

I Have seen with no small degree of vexation, the indignity with which the labourers in the field have been treated. We are called a nation of shop-keepers, and true it is, that our shop-keepers and artificers have assumed so much importance on account of their own pursuits and attainments, that the industrious husbandman has been neglected and forgotten. The fact is, that people in trade seldom meet together even for merriment and diversion, but the conversation ends in a conspiracy against the public, or some vain and idle triumph over the peaceful inhabitants of the provinces. To shew the absurdity of this ebullition of self-conceit, I will entreat the attention of your readers to a comparison made by Adam Smith, who is most abundantly complimented in various parts of your work. The passage I allude to, occurs in the concluding section of the 10th chapter of the first book, and appears in the following terms.

“ Not only the art of the farmer, the general direction of the operations of husbandry, but many inferior branches of labour, require much more skill and experience than the greater part of mechanic trades. The man who works upon brass and iron, works with instruments and upon materials of which the temper is always the same or very nearly the same. But the man who ploughs the ground with a team of horses or oxen, works with instruments of which the health, strength, and temper, are very different upon different occasions. The conditions of the materials which he works upon too, is as variable as that of the instruments he works with, and both require to be managed with much judgment and discretion. The common ploughman though generally regarded as the pattern of stupidity and ignorance, is seldom defective in this judgment and discretion; he is less accustomed, indeed, to social intercourse than the mechanic who lives in town. His voice and language are more uncouth and more difficult to be understood, by those who are not used to them. His understanding, however, being accustomed to consider a greater variety of objects, is generally much superior to that of the other, whose whole attention from morning till night, is commonly occupied in performing one or two simple operations.

How much the lower ranks of people in the country, are really superior to those of the town, is well known by every man, whom either business or curiosity has led to converse much with both. In China and Indostan, accordingly, both the rank and the wages of country labourers are said to be superior to those of the greater part of artificers and manufacturers. They would probably be so every where, if corporation laws and the corporation spirit, did not prevent it."

I am, Sir, yours, &c.

Sept. 2d, 1804.

V.

OBSERVATIONS ON THE ACT GRANTING A BOUNTY ON THE
EXPORTATION OF CORN.

To the Editor of the Agricultural Magazine.

SIR,

IT is not my intention at all to deviate into the general nature of bounties in a political point of view, my object in this paper, is to confine myself to the probable operation of the late Act of Parliament, and if I discuss the motives from which it originated, it will not be with the view to interfere with the pretensions, or to expose the finesse of particular factions, it will be merely to shew the situation of the landholders and farmers of the country, respecting the system adopted and pursued by its rulers.

We perhaps may reluctantly acknowledge the fact, but certain it is, that the progress of agriculture has been so slow in this island until the middle of the last century, that the produce of corn was not adequate to the supply of its inhabitants, and there was a period when we looked to France as the principal source of our supplies. Every historian is acquainted with the difficulties to which England was exposed in the time of Queen Elizabeth, when Henry IV. reigned in France, and subsequently under Lewis XIII. and XIV. when the exportation of grain was prohibited in that kingdom. It was not until the year 1764, when the successor of Deodatus swayed the sceptre, that we were enabled to derive advantage from the exuberant produce of that favoured country.

These difficulties presented to Englishmen serious motives for cultivating with industry, the article which forms the essential subsistence of life, but notwithstanding all the improvements in rural affairs, in the extent of territory cultivated, in the scientific mode of inviting fertility, in the mechanical engines devoted to the business of the field, and in the subservience of chemistry and general philosophy to this important purpose, we have very recently experienced a scarcity, which has alarmed the fears of every benevolent man within these realms.

The late reduction in the price of wheat excited similar apprehensions. It was supposed that the little encouragement afforded to the industry of the farmer for this species of growth, would lead him to direct his labour to some other produce more valuable to himself, and less conducive to the public subsistence. I am not disposed to blame the farmer for making his election, he is pursuing a trade to all the benefits of which he is entitled; it is sufficiently intricate and laborious, and in the words of a French writer, "*Si les habitans voluptueux des villes savaient ce qu'il en coûte de travaux pour leur procurer du pain, ils en seraient effrayés* *."

It perhaps is proper to advert to the cause of this expectation. It arises from the new condition in which the farmer appears. It is true that rapid improvements have been made in agriculture, but it is not less true, that the rent of land has kept pace with this amelioration, while no essential difference has been occasioned in the price of the articles produced: so that the advantage the farmer enjoys, is not any increased value for his commodity, but merely the additional quantity he is enabled to extract by the superior ingenuity of the present times. It is on this account, that every disadvantageous fluctuation in the price is very severely felt by him. Is it an aggravated statement, that the rental of the whole kingdom has doubled within the last five-and-twenty years? If it be not, unless the farmer produce double the quantity under the explanation I have just given, he will not be remunerated for the discharge of his active and laborious duties.

The complaints of the great proprietors of land have been unceasing: we have been told, that in whatever form the taxes are imposed, they must fall ultimately on the land, and that therefore the owner must sustain all the burthens of the state. This is a prejudice wholly arising from a mistaken conception of the comparative weight and influence of the commercial and agricultural systems. What rational ground of dissatisfaction the proprietor can reasonably present under the immense increase of rental within the period of one generation, it would be very difficult to conjecture.

In this situation of affairs, a new minister is called to office; he finds himself unsupported by the land interest, and to conciliate its favour, he proposes a bounty, which is the subject of the present paper. It is not my intention here to complain, that by the increased magnitude of the funded

* If the voluptuous inhabitants of cities knew the exertion which was required to procure bread for their support, they would be seriously alarmed.

debt he has secured to himself, and to every other minister the monied interest, or even of this new expedient to obtain the remaining suffrage of the land interest in his favour; these are points which are well deserving the attention of the patriot, the statesman, and the philosopher, but are wholly inconsistent with the design of this disquisition.

My next enquiry is then, not what is the cause, but what is the effect of this bounty? And here it is necessary to consider, what has been called the natural and market price of commodities.

When the price of any article is only equal to the discharge of the rent of the land, the wages of the labour, and the interests of the stock engaged in raising, preparing, and bringing it to market, the commodity has then been sold, for what may be called its natural price.

The actual price at which any article is sold, is called its market price, and this may be either more or less, or exactly the same with the natural price.

Writers on commercial economy have likewise distinguished what they have called an effectual demand. "The market price of every commodity," say they, "is regulated by the proportion between the quantity which is actually brought to market, and the demand of those who are willing to pay the natural price of the commodity, or the whole value of the rent, labour, and profit, which must be paid in order to bring it thither. Such people may be called the effectual demanders, and their demand the effectual demand."

The natural price is the central point to which the prices of all commodities are continually gravitating. It has, therefore, been the custom in numerous branches of trade that have been considered beneficial to the country, to give to the followers of them exclusive privileges, in order that an artificial price might be obtained, exceeding the natural price, as an extraordinary reward for the application of their industry in the direction considered most beneficial. If these immunities, which were granted so liberally in the time of our favourite princess were right and politic in the support of particular trades, it may be difficult to explain why some exclusive advantages should not be granted to agriculture, in which the very existence of our extensive population depends; and let those who have resisted the present bounty, and who have represented the minister as base and venal for the late concession to the farming interest, reflect for a moment, if it be not a necessary counterpoise to the lavish grants from the conclusion of the sixteenth century to the present time in favour of the commercial system. Is it not the more expedient to encourage agriculture from the consideration, that in this pursuit, differ-

ent years produce very different quantities of commodities. The same number of spinners and weavers will every year produce nearly the same quantity of linen and woollen cloth; but the varieties of season, and the accidents of vegetable growth, will occasion the same number of labourers in husbandry to produce in different years very different quantities of corn; not only therefore the profits of the farmer are subject to this uncertainty, but the subsistence of the country, and the immediate object of the bounty is to insure such an exclusive produce as shall be always sufficient for the actual demand.

The effect of the bounty, is to open the markets of Europe to our produce, and the natural consequence of increasing the buyers, is to enhance the price. But the less agreeable effect is, that while it facilitates the sale of the article to the farmer, it increases the rate of the substantial commodity of life to the natives of this country, and some complaint has been reasonably made, that we are supplying bread to the poor of the continent by exportation at a cheaper rate, than we are affording it to the indigent of our own island. In answer to this it may be said, that the statute is only a temporary regulation, and that when the produce of corn be rendered sufficiently abundant by this extraordinary encouragement, it may be withdrawn, and then the commodity will be restored to its level. The fable of the old man and the treasure which he left to his sons concealed in the ground, is perhaps revived by this example of state policy, the extensive cultivation which the children of the state will promote by this inducement, will extract that hidden treasure, from which the descendants of the old man derived such abundant advantages.

The chimera of agriculture is to endeavour to make nature produce more than her womb will sustain, as a woman to bring forth ten children at a birth; but we are very far indeed removed from such an enterprize, and when we consider that one-fourth of the country is in a condition of absolute infertility, we need not be under any apprehensions of such extravagant speculations.

It must be obvious to every one accustomed to political research, that whether this be a temporary or permanent regulation, with respect to this state, the benefit is merely temporary with regard to the farmer. He possesses only a short interest in the land he occupies, it will soon devolve to the landed proprietor, and when the latter renews his leases, the rent he will require will be increased in proportion to the new advantages that are to be derived from this bounty. Some idea may be formed of the extent of emolument to the land owner, from the consideration of the quantity of bread

used in this country, which, at eightpence the quartern loaf, has been computed with sufficient correctness for the present enquiry to cost twelve millions of money. Suppose the bounty should occasion an advance to tenpence the quartern loaf, it will give an accession of wealth to the returns on the land of no less than three millions: if the price should increase to twelpence the quartern loaf, the profit in this article will swell to six millions of money beyond its natural ratio.

*Inner Temple,
Sept. 14th, 1804.*

I am, Sir, your most humble servant,
J. L. D.

ACCOUNT OF THE MANNER OF TREATING BEES IN PORTUGAL.

To the Editor of the Agricultural Magazine.

SIR,

I Have seen some papers in your Magazine on a favourite and industrious insect, which is less attended to in this country than it deserves, from a variety of causes it is not necessary now to explain. A gentleman, who resided in Portugal, has given a short account of the mode of management of bees in that kingdom, which I have thought could not be unacceptable in your Miscellany.

To form a colony of bees, a spot of ground is chosen for the hives, exposed towards the south or south-east, well sheltered from the northern blasts, and surrounded with shrubs and flowers; of the latter, the best is rosemary. The richer the neighbouring ground the better, for bees are said to range for food to the distance of a league from their homes. The situation being chosen, lanes must be cut through the shrubbery-thickets of five or six feet wide. The fences between the lanes should be about the same dimensions, and formed at intervals into small recesses, like bowers or niches, to receive the hives.

The figure of the hives are in general cylindrical; in height about twenty-seven inches, by fourteen in diameter. They are formed of the rind of the cork tree, and covered with a pan of earthen ware inverted, the edges of which project over the hive like a cornice. The whole is fastened with pegs made of some hard and durable wood, and the joints stopped with peat. In the front of the cylinder, at the height of about eight inches, there is a small aperture where the bees enter. The inside is divided into three equal divisions, which are separated by cross sticks; here the bees form their combs or cells.

When the bees swarm, which is usually in the month of May or June, the hives are placed to receive them where they

light. If they descend on a tree, they are shaken off: the person who performs this operation must not be afraid of them, as they do not commonly sting unless they are irritated: it will be safe, however, to cover the head with a wire mask, and the hands with gloves.

Some bees are so wild that they fly away in attempting to collect them, but they may be caught again in this manner: a sheet is placed by night on the ground contiguous to the swarm, and when they alight, the hive is placed over them with the entrance stopped, then the whole is covered with a sheet, in which they are carried home. But they should not be placed near the hive whence they had originally departed.

When the time arrives for taking out the honey combs, which is generally in the month of June, when the flowers begin to decay, it should be done in the heat of the day, as the greater part of the bees are then abroad, but not during a high wind, or at the commencement of a new or full moon. The hiver must have his face and hands defended as above mentioned, and accompanied by a person holding a chaffing-dish in his hand, with a coal fire, covered with moist peat, to make the greater smoke: this smoke being infused among the bees from the top of the cylinder, they fly away, or remain intoxicated at the bottom, then the hive is taken to pieces by drawing out the pins. The combs are cut out, without destroying the bees, except two cells, which are left around the hive, and lest the bees should feed on what remains, the incision is covered with pulverized clay: after this, the hive is put together as before.

The combs should not be taken out but when they are full of honey; it is rarely good the first year the bees assemble. In the months of March and August the wax is taken out which is lodged in the first division of the hive, after which the bees form other combs, and generate a young colony.

The hiver should often visit the ground, and repair any accidents that have happened. If snakes frequent the places, they should not be killed, since they do not molest the bees, but destroy the toads and lizards which are obnoxious to them.

When the hives are decayed, they are taken asunder and fumigated; then the bees forsake their habitation, and take shelter in an adjoining hive, previously prepared for that purpose. This should be performed in the spring, when the flowers begin to open and afford their succour. The same method may be used in taking out the honey; but if repeatedly practised, it will extinguish the colony.

As the bees, in returning from their excursions, are loaded and fatigued, there should be nothing near the hives to obstruct their descent, which is not in a perpendicular course, but in an oblique one.

I am, Sir, yours, &c.

Sept. 3, 1804.

B. E. E.

ON THE NATURE OF HONEY, PARTICULARLY ON ITS SACCHARINE PARTS WHEN OBTAINED IN A SOLID FORM.

To the Editor of the Agricultural Magazine.

SIR,

I Have considered with much pleasure a communication of M. Lowitz, of the Economic Society of St. Petersburg, as a proper addendum to some letters in your work on the bee-hive, and I have therefore procured for you an accurate account of his discoveries, somewhat indeed abridged, as several of his remarks, if not too scientific, are too technical for the general object of your work, if I may presume to form a judgment on a matter within your immediate province.

A substance so remarkable and so useful as honey, ought to have been long since accurately analyzed by the chemists. Its saccharine taste has always led them to suppose that it contained a large quantity of sugar; but the great question was, how to separate the saccharine part from the mucilaginous and other heterogeneous parts. This separation was the principal object of my inquiry, in the experiments of which I am going to give you some account.

The property possessed by charcoal, of decomposing and absorbing the mucilaginous and phlogistic parts of various substances (a discovery which I formerly made, and of which I then gave an account), induced me to hope that I could, by its means, obtain the object I had in view. I did indeed succeed in depriving honey, which had been previously dissolved in a sufficient quantity of water, of that smell which is peculiar to it, and also of its taste and colour; but when I evaporated the solution by a very gentle fire, it soon acquired its former brown colour, and did not shew any disposition to produce regular crystals. I therefore thought it reasonable to conclude, that this property of recovering its original colour, either was natural to the whole substance of honey, or belonged exclusively to one of those constituent parts of it upon which charcoal had no power; for when a solution of common sugar is thickened by boiling, even though it is made to boil vehemently, it does not contract any colour until all the aqueous parts are evaporated.

The honey that had been treated with charcoal, and

thickened by evaporation, in the manner already described, was observed two months after to have a great number of small white lumps in it, which had the appearance of crystals; and soon after, the whole mass seemed to be full of them. To distinguish accurately the nature of these small lumps, it was necessary to separate them from the rest of the mass, which was entirely coagulated, very thick, and glutinous. This operation I performed tolerably well, by washing the mass with alkalized spirit of wine without heat. I soon perceived, that the spirit dissolved the glutinous part completely, merely by shaking the mixture, but that fluid did not seem to have any effect upon the white granulated part; so that I succeeded in obtaining this last quite pure. After having separated this saccharine granulated part from the liquor, by means of a filter, I dried it by a gentle heat, and reduced it into powder: this powder did not attract moisture, and had a very agreeable sweet taste.

As the granulated consistence of white honey seems to arise from the coagulation of its saccharine parts, I endeavoured to separate that part, by means of the purest spirit of wine, and which contained the smallest possible quantity of water. From twelve ounces of this honey, I procured three ounces of saccharine matter. This matter still contained some heterogeneous substances, which appear not to be soluble in spirits of wine. To dissolve the saccharine part, I again had recourse to the purest spirit of wine I could procure; which I made use of by putting the mixture into a glass matrass, and boiling it therein for some time. By these means the saccharine part was entirely dissolved, while the insoluble part remained behind upon the filter, having the appearance of greyish dirty slime. I had filtered the mixture while it was hot, after which I had poured the clear liquor into another matrass, in which I let it stand quiet for some days. After that time, the sugar of the honey again began to fix itself to the bottom of the vessel, in the form of little spherical knobs, ranged in lines by the side of each other; these, increasing in number every day, formed at last a solid crust, which was as white as snow, rather rough at the top, and which, after being separated from the liquor above it, was so firm as to bear cutting with a knife into very thin slices. The remaining liquor, having been left quiet for some days, let fall, in that interval, a fresh portion of the saccharine matter, which was exactly similar to that spoken of.

Having thus provided myself with a certain quantity of this kind of sugar, I tried various methods to make it take a regular crystallized form, but in that respect, all my trials were in vain. Whether I used the purest spirit of wine or

water to dissolve this substance, the result was the same. I remarked, indeed, that the solution of it in water, which had been thickened to the consistence of syrup, deposited, after some time, small knobs on the sides of the vessel, which had the form of cauliflowers; the whole solution afterwards coagulated, and appeared like a solid, dry, white mass, full of small cavities, which, when examined with a microscope, seemed to be composed of very small long crystals, extremely thin, and hardly visible to the naked eye.

Though this manner of crystallizing sufficiently distinguishes the saccharine part of honey from the common sugar, I suspected at first, that this difference proceeded only from the presence of some heterogeneous parts, from which the honey was not sufficiently cleared, but the experiments evidently shewed, that these two substances differ from each other by properties which are very strongly marked.

The union which exists between the saccharine part of honey, and the oily part, is much weaker than the union between the same parts in sugar. This last cannot be decomposed, in the humid way, except by treating it with the nitrous acid, while honey and the sugar it contains, may be decomposed, not only by that acid, but also by mild alkalies, and by lime.

Upon the whole there appears very little reason to hope that we shall be able to obtain honey in the form of sugar; to bring it into that form, something more than a mere separation of its heterogeneous parts seems necessary. It is indeed said, that, in some kinds of honey, especially in that from Narbonne, crystals of sugar completely formed have been observed; admitting the fact, I consider it only as an accidental circumstance.

I am, Sir, yours, &c.

Sept. 4, 1804.

WILL. HONEYCOMB.

For the Agricultural Magazine.

EXPERIMENTS AND OBSERVATIONS ON THE MOTION OF THE SAP IN TREES. IN A LETTER FROM THOS. ANDREW KNIGHT, ESQ. TO THE RIGHT HONOURABLE SIR JOSEPH BANKS, BART. K. B. P. R. S. *

MY DEAR SIR,

IN my observations on the descent of the sap in trees, which I last year took the liberty to request you to lay before the Royal Society, I offered a conjecture, that the

* This curious and instructive paper on one of the most important departments of the vegetable process, was read before the Royal Society of London, on the 16th of February last; and it is sufficient to say, that it was received with peculiar respect and distinction by that learned body.

vessels of the bark which pass from the leaves to the extremities of the roots, were, in their organization, better calculated to carry the fluids they contain towards the roots, than in the opposite direction. I had not, however, at that time, any experiment directly to support this supposition; but I thought the forms generally assumed by trees in their growth, evinced the compound and contending actions of gravitation, and of an intrinsic power in the vessels of the bark, to give motion to the fluid passing through them. In the account of the experiments which I have now the honour to address to you, I trust I shall be able to adduce some interesting facts in support of that inference.

Having selected, in the spring of 1802, four strong shoots of the vine, growing along the horizontal trellis of my vinery, I depressed a part of each shoot, whilst it was soft and succulent, about three inches deep, into the mould of a pot placed beneath it for that purpose; but without making any wound or incision, in the young shoots thus employed as layers.

In this position they remained during the succeeding summer, and in the autumn had nearly filled the pots, which were ten inches in diameter, with their roots. As soon as the leaves had fallen, the layers were disengaged from the parent stocks; and about five inches of wood, containing one bud, were left, both at the proper and inverted end of each layer. Every bud was also by previous management, made to stand with an equal elevation, of about thirty-six degrees. About one inch of wood was likewise left at each end of every layer, beyond the buds.

In the preceding spring, the buds vegetated strongly, both at the proper and inverted ends of the layers, as the experiments of Hales and Du Hamel had given me reason to expect; and in one instance, the bud at the inverted end of the layer grew with greater vigour, than that at the proper end: but the growth of these buds was not the object I had in view.

I have already stated, that nearly an inch of wood was left at each end of every layer, beyond the bud; and to this wood at the inverted ends of the layers my attention was chiefly directed; for if the vessels of the bark possessed the powers I attributed to them, I concluded that the sap would be impelled to the inverted ends of the layers, and be there employed in the production of new wood and roots, and in this my expectations were not disappointed. At the proper end of the layers, the wood immediately beyond the bud became dry and lifeless, early in the succeeding summer; the stems also between the buds and the mould in the pots increased in size as usual, and nothing peculiar occurred. But at the inverted end, appearances were extremely different:

new wood here accumulated rapidly beyond the buds, and numerous roots of considerable length were emitted, whilst no sensible growth took place between the base of the young shoots and the mould in the pots.

It having been proved by Du Hamel, that inverted parts of trees readily emit roots, I expected to derive further information from cuttings of this kind: I therefore planted in the autumn of 1802, forty cuttings of the gooseberry-tree, and an equal number of the common currant-tree; one-half of each being inverted. Of the former not one of the inverted cuttings succeeded, whereas few of the latter failed; and in these I had an opportunity of observing the same accumulation of wood above the bases of the annual shoots, and the same mode of growth in every respect as in the inverted vines, except that no roots were emitted at their upper ends. The same thing occurred without any variation in inverted grafts of the apple-tree.

If it be admitted, according to the theory I have on a former occasion laid before you, that the sap descends from the leaves through the vessels of the bark, and that such vessels are in their organization better calculated to carry their contents towards their original roots than in the opposite direction, it will be extremely easy to explain the cause of the accumulation of wood, and the emission of roots above instead of below the base of the annual shoots. The vessels of the bark (the *vaisseaux propres* of Du Hamel) commencing in the leaves, were formerly traced by M. Mariotte, and subsequently by myself, (being ignorant of his discovery) to the extremities of the roots; and when a cutting or tree is planted in its natural position, the sap passes downwards through these, to afford matter for new roots, and to increase the bulk of those already formed, having given proper nutriment to the branches and trunk in its descent. But in the inverted cutting or tree, these vessels become inverted, and if their organization be such as I have supposed it, a considerable part of that fluid which naturally descends will be carried upwards, and occasion the production of new wood above, instead of below the junction of the annual shoot with the older wood, as in the experiments I have described. The force of gravitation will, however, still be felt, and, by its agency, sufficient matter to form new roots may be conveyed to those parts of the inverted cutting or tree, which are beneath the soil. Besides, if we suppose a variation to exist in the powers or organizations of the vessels which carry the sap towards the root, we may also attribute in a great measure to this cause the different forms which different species or varieties of trees assume: for if the fluid in these vessels be impelled with much force towards the roots,

little matter will probably be deposited in the branches, which, in consequence, will be slender and feeble as in the vine; and there is not any tree that has been the subject of my experiments, in which new wood accumulated so rapidly at the upper end of inverted plants. To an excess of this power, in the vessels of the bark we may also ascribe the peculiar growth of what are called weeping trees, for by this power, the effects of gravitation will be in a great degree suspended, and the pendant branch will continue healthy and vigorous by retaining its due circulation. The perpendicular branch will, however, still possess some advantages; for in this, gravitation will act on the fluid descending from the leaves; and these will of course absorb from the atmosphere with increased activity. A greater quantity of matter will, therefore, enter within any given portion of time into vessels of the same capacity; and this increased quantity may frequently exceed that which the vessels of the bark are immediately prepared to carry away. Much new wood will, in consequence, be generated, and increased vigour given; and the same causes operating through successive seasons, will give the ascendancy we generally observe in the perpendicular branch.

In the preceding experiments, none of the layers or cuttings exceeded a few inches in length, and to the summit of these the sap appeared to rise, through the inverted tubes of the wood, nearly as well as in those which retained their natural position. But some former experiments had induced me to suspect that this would not be the case in longer cuttings; I therefore planted in the autumn of 1802, twelve cuttings of willow (*salix caprea*) inverting one-half of them. The whole readily emitted roots, and grew with luxuriance; but their modes of growth were extremely different. In the cuttings which stood in their natural position, vegetation proceeded with most vigour at the points most elevated; but in the inverted cuttings it grew more and more languid as it became distant from the ground, and nearly ceased towards the conclusion of the summer, at the height of four feet. The new wood, which was generated by these inverted cuttings, accumulated above the bases of the annual shoots, as in the preceding instances.

These facts appear to prove, that the vessels of plants are not equally well calculated to carry their contents in opposite directions; and I think afford some grounds to suspect that the vessels of the bark, like those which constitute the venous system of animals (to which they are in many respects analagous) may be provided with valves, whose extreme minuteness has concealed them from observation.

The experiments, and still more the plates of Hales, have induced naturalists to draw conclusions in direct opposition to the preceding. But the plates of that great naturalist are not always taken correctly from nature*; and plates under such circumstances, however fair and candid the intentions of an author may be, will too often be found somewhat better calculated to support his own hypothesis, than to elucidate the facts he intends to state.

The preceding peculiarities in the growth of inverted cuttings, appear to have escaped the observation of Du Hamel; and as very few instances of error, or want of accurate observation, will be found in the works of that excellent naturalist, I must request permission to send you some of the subjects of my experiments, as vouchers for my own accuracy.

Of the inverted cuttings employed by Du Hamel, a small portion only appears to have remained above the ground, and under such circumstances, the different forms of those growing in their natural, or inverted position, would be scarcely observable. It appears also from his experiments, that such inverted cuttings in subsequent years, grow with as much vigour as others that are not inverted; whence we must conclude, that the organization of the internal bark becomes again inverted, and adapted to the position of the branch. The growth of some inverted plants of the gooseberry-tree, which I obtained many years ago from layers, gave me reason to draw a different conclusion, for these always continued weak and dwarfish. I do not, however, entertain the slightest degree of doubt but that the assertion of Du Hamel is perfectly correct.

I intended to have added some observations on the reproduction of buds and the roots of trees; but these would necessarily extend the present paper to an immoderate length; I shall therefore reserve them for a future communication, and conclude with an account of an experiment which more properly belongs to the paper I had the honour to address to you last year, but which had not then succeeded.

I have stated, in that paper, that the leaf-stalk, the fruit-stalk, and the tendril of the vine, had been successfully substituted in many instances for each other; but that I had failed in my efforts to engraft a bunch of grapes, by approach, on the leaf-stalk; owing, I conceived, to the operation having been improperly performed. In those experiments, I cut the leaf-stalk in the form of a wedge, and made an incision in the fruit-stalk, adapted to receive it; but under

* The eleventh plate (*Vegetable Staticks*) is that to which in this place I particularly allude.

such circumstances the leaf-stalk (as I had proved by many experiments) has no power to generate new matter, and the wounds of the fruit-stalk heal so slowly, that I readily anticipated the ill success of the operation. In the last spring I pared off similar portions of the leaf-stalk and fruit-stalk, and bringing the wounded parts into contact, I secured them closely together by means of a bandage, letting the leaf remain. Under these circumstances an union took place; and the fruit-stalk being then taken off below the point of junction, and the leaf-stalk above it, the grapes drew their whole nutriment through the remaining part of the leaf-stalk. They did not, however, acquire their full size; and the seeds were small, and I think incapable of vegetating; but this I attribute to the want of nutriment in quantity, rather than in quality; for the union of the vessels of the leaf-stalk with those of the fruit-stalk was imperfect. The grapes, which were the purple Frontigniac, possessed their musky flavour in the same degree with others on the same plant.

There is another experiment in my last paper, which I will also notice here, because it appears to lead to some important conclusions, and had been tried only in a single instance: I have there stated, that the stem of a young tree became elliptical, by being confined to move only in a segment of a large circle. This experiment was successfully repeated, during the last year, on other trees; but I have nothing to add to the description which I have already given.

I am, &c.

T. A. KNIGHT.

OBSERVATIONS ON THE STATE OF VEGETATION ON HIGH MOUNTAINS. READ AT PARIS IN THE NATIONAL INSTITUTE, JUNE 1804.

To the Editor of the Agricultural Magazine.

SIR,

THE first thing which strikes an observer of plants at the entrance of high mountains, in our temperate regions, is the vigour and luxuriance of vegetation; every thing he has seen in the adjacent plains suddenly changes its dimensions, its aspect, and its form; he scarcely knows the most common plants under the new dress which they have assumed. The stems are high, the flowers enlarged; and even the leaves of trees have acquired such an amplitude, as often excites some doubt in regard to the identity of their species. The groves are better clothed with foliage, the grass is thicker as well as more abundant, its green colour lovelier; in a word, every thing is enlivened with more brilliancy from the depths

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of the vallies to those heights where the eye can discern nothing but bare rocks and eternal snow.

The plants being thus endowed with a vigour of vegetation unknown in other places, they tend with more energy to pass through the periods of their existence. Time, which regulates the periods of it, creeps on with a slow pace in our plains, but in the mountains it flies. Every thing hurries on along with it: meteors succeed each other with extreme rapidity; the air there is in continual agitation; all the determining causes act at once with their whole force; the signal of germination, floreation, and fructification is given at the same time to all individuals placed under the same conditions. The decorations of the meadows and forests change suddenly at the pleasure of the south wind, of a storm, or stroke of the sun, which uniformly affects the whole of certain kinds of species; and each day of the fine season, is the spring of an order of vegetables, or of one of the regions in which they grow.

This first view is succeeded by another; in traversing the mountains and vallies, each situation has its own soil, and each region its climate. These particular regions have each their productions; each has its characteristic vegetables, which are distinguished in the number of those cosmopolite plants, whose temperature, more robust or more flexible, seems to adapt themselves to every soil, and to triumph over every climate. In the plains these local distinctions occupy immense spaces, the limits of which are too extensive, and too indeterminate to be easily perceptible. In the mountains every thing, on the other hand, is confined within narrow limits, which the eye often embraces at one time: a humble hill continued between two valleys, a ridge of rocks, and some steps, which the traveller passes over in a few instants, are the insurmountable barriers which nature has raised between things which it has thought necessary to separate.

Among the different causes of separation, one more apparent seems at first to direct all the rest: it is the elevation of the different stages of mountains; every hundre dmetres* of height lower the temperature about half a degree of the common division of our thermometers; and if we take as the term of cold, that which generally suspends the progress of vegetation, the eternal ice with which the pole is covered, and each hundred metres of vertical elevation, will correspond to a degree of the distance of the mountain from the pole.

It is on this short scale that the phœnomena of the climates which succeed each other on the surface of the earth are presented; the circumstances are different, but the results are nearly the same: on the one hand, the increase of cold is

* The metre is something less than forty inches English, and is thus decimally expressed, 39. 371 inches.

accompanied with a shortening of the column of air; on the other, with an obliquity of the rays of the sun. The vegetables, however, are distributed in a manner nearly similar; and this conformity teaches us to exclude from the number of the causes which act on this distribution, those which are not common to the two scales on which they have been executed by nature. Thus in the Alps and the Pyrenees, trees stop at the absolute elevation of 2,400 or 2,500 metres, as they do about the 70th degree of latitude; and the band of the mountains occupied by these large vegetables is divided into as many particular bands as the trees constitute different species: oaks remain at the bottom; the beech occupies the mean heights; and above these are the pitch-pine and the yews, which soon give place to the pines; and these pines, both in the Pyrenees and the Alps, are those of Scotland and of Riga; while the latter chain possesses also the cembra and the larch, which are foreign to the former; but it wants the cedar which grows on Lebanon, and which would no doubt thrive in our mountains of Europe, had nature placed them there, as it has done in the mountains of Asia. But such is the mystery of the original dissemination of vegetables, that nature seems in turn, indifferent in regard to the similitude of places, and the distances by which they are separated; sometimes placing in similar climates the plants of countries the most distant from each other, and sometimes refusing this conformity of productions to regions which unite all the uniformities of soil and climate.

In the zone of trees is seen a shrub, common to all the mountains of Europe, and which is at the same time peculiar to them, and is never found any where else. Intractable to cultivation, it languishes in our gardens; it requires the soil, air, water, and snow, of its native place; it requires mountains, and it must have a particular determinate situation. The plant here alluded to is the *Rhododendron*: nothing can be more brilliant than this shrub when in flower, but nothing is more delicate or intractable. It appears in the Pyrenees exactly at the absolute height of 1,600 metres, and stops exactly at 2,600; but between the limits within which it is confined, it is so abundant and so vigorous, that it would almost be as difficult to extirpate, as it is to transplant it.

The juniper traverses this band, and ascends much higher. I have found it at the altitude of 2,900 metres above the level of the sea; but at each stage to which it rises, it loses some part of those characters by which it is distinguished in our plains. In the high regions, it is the juniper of Sweden and Lapland, low and stunted, with its trunk creeping over the ground to seek for shelter between the quarters of the rock which are within its reach. There, conducted by nature, as it would be by in-

stinct, it searches for and finds, without ever being deceived, the faces of the rocks which are exposed to the south or the west: rises upon them, and expands its branches in the form of an espalier, with a regularity scarcely to be attained by art.

Higher up, the severity of the climate admits nothing but low shrubs, which can be entirely covered by the first snow; but still higher, this shelter insufficient against the cold and the length of the winter, nothing exists but what is contained in the earth; the only vegetable productions found here are herbs, with vivacious roots, and nature has almost entirely banished from these places the annual plants which would deceive its hopes, when in the course of a summer reduced to a few days, and often to a few hours, a gust of wind, or a frost, may blast its flowers scarcely expanded, bring back winter, and terminate the year.

On the other hand, no elevation checks those vivaceous kinds which, on the approach of the intense cold, entirely re-enter under double shelter of the snow and the earth, and revive from their roots on the first fine weather; their duration exhausts all the changes of the seasons to attain, sooner or later to the year favourable to the maturation of the seeds from which they are to be renewed.

At Neouvielle, at an elevation greater by 250 metres than that of the *Pic du Midi*, and at which the thermometer rises in summer only to eight degrees, I collected during five excursions, twelve pieces, all vivaceous.

On the summit of Mount Perdu, at the absolute elevation of 3,500 metres, in the bosom even of the permanent snow, but under rocks freed from it by their inclination of their sides, I collected six species exceedingly vigorous. Here on one of the warmest days of a year remarkable for its heat, the thermometer rose only to 5.5° , above the freezing point; and it no doubt descends in the winter to 25° and 30° ; and it is certain, that the plants which I found here uncovered, in a year when the snow had undergone an extraordinary diminution, disengage themselves from it every year. Besides, I have seen some reappear, which existing on the edge of the permanent snow, remain almost always buried under extension; they do not see the light, perhaps, ten times in a century, and then they pass through the circle of vegetation in the short space of some weeks, to sleep again during a winter of several years. It cannot be expected that plants, subject to conditions of existence so singular, should be found among the number of the species which we observe in the plains of our temperate climates: they belong either exclusively to the highest summits of the mountains, or they are represented merely in the polar countries of Europe. Norway, Lapland,

and Greenland, are countries which furnish plants analagous to those which grow on the summit of the Alps and the Pyrenees, they are not found in Siberia or Kamschatka, nor in the polar countries of America, though it is as difficult to conceive the diversity, which prevails among the vegetable productions of countries so similar and so near to each other, as it is difficult to explain the conformity which exists between the vegetation of one of them, and that of the summits of some mountains which are forty degrees distant from them.

But we are informed by observation, that the propagation of vegetables does not always take place parallel to the equator; that if a certain number of plants confined by their temperament to a determinate climate, are found at some distance under the same latitudes, many others, on the contrary, seem to have been carried away in the direction in which our continents separate, and to be dispersed in the direction of the meridians. On the south, America, Africa, and Asia; on the north, Europe, Asia, and America, are far from presenting the same vegetation on the same parallels; while a multitude of plants, faithful to each of these parts of the world, faithful even to certain subdivisions of these grand divisions, brave all those obstacles which diversity of temperatures oppose to them, to propagate in a direction absolutely contrary to that which they are called by the conformity of climate.

But, not to wander, the subject it is thus, for example, that several remarkable vegetables of Sardinia, Sicily, and Italy, climb the Alps, pass over them, and spread to the lower Germany, without yielding to the temptations of climate, which would carry them to the contrary side. It is thus that the Pyrenees receive from Spain a great number of the plants of Barbary, and convey them to the western part of France. The meadow-saffron, which grows in the north of Africa, shews itself in Andalusia, Castile, Arragon, the Pyrenees, and descends even to the department of Landes; the *Hyacinthus tardisus*, the *Narcissus bulbocodium*, have the same origin, and pursue the same route; the *Anthericum bi-color*, setting out from Algiers, traverses the same chain, and arrives at Anjou; the *Scilla umbellifera*, the *Saffranum multifida*, go from the Pyrenees to England, without any of these plants proceeding literally to meet those which the Alps receives in like manner from the south to proceed to the northern parts of Germany.

But it is in the large valleys of the Pyrenees, hollowed out from north to south, that these directions assume a character altogether striking and singular.

I find the large *Dianthus plumarius*, at the entrance of

the valley of Canopan and that of Garvanic. It traverses them entirely without entering any of the oblique valleys which open into it. The *Verbascum miconi*, that beautiful and rare plant, which neither belongs to the genus in which Linnæus has placed, nor, perhaps, even to any family of plants now established, and having a foreign air amidst our vegetables of Europe, is distinguished among them as the alcyon is among our indigenous birds. The *Verbascum miconi* affects the same preference for the same direction. It is found in all the large valleys of the Pyrenees, where it shews itself indifferent to all soils, and the same exposures do not attract it into any of the collateral valleys. I could quote a multitude of examples of the same fact; but it will be sufficient to mention only one, that of *box*. This shrub, so robust, grows in the mountains like the most delicate plants: on the first regions of the Pyrenees, it covers all the hills, both on the side towards France and towards Spain. These large valleys, lying north and south, open before it; there it enters, but never to issue from them; in vain do the ramifications of these valleys present it on all sides other valleys to people; it passes over these openings, and continuing its route in the direction it has adopted, it ascends from north to south, stops at the bottom of the ridge of the chain at about 2,000 metres of absolute elevation, and reappearing on the other side at the same height, descends towards the south in the same direction, from which it has constantly refused to deviate.

ON THE STATE OF AGRICULTURE IN SPAIN.

To the Editor of the Agricultural Magazine.

SIR,

I know no subject more interesting to an Englishman, who has almost every obstruction of climate to combat with, than the agriculture of those countries which possess every advantage, and yet yield a supply wholly inadequate to the beneficial circumstances by which they are surrounded. I do not mention this in commendation of my country, but by the political institutions of mankind, we are absolutely driven to the necessity of measuring our advantages in proportion to the detrimental situation of others, as we express in the anthem, the musical taste and spirit of which has seldom been exceeded.

“The nations not so bless’d as thee,
Shall in their turns to tyrants fall,
Whilst thou shalt flourish great and free,
The dread and envy of them all.”

I confess, Mr. Editor, I had much rather have read the

concluding line, "the love and safety of them all," than in the form in which it appears addressed to a Deity infinitely beneficent. It is, however, right, not to be too abstracted in our contemplations on the comparative condition of our fellow-creatures. The intelligent readers of your Magazine will not fail to derive some instruction, and perhaps more entertainment, from the account I am about to give of the state of agriculture in Spain, a country which has received from nature a climate the most favourable to every kind of cultivation, and that will become one of the most flourishing regions of Europe, whenever she shall think fit to remedy those errors and abuses which have hitherto proved most destructive, both to her population, and her industry.

It is happy for that nation, that government now better understands its real interests than heretofore, in what regards its political œconomy, and I express not only my own sentiments, but those of a learned foreigner, when I give the subsequent strictures on the state of farming in that country.

There are numerous societies formed in Spain, under the appellation of *Amigos del Pais*, or Friends of the Country, which very much resemble our agricultural associations in these islands. After a fund of patience sufficiently extensive has been exhausted, these institutions have met with some countenance from government: but a few years of vigilance and encouragement, have not been sufficient to repair the the evil caused by several centuries of indolence. Besides, one of the chief obstacles with which the zeal of the societies will meet for a long time to come, is less the want of population (for it is proved that the population of Spain has increased one-third within thirty years) than the too great distance between one village and another. Most travellers who have gone through the kingdom must have observed that but few lands, except those at the distance of a league or more from cities and villages, are cultivated, and it is not possible to clear such as are more remote, since, in some places, there is not a single habitation in the space of four, five, or six leagues. The intermediate lands seem to be sacred, and would be profaned by the plough or hoe, and some villages become poor and wretched, because they are too great and populous. The first care of government ought to be to fix the limits of all towns, villages, and hamlets, and instead of suffering them to extend, to oblige them to separate. Men would then occupy a greater space, and the waste lands would obtain a value. Spain affords a proof of this in the Kingdom of Valencia and the Sierra Morena.

In countries not peopled in proportion to their extent, the œconomy of men and cattle should be well understood; yet it is not uncommon, in Spain, to see in a field

of only an acre, ten or twelve pair of oxen, which, one after the other, follow the same furrow, and are guided by as many labourers. Whilst in a neighbouring inclosure, ten or fifteen men, arranged in like manner as the oxen, are provided with spades, and scarcely scrape the land. Many inconveniences arise from this mode of cultivation. The first is undoubted that of employing too many hands; but the most dangerous one is, that the earth, not being sufficiently opened, does not communicate to the plants or grain, the vital principles they ought to receive from it. The fogs and dews which are always abundant in Spain, not penetrating the earth, are too soon exhaled by the sun. The plants decay, and the rain, if it be too heavy, roots them up; the winds alone are sufficient to make considerable ravages in the land so cultivated. Yet, notwithstanding the disadvantages of this very defective mode of cultivation, it has been remarked, that upon an average the harvest furnishes in corn, the subsistence of a year and a half for all Spain. What would be the produce, were all the lands well cultivated?

It may be supposed that in consequence of this abundance, were there a few public granaries, there ought never to be a want of corn in Spain: yet a scarcity frequently happens in some provinces, because exportation is there badly understood; bread is also much dearer there than in France. It is true, the Spanish peasant is unacquainted with the black and disgusting bread which the French labourer frequently eats; the whitest bread made from the best wheat is eaten by every class of persons. The Castiles and Estramadura are the most fertile provinces in corn, and to these especially government ought to turn its activity.

Several remedies might be applied to the great sterility complained of in Spain. The first, whence a double advantage would be to plant trees. Travellers have the fatigue of crossing the immense plains of Castile without meeting with the beauties of vegetation. Most of the provinces are well supplied with springs, but these disappear in very hot weather. Were care taken to plant trees by the sides of rivers and rivulets, the effect of the sun would be considerably lessened; and were others planted in the country, rain water would continue longer on the earth.

The soil of the country between Madrid and the Sierra Morena, and from Talavera to Badajos, has a superficies of a foot and a half of sand, under which the earth is clayey and strong: thus nature herself has furnished upon the land what is proper to mix with it, and nothing remains to be done but to supply it with moisture, and this, as I have already

observed, might be effected by properly sheltering the springs from the heat of the sun.

If we recollect that in Spain there are upwards of an hundred and fifty rivers, six of which are large ones, and numerous springs in the mountains, the want of moisture must appear to proceed from the indolence of the inhabitants; since the climate of Spain, notwithstanding the great heat, is so favourable to the natural fertility of the lands, that even those most exposed to the sun sometimes produce an hundred fold.

One of the first reforms to be made for the benefit of the agriculture of Spain, should be to restrain the too general use of mules*. The horse, considering his beauty only, undoubtedly deserves the preference; but while we grant to the mule all the superiority of strength and frugality supposed in him, his incapability to multiply his species ought to be decisive for his exclusion. Ignorance of the art of agriculture, and an ill-judged luxury alone support the national prejudice in favour of mules, most of which are bought from other countries at an extravagant price. If, in some parts of Spain the horse be not strong enough to support the climate in these places, let the use of mules be continued; but whatever horses can be safely employed, they seem under every point of view, to merit a preference.

The great number of bulls, likewise, which are kept in indolence, and at a great expence to the public, to be destroyed for a cruel amusement, ought to be diminished, if the people be so attached to bull-fights as not to be satisfied without them, the number of victims might be reduced; and instead of twenty bulls, which in these butchering diversions are torn to pieces alive, the sacrifice of four should be sufficient. Agriculture would gain considerably from such a reform.

Mr. Bowles, who in his *Introduction to the Natural History and Geography of Spain*, gives the most satisfactory proofs that he has well examined the productions of that kingdom, assures us, that neither Bellon or Rauwolf, mention any plant in the environs of Jerusalem, which he has not found in this country.

I do not think it altogether useless to supply some idea of certain plants, trees, and shrubs, found in Spain.

* A set of horses are seldom seen in that kingdom. Notwithstanding the prohibition which has been several times renewed, of being drawn by mules, or making any use of them in travelling: none but women and ecclesiastics being exempt from the law, the old custom has constantly prevailed. These prohibitions were made because the breed of horses began to be lost.

The turpentine-tree is rather common; it is pricked by an insect to deposit its eggs, and the puncture produces a gall-nut, of the colour of coral; and as the nut, instead of becoming more round, lengthens out upwards of half an inch, and takes the form of the horn of a goat, this kind of turpentine-tree is vulgarly called *Cornicabra*. The roots, frequently thicker than the trunk, produce a very hard wood, handsomely veined, and which receives, in the lathe, all the forms the artist desires to give it. It is susceptible of a fine polish, and at Orihuela great quantities of it are made into snuff-boxes, known by the name of wood of Orihuela. But the workmen are not ingenious; very few of the boxes I saw made in the country had either elegance or neatness.

The Indian fig-tree (*Opuntia*) is very common in the eastern and southern parts of Spain, and although this shrub be originally from the Indies, it grows every where without cultivation, in the openings of the rocks, even where it scarcely finds earth sufficient to take root. Its flower is almost the size of a common carnation, but more tufted, of a very red colour, and without thorns, but the leaves by which it is enveloped whilst yet in the bud, are armed with sharp prickles. The fruit, which succeeds the flower, resembles the common fig; it stains with red the urine of such as eat it. It was by chance discovered in England, that the bones of a pig kept in the house of a dyer, and which had been fed with madder, were stained with red. The experiment was repeated, and confirmed by the Academy of Sciences of Paris.

The great palm-tree grows in all the southern provinces of Spain, but is found in the greatest abundance in the kingdom of Valencia, in the environs of the Elche, where the plain is covered with it as far as the eye can reach. It is said there are upwards of fifty thousand trees, two-thirds of which are at least 120 feet high, and form a magnificent forest. The dates they produce hang in clusters of from 15 to 25 pounds weight at the top of the tree. They are not so sweet, and not so good as those of the Levant; but this I am of opinion depends in part on the preparation of the latter, which corrects the husk of the fruit, naturally rather sour.

There are several kinds of oak in Spain. The *Ilex aculeata cocciglandifera* is that, under the prickly leaves of which is found the *kermes*, or the worm known by the name of the gall insect, used in the dying of scarlet, and which was very valuable to the ancients; but the use of it is now less frequent on account of the abundance of the insect, named *cochineal*, brought up from America. This kind of oak is called in Spanish *coscoxa*.

The *suber*, or *Alcornoque*, is the kind of oak which pro-

duces cork. Its acorns are bitter. Every four years it is despoiled of its bark as far as the cuticle; were this injured, the tree would decay. After this operation the tree produces a kind of liquor, which congeals in the air, and in four or five years forms the new cork.

The real oak, called in Spanish *Encina*, is a very lofty tree with a thick foliage, and wood extremely hard; the roots are more porous and flexible. This oak produces very large acorns of an oblong shape, and so palatable, that they are eaten in the manner of chesnuts. There is a variety of this kind of oak, the leaves of which are smooth and glittering, but the acorns are neither so large, nor so good, as those of the former.

The northern mountains of Spain produce white oak, very fit for ship-building; the leaf is very broad and indented, and falls in winter. This tree yields bitter acorns.

The beech also grows in the northern provinces, upon the tops of mountains, where the oak cannot support itself; it grows in the plains likewise, and produces fruit of a triangular form.

The walnut-tree is common enough in some parts of Spain. It is astonishing that this tree has not been planted in other parts of the kingdom, where it would thrive extremely well.

Most of the olive-trees are, if I may so say, nothing but bark; this arises from the bad method of planting them, which consists in cutting a branch from the tree, splitting it into four parts at one end, and putting it into the earth, so that the water and heat rot the inside. Spain produces in general an abundance of oil, but for the most part it has a bad smell, and is detestable to the taste, whilst it might be rendered as good as that of the southern provinces of France.

Andalusia abounds with olive-trees, those of Lucena and the environs produce a round little olive of a good quality, for making oil. The olives of Seville are as big as a pigeon's egg, and are excellent for preserving.

The apple-tree in Biscay seems to be in its natural climate: the species of it in this province are exceedingly numerous. The rennets are common, with a little variety amongst them: the cherry-tree grows to the height of an elm; the peaches are delicious, and in the same province are produced the four best kinds of pear.

The people of Valencia pretend that their silk is finer, lighter, and more smooth than that of Murcia, because they lop their mulberry-trees every two years; whereas the Murcians lop theirs only once in three years, which makes the leaf stronger and more sour. But to this, may be opposed the example of the inhabitants of Granada, who never lop their trees, and may justly boast of producing the finest

and smoothest silk in Spain. The cultivation of the mulberry-tree, in the kingdom of Granada, is indisputably the best.

The kingdom of Murcia contains forests of oranges and lemon-trees, and all other fruits of this kind are found there in the greatest abundance. The oranges of Murcia are commonly larger and sweeter than those of the kingdom of Valencia, Catalonia, and the rest of Spain.

The plant the Spaniards call the *Pita*, is the aloe of America. The kind of grass they call *Esparta*, is very common, for it covers a great part of Spain. It serves to make ropes, mats, and several useful articles. Mr. Bowles says, he counted upwards of forty methods of employing it. A few years since the Spaniards found the means of spinning this plant like hemp or flax, and making it into very fine linen. Charles III. rewarded the person who made this valuable discovery, and granted him several privileges.

The Spaniards esteem the saffron which grows in La Mancha to be the best in Europe. All the provinces in Spain produce more or less hemp and flax, but there are districts more favourable to them than others, as Murcia to flax, and Arragon to hemp.

The cotton plant is not uncommon in Valencia, and it seems extremely surprizing the inhabitants should now neglect it, as it was formerly cultivated there with much success.

Along the coast, from Malaga to Gibraltar there are upwards of twelve manufactories of sugar; the little village of Motril contains four, which have existed from time immemorial, and according to tradition, Spain is indebted to the Moors for the sugar-cane, and the manner of preparing it. This cultivation might in that kingdom be more extensive; the same districts are proper for the Ananas also, and many other plants and fruit-trees of America. Spain also produces cinnamon, but it has neither the taste nor the balsamic flavour of that brought us by the Batavians.

I have in your Magazine observed some notice taken of a paper which I had the honour to communicate. The writer may rest assured, that the first opportunity I have of attending to the inquiries to which he has directed his attention will not be neglected. My apology for delaying the answer to his interrogatories may be collected from the concluding line of this letter. With much respect for your Miscellany, but with somewhat more for my own pursuits and engagements,

I am, Sir, yours, &c.

MERCATOR TARRACONENSIS.

P. S. I have read the letter of your correspondent B. A. page 134. His paper certainly affords me a new motive for my attention to the subject to which he has adverted, and when I have time and opportunity it shall not be neglected.

ON THE SIZE OF FARMS. IN ANSWER TO
AGRICOLA MERIDIONALIS.

To the Editor of the Agricultural Magazine.

SIR,

Sept. 13, 1804.

I N your 57th number I stated that farms are generally too small, that if they were enlarged and occupied under the security of leases for fifteen to twenty-five years, much greater capital and abilities would be employed in our agriculture, and that all parties concerned—the landlords, the tenants, and the community,—would be benefitted in a much greater degree than under our present systems. Your 59th number contains a paper by Agricola Meridionalis, “On the Size of Farms, in Answer to a Landlord and Agricola Northumbriensis;” and from its title, I supposed my position would have been controverted in a direct manner. But instead of doing this, like a practical farmer, your correspondent, like a speculative philosopher or politician, has mounted his very comprehensive principles, (which, he says, “are generally admissible, whether the questions relate to law, physic, or divinity,—to navigation, commerce, or agriculture,”) and having directed them with some *violence* against a body of upwards of one thousand men, headed by that indefatigable patriot Sir John Sinclair, (to whom this country is highly indebted, and who has, unquestionably, enjoyed very favourable opportunities of being fully acquainted with the effects of the various modes of occupancy and cultivation in *all parts* of the kingdom) he quits his agricultural course; and, with a view of reasoning from analogy, contrasts the operations of the wealthy with those of the necessitous merchant, concluding that “embarrassment and ruin are more frequently the consequences of a deficient capital, than of an unproductive trade.—What is true,” says he, “with regard to trade, is equally correct when referred to agriculture, and the defective produce and tardy improvement of the country, is rather to be attributed to the deficiency of capital, than to any other cause; a disadvantage arising from the inferior rank the cultivators of land are assigned, by popular opinion, in this great commercial nation.”—He thinks, therefore, “that the first object of every prudent landlord, on letting his farm, should be, to ascertain whether the capital of the person proposing to be his tenant, be competent to the culture of the land to be occupied.”—Your correspondent has also stated, that “those

who have considered the subject of the size of farms, have done it in two points of view; 1st, as affecting the public, and 2dly, as operating on individuals. I am yet ignorant of the evil which would arise from the whole of the country being either exclusively in large or in small farms. The whole question appears to me to turn upon the resolution of this doubt: by which of these the produce of the soil of the nation would be most abundant. For which ever would produce this abundance, would afford to the people the greatest quantity of employment, and the largest means of subsistence. I must again refer to my favourite argument from analogy: the source of the commercial prosperity of this country, is the freedom with which trade is permitted to expand itself on every side. This has not been permitted in agriculture, sometimes from the avarice, at others, from the envy, of landlords, but in both cases, from mistaken views of their own advantage."—From these quotations it will appear, that A. M. has attached much importance to the *competence* of agricultural capital; and undoubtedly, Sir, property should always be considered as a very important article in the catalogue of the farmer's qualifications. But I am sorry to observe, that he has omitted to pay that tribute of respect to *talents* which these important acquirements deserve. Let us bring him from his aerial flight, to the field of industry. *There* let us request accurate observation, and then ask him whether the interests of the landlords, the tenants, and the public, can be *fully* promoted by capital, without great knowledge and talents; or by the latter qualifications, without capital? After which, Mr. Editor, I hope he will answer, that in order to derive the utmost advantage from the management of our lands, it is absolutely necessary that their occupiers should possess, not only abundant capital, but extensive knowledge and talents.—All these appear to me to be necessary in effecting such meliorations, and raising such luxuriant and productive crops as would, (in the words of your intelligent correspondent,) afford to the people the greatest quantity of employment and the largest means of subsistence. For I have invariably observed the crops the most productive, and the improvements most extensive and substantial, where the talents of the cultivator, and the quantity of labour and manure bestowed upon his land, were greatest.—Now, Sir, as I have concluded from all the remarks I have been enabled to make in *various* parts of the country, as well from the sentiments of some distinguished writers on rural œconomy, that the occupiers of large farms, generally, possess, not only greater capital (per acre), but greater knowledge, than those of small farms, I must contend, that the latter are not so advantageous to the country,

as the former.—I will not, however, assert, that there are no examples of good management on small farms, but in corroboration of what I have advanced relative to abilities in the farmer, I may assert, that most of the little tenants who pursue such management, have had an *unusual* intercourse with society, or better opportunities of acquiring capital, and the principles of improvement, than the great body of that class of cultivators.—With your permission, I shall now proceed to take a more *particular* view of the circumstances and operations of the occupiers of small farms. The limited sphere of their transactions prevents their mixing with the world. They cannot afford to render themselves more intelligent by travelling into various districts, nor are they improved by reading, for they consider “Book farming” as the *ne plus ultra* of absurdity. Probably the whole body of them do not contribute two guineas per annum towards the Agricultural Magazine, and all other works on rural science; and, therefore, Mr. Editor, I am sure you will second my motion for having their names struck off the list of cultivators, for you will readily conceive that, *under such darkness*, they will blight the produce of our soil. None of our agricultural improvements originated with them, and they cannot pursue the most beneficial management, even if they knew and approved of it. They cannot, in general, afford to erect any kind of thrashing-mills, and if we suppose the tenth part of them able to defray the cost of those on a small construction, we shall be obliged to admit that they cannot perform the operation of thrashing on such advantageous terms, as those erected on a proper scale.—Most of their other implements, and their horses and cattle, are of an inferior kind. They cannot afford to take bulls and rams of the best breeds. Machines for drilling corn (the prices of which are twelve to twenty guineas) are beyond their reach; nay, many of them cannot procure even a turnip-drill, and when others are informed of the smallness of the cost, and earnestly requested to purchase one, an insignificant laugh, or a shrug of their shoulders, almost always accompanies some such remark as this, namely—*we cannot afford to venture out of our common course, for if an experiment fails in our narrow circumstances, embarrassment, or ruin, generally follows*; and even if we were satisfied of the advantage of drilling, it would be so trifling on our *small farms*, as not to be worth the additional trouble or attention. They cannot afford to employ the best labourers, and most of them, from necessity, work *very severely* themselves. Indeed, Sir, the condition of the negroes in the West Indies, is, in most respects, more comfortable than that of *most* of these little farmers.—The negro is obliged to work,

but he feels no anxiety as to his board, clothes, &c.—The little farmer not only labours, during the day, *more severely than the negro*, but when he retires to his bed of *chaff or straw*, is deprived, by unceasing anxiety, of the refreshing powers of sleep. The approaching demands of his landlord, his labourers, or the tax gatherers, &c. &c. constantly croud upon his mind during his sleepless nights. When he leaves his farm to sell that produce which is rendered *scanty* by the deficiency of his capital and his talents, one half of his agricultural operations are suspended, and, perhaps, “the favourable season irremediably lost.” When in the town, the little farmer hastens from door to door, and, with a melancholy countenance, cries, “buy my butter! buy my poultry! buy my eggs!”—Thus those important members of society, upon whose exertions and talents in fertilizing the soil the public depend for supplies of corn, beef, mutton, &c. are degraded to the level of those odious Israelites, whose cries offend the ear in the streets of the metropolis!—Can we be surprised, then, at that inferior rank which A. M. says the cultivators of the land are assigned by popular opinion, in this great commercial nation, or at that “tardy improvement,” which he has attributed to it? From seven till eleven o’clock in the forenoon the little farmer is generally employed in selling butter, eggs, and poultry, and when cattle and sheep are to be sold, it is obvious that one branch of his employment must be neglected. At the latter hour he repairs, *uninformed*, and almost exhausted with fatigue, to the corn markets, and from thence he hurries to his farm to perform the work of the plough and cartwright, the blacksmith, the sadler, and the cobbler. Now, Sir, as your friend, in his letter on the Size of Farms, has referred to the works of Dr. Adam Smith on the Wealth of Nations, I shall presume to follow his example, and refer to that celebrated author’s chapter on the *division of labour*, where, I think, he will find abundant reason to conclude that the *various* and unremitting occupations of the little farmer—that “Jack of all trades”—are totally inconsistent with the interests of the country.—These interests are better promoted by the occupiers of middling sized farms, but not in so great a degree as by those whose possessions are more extensive. These large farms have been formed, originally, by uniting small contiguous farms, with a view of having that *variety* of soil in the occupation of *one* tenant, which conduces to diminish the expence of labour, and, consequently, to encrease the rent. I trust it is almost unnecessary to say more on the advantages which result to society, from the superior capital and talents of the occupiers of large farms, ~~on~~ their vast crops, or on that spirit of enquiry and enter-

prize to which their qualifications, almost always, lead. To some inexperienced men, however, it may be necessary to state, that when one part is turnip, and another stronger, land; or, if the soil can with propriety be laboured in one part, while it is not in a proper state in another, every practical farmer can estimate the advantages of the conjunction I have mentioned, in the saving which arises from that reduction, which may, with propriety, take place in the number of labouring animals*. I consider this as a material reason for that enlargement of farms, which has been observed in some of our best-managed districts within the last forty or fifty years. In other parts of the country, however, they have been continued in small farms, or even diminished; and I strongly suspect that this is the effect of principles which cannot be too severely reprobated, and to some of which A. M. has very properly adverted†. “The benevolent designs of God and nature,” are obstructed when landholders oppose the formation of large farms, and thus prevent agriculture from “finding its own level.”—With respect to pastoral districts, every man of experience knows the advantages of keeping *separate* flocks, or, in other words, of keeping the young from the old sheep, and the ewes from the wedders; therefore it is more judicious management to have them in large than in small farms, for five shepherds upon one of the former would manage as many sheep as would require twelve men, if it were divided into *three* farms.—Much clamour has been raised against large farms, under an idea, that they enhance the price of provisions, and tend to the depopulation of the country.—On the first subject I shall only observe, that in nineteen cases out of twenty, the great, as well as the small, farmer, sells the whole of his crop within the space of twelve or thirteen months. The latter, indeed, from pecuniary difficulties, is often under a necessity of carrying a greater proportion to market during the autumn, winter, and spring, than the former; but as the supplies during that period are generally greater than the consumption, the surplus quantity is left, till summer, in the granaries of the corn merchants, and as they are very far from being so numerous as the growers of grain, they may, with greater facility, combine to raise the prices‡. The consequence, then, of an enlargement of farms, would be more steady markets; and, *if the encreased produce*

* Even when the nature of the soil is throughout, the same labour is more advantageously performed on large, than on small, farms.

† In terms of disapprobation.

‡ For my own part, however, I believe not in those doctrines relative to monopoly, &c. which were so popular in this country a few years ago.

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were not counterbalanced by the increased population, and other circumstances, which would arise from the increased prosperity of the country, lower prices.—With regard to the supposed effect of large farms in diminishing the population, I will venture to assert, that the direct contrary is the truth; for on these farms, married servants with large families, cows, poultry, &c. are preferred, whereas the people on small farms are, almost all, unmarried. Practical men, Sir, will readily see that the enterprize, substantial improvements, and superior cultivation, of the great farmer, (who, in applying a much greater proportionable capital than his little brother, necessarily requires a corresponding increase of labourers) must greatly augment the population of the country.—In support of this, permit me to state a few facts, on the authority of Sir John Sinclair, whom your correspondent has, *improperly*, characterized as a man of narrow education and local prejudices.—By Dr. Webster's Statistical Account of Scotland, the population of the counties of Inverness, Ross, and Argyle, was in 1755.....170,440

By that of Sir John Sinclair it was in.....1792.....200,226

In the counties of Roxburgh, Berwick, Dumfries, Kirkcudbright, and Wigton, it was in.....1755.....135,183

It was in.....1792.....163,166

Within the above period most of the farms in these eight counties were very considerably enlarged.

The population of the counties of Bamf, Elgin, and Aberdeen, was in.....1755.....172,225

In.....1792.....163,261

During the above period the farms within these three counties were, almost all, continued in their former state—viz.—in small farms.

As my sentiments on the size of farms are now pretty fully declared, and as I formerly communicated my opinion in favour of long leases, probably A. M. will now conclude that, in comparing the increase of rent on the estates of the Earl of Tankerville and Sir Henry Grey, with that on the lands of the Duke of Northumberland, I did not mean to impute the superior advance on the two former, to *one cause*. After all I have said, I willingly allow, that *very small* quantities of land let with cottages, or to persons concerned in trade, manufactures, &c.* would, upon the whole, *provided that system were not too far extended*, be employed to the benefit of the country.—In discussing the question, *How large ought a farm to be?* perhaps many of

* To enable them to pursue their business with increased facility and advantage; and to afford to the cottager the means of rearing a numerous and healthy offspring.

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those who think favourably of letting great quantities of land to one tenant, will contend that, provided the occupiers were men of great capital and talents, the larger the farms, the better for the community. In this opinion, however, I cannot coincide.—Grass farms may be advantageously occupied to a much larger extent than those in tillage, or partly in tillage, because there are fewer servants, and fewer operations to superintend; and for the same reason, a farm of the latter description may safely be larger than one wholly in tillage.—Upon a tillage farm of about 450 to 600 acres, it is necessary, even for an active tenant in perfect health, to have an overseer, and *occasionally* two. Upon most tillage farms of 900 to 1,200 acres, one overseer in constant employment, and *generally* a second, will be indispensable; and the larger the farm, of course the more overseers will be required.—With these servants, *properly selected*, we know, from experience, that great farmers manage their lands and live stock more profitably, both for themselves and their country, than little tenants.—In order, however, that the management may be of this advantageous nature, it is absolutely necessary that a *certain degree* of attention shall be paid to *every part* of the concerns, by the farmer *himself*; and when his lands are so extensive as to prevent this attention, then, Sir, his farm is, indisputably, *too large*. This I consider as the proper criterion with regard to the size of farms. I cannot agree with A. M. that “one farmer is capable of conducting (a tillage farm of) 10,000 acres extent.”—He says, “what a frivolous engagement would 10,000 acres be, compared with the gigantic interests of the merchants of London, and, till lately, of Amsterdam, with the four quarters of the globe?”—Does he mean to assert, that the judicious and able management of ten thousand acres of tillage land, by *one farmer*, would be *frivolous*, when compared to the exertions and fatigue of the greatest merchant in London who has no *partners*? If he does, our surprise on reading the Gazette will cease; for almost every practical farmer will think that the *most advantageous* cultivation of so very extensive a farm, is much beyond the powers of *one* tenant, even if he were as well qualified for dispatching an enormous deal of business as the famous De Witt, and as rich as Crassus. I am, Sir, yours, &c.

AGRICOLA NORTHUMBRIENSIS.

P. S. If this letter should subject me to the animadversions of some landholders, who possess not the power and the trappings, *but much of the spirit*, of the ancient feudal system, I should be glad of the assistance of your Norfolk correspondent, who, doubtless, thoroughly understands the subject.—A. N.

TABLE of the STATE of the THERMOMETER, BAROMETER, and HYGROMETER,

FOR THE YEAR 1803;

From the METEOROLOGICAL JOURNAL kept at the Apartments of the
ROYAL SOCIETY.

The Quicksilver in the Bason of the Barometer is 8 $\frac{1}{2}$ Feet above the Level of low Water Spring-Tides at Somerset House.

	Six's Therm. without.			Thermom. without.			Thermom. within.			Barometer.			Hygrometer			Rain.
	Greatest height.	Leaf height.	Mean height.	Greatest height.	Leaf height.	Mean height.	Greatest height.	Leaf height.	Mean height.	Greatest height.	Leaf height.	Mean height.	Greatest height.	Leaf height.	Mean height.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Inches.	Inches.	Inches.	Deg.	Deg.	Deg.	Deg.	
1803.																
January	48	19 35,3	48	19 35,7	56	43 49,0	30,18	29,05	29,65	95	73 86,9	1,544				
February	53	19 38,3	52	20 38,5	59	42 49,1	30,48	29,27	29,86	95	69 85,1	0,744				
March	66	25 44,4	66	26 44,5	64	48 55,1	30,39	29,38	30,03	94	65 80,5	0,449				
April	72	36 50,4	68	39 51,0	65	56 60,3	30,50	29,18	29,89	90	61 76,2	1,094				
May	69	38 53,0	73	44 53,8	62	55 59,4	30,35	29,34	29,95	92	64 76,3	1,685				
June	74	49 59,0	85	50 59,8	65	60 62,2	30,46	29,63	30,02	91	61 78,2	3,359				
July	86	51 56,3	80	54 67,2	73	64 68,8	30,45	29,93	30,13	91	62 72,7	1,368				
August	81	47 64,6	74	51 65,4	74	63 68,7	30,31	29,81	30,06	93	58 71,3	0,755				
September ..	75	38 55,1	67	40 55,5	67	56 62,4	30,42	29,25	30,12	92	62 74,3	0,919				
October	67	38 51,1	70	39 51,3	65	57 66,6	30,48	29,72	30,07	91	63 79,4	0,474				
November ..	57	31 43,7	56	31 44,0	59	52 55,3	30,33	28,67	29,50	96	68 84,8	2,441				
December ..	55	21 44,7	56	21 43,3	58	46 52,6	30,53	28,98	29,61	99	75 92,1	3,090				
Whole year		50,5		50,9		58,6			29,1		79,8	17,922				

ON TURNIPS, THE PRICE OF LABOUR, QUANTITY OF SEED, &c.

To the Editor of the Agricultural Magazine.

Sept. 15, 1804.

SIR,

I Request your permission to inform your correspondent R. W. that I have again reflected on the subject of the corn trade, and am not yet convinced, that my argument is fallacious.—It is very true that Poland—I beg pardon—I mean those countries of which Dantzic, &c. &c. are the principal sea-ports—has long consumed considerable quantities of our manufactures, &c.; but, if I am not misinformed, he will see, on referring to the best authenticated documents, that, however great our importations of grain would have been under an unrestrained trade, the average import *from all parts of the world*, for a few years previous to 1795, was only about one thirty-second of our consumption. The proportion from the coasts of the Baltic and the north of Germany, could not, therefore, materially affect the ability of those countries to purchase our goods. In fact, I think, he will find that in those years when the exportation of corn to this country was smallest the sales of our manufactures, &c. in the north of Europe, were very nearly, if not fully, as great as in other years, when the exportation of grain to Britain was much more considerable.—R. W. probably, did not, at the time he wrote to you, fully consider the effects which would arise from the application of his principles.—At present, Great Britain is a great agricultural and commercial nation, though the former has not received that attention and encouragement which the best interests of the country demanded. But under R. W.'s system of encouraging the growth of foreign corn, *with a view of extending the sale of our goods*, we would only be what our enemies have called us, *in derision*,—a nation of manufacturers and shopkeepers. If deprived of our hardy and virtuous rustics—a description of people who, in all ages, have been deemed the safeguard of nations—we should become an enervated and diminished people.—There are, unquestionably, many circumstances connected with the extension of our agriculture, and the improvement of our waste lands, of much greater consequence, in a national point of view, than the present difference between agricultural and commercial profit.—Were I to maintain that it would be more advantageous to this country to depend *entirely* upon foreign than upon British corn, because commercial, affords a greater profit than agricultural capital, and because we should, by such dependence, enable foreigners to purchase greater quantities of our manufactures and colonial produce, you would, probably, condemn me. To maintain this position, however, does not appear to me inconsistent with R. W.'s prin-

ciples and arguments; and I am sorry that so respectable a writer, and a brother of the plough, should virtually defend those injudicious commercial principles to which the interests of agriculture and of the country, have been too much sacrificed since the reign of King Charles the Second. The adherents of those principles generally estimate advantages by pounds, shillings, and pence, and also the dread of starving, will have a more powerful effect than any arguments I can use. I cannot, perhaps, do better than refer them to the story of the Phrygian king, so aptly introduced into your 60th number, by your new and intelligent correspondent Agricola Septentrionalis.—Deeming it more rational to adopt the principles of the great Lord Bacon, who taught mankind to reason from *facts and experience*, than those of Aristotle, who reasoned from *theory*, I have no doubt that, within a few years, your correspondent will clearly perceive that his calculations in the 48th page of the above number, are ill-founded, and that our legislators have done wisely in recurring to the course so beneficially pursued by our ancestors in the 17th century.—Having formerly gained a little commercial knowledge, I think I may safely say that the statement of R. W. “that the corn markets of France and Holland are generally higher than those of this country,” is incorrect.—I am glad that he and I agree relative to the Norfolk sheep, and that the farmers of that county are generally introducing better breeds.

In answer to what he has stated against the Northumberland culture of turnips, I must observe, that I have conducted some very accurate comparative experiments, with a view of ascertaining whether the broad-cast, the Yorkshire*, or the Northumberland† mode of cultivation is the most advantageous; and am so thoroughly convinced that when the quality and condition of the soil, quality and quantity of the manure, time of sowing, hoeing, &c. &c. are equal, a weight of turnip per acre, *greater by 25 to 33 per cent.* can be obtained in the latter than in the other modes; I would not hesitate a moment (were I a better) to risk 500 or 1,000 guineas on the issue of a fair trial. I am surprised, also, at what R. W. has advanced relative to the expence, for in this part of the country we find the culture with broad intervals, the least expensive, including hoeing.

But if (in consequence of unskillful management) we were to discover what he says has been experienced in Norfolk, namely, “that the additional produce is not equal to the additional expence,” I am fully persuaded that we should

* Drilling on a flat surface, with intervals of 12 or 13 inches.

† Drilling on small ridges, with intervals of about 26 inches.

still persevere in our present mode of management, because, (besides other advantages) the "additional produce" would enable us to increase the quantity of that fertilizing article, *dung*; and because the succeeding crops would be greater than under the practice of the old school. Before we abandon any particular mode of culture on the score of expence, we should maturely consider the effects of that mode in all their ramifications, more especially in those cases where a greater produce can be placed in the opposite scale, always remembering this important fact, that one good crop lays the foundation of many; because the additional quantity of manure thereby obtained, accumulates somewhat like money at compound interest. And so highly profitable is the article of dung, that we should not only strain every nerve to increase the quantity of it, by adhering to those modes of cultivation which raise the greatest crops (except where the expence is too high, &c.) but also by the yearly collection of weeds, rushes, ferns, and other vegetable matter within our reach.

I should be glad if R. W. would communicate to your readers the best mode which has been practised in Norfolk of preserving turnips in severe frosts.

Agricola Septentrionalis says I have misrepresented the increase in the price of labour within the last fifteen years, and states much lower, namely, at 10 to 20 per cent. justly remarking, that to shew the foundation of his difference of opinion "would require a long and laborious calculation on the wages in the different counties of the kingdom." Perhaps it may be true, that I have stated it somewhat too high at 100 per cent. or upwards, *on the average of the country*; but, from all the accounts I have received, the advance in every part of the kingdom is greatly above your friends estimate. For that in Northumberland, and I think I may add a much more extensive district in the north, I refer to the following account.

About ten or twelve years ago, the common wages of women-servants	£.	s.	£.
were, including board.....	2	15 to 3	per ann
This year they are.....	7	0 to 10	—
Those of men were then.....	8	0 to 10	—
Now they are.....	17	0 to 21	—
Those of harvest labourers were then	5s. to 6s.	per week in-	
cluding board.			
Now they are.....	10s. to 14s.	per do. do.	
Carpenters were then	1s. per day,	with victuals.	
Now they are,	1s. 6d. to 2s.	per do. do.	
Masons were then	1s. 8d. per day,	without victuals.	
Now they are	3s. to 3s. 6d.	per do. do.	

The wages of our hinds (married servants who live in their

own houses) have also increased greatly, but not so much as those above.

The increase of rents throughout the kingdom, has, of late, been very great. In this district, few farms taken within the last six years, have brought less than double rent; many have increased in a three-fold ratio, and some have been quadrupled. Throughout Scotland, the general rise has been enormous; and in most parts of the country, wood, iron, leather, &c. have increased in value, 70 to perhaps 100 per cent. In what ratio rents have increased throughout the kingdom, since 1650, I cannot, with precision, state; some have reckoned it 25 to 1, some 15 to 1, and others 10 to 1; all agreeing that it has been very great. If my information be correct, some considerable estates in this district have increased, in yearly value, in the ratio of 18 or 20 to 1, since 1650, when taxes, labour, and all articles of agricultural consumption, were *low indeed*, compared to their present rates.

To these circumstances, I request the attention of Agricola Septentrionalis, in particular. I must also beg his attention to the best authenticated tables of the prices of grain for the last 200 years, *where he will find them higher in the seventeenth than in the last century*. Now, Sir, after he has maturely considered the enormous increase of expence on the one hand, and the decreased value of grain on the other, let me ask him, whether it can, reasonably, be considered as "humbling for British agriculturists to acknowledge (to the Legislature and the world) that the increase of produce has not kept pace with the augmentation of expence," and to petition for such regulations as they conceive likely to raise the price of wheat to 7s. 6d. to 8s. 6d. per Winchester bushel? Will he deny that these prices are now more moderate to the great body of consumers than the average prices of the last, or of the preceding century? Or that "the wonderful discoveries in agriculture which British energy, British gold, British talents, British strength, and British patriotism have produced," have been highly honourable to our husbandmen, and advantageous to their country? Will he assert that the "lean cow, the ass, and the goat, or even the oxen yoked by the horns," have been as creditably engaged in tillage as the English cart-horse? Or, that the merits of any cultivators of the soil upon the continent of Europe or Asia, are comparable to those of British agriculturists? Before he answers these questions, or extols the Flemish and Chinese husbandmen, I hope he will take a very comprehensive view of the subject—of soil, climate, &c. and also of the many obstructions to our agriculture.

By an attention to these matters, he will perceive that the

wonderful improvements and great crops, which the talents and capital, the energy and the patriotism of our most respectable class of cultivators have produced, for maintaining the happiness and prosperity of a powerful people, have been brought forward under some very unfavourable regulations, and in spite of many of their brethren being tenants at will upon farms of too small a size, of injudicious covenants, of the payment of tithes, of improper corn laws, and of the want of a general inclosure bill. We are astonished at the bold assertions of Agricola Meridionalis and Mr. Bartley, with regard to the increase of the productive powers of our lands; yet, when we *fully* consider the vast *increase of produce* which must have been obtained within the last hundred years, placed in the scale against the enormous augmentation of expences supported by farmers within that period, and likewise the probable effects of removing the obstructions I have just mentioned, our surprise will, in some measure, cease; though many husbandmen will still think they have taken "too wide scope."

A. S. says, that I "do not seem aware, that almost every man of large capital in trade, considers 8 or 10 per cent. not only a sufficient, but an ample remuneration." If he means 8 or 10 per cent. per annum, I certainly am not aware that it is deemed an ample profit, and still contend, that commercial gains are generally *much* greater.

The measure recommended by Lord Stanhope, of having public granaries for storing the surplus quantities of grain in plentiful seasons, is abundantly extravagant, without the exaggeration of any circumstances attending its execution; and as A. S. in his calculations relative to these granaries, has reckoned upon a whole year's consumption of the people of Great Britain, I shall beg leave to ask a question for the noble defendant in this cause. In what accounts of those scarcities which have hitherto prevailed, did A. S. discover that Providence has chastened this country with such *extreme* severity, as to sweep away, at once, the *whole* crops of a year? Perhaps he should not have extended his calculations much beyond the quantities imported during the greatest scarcity.

I shall be very glad, Sir, to be corrected by the superior abilities of this correspondent, for I anxiously wish to acquire knowledge, and to disseminate useful truths. But I must remark that, however the signature of *Meridionalis** might have accorded with his *local* knowledge, that of *Septen-*

* I do not think that he would have been justifiable in using the signature of another correspondent, but merely that he is not fully acquainted with the circumstances of the north.

trionalis is, as far as I can learn, (and I have paid considerable attention to the subjects) ill chosen, for I am pretty certain that in every county of the kingdom, from the parallel of Nottinghamshire almost to the northern extremity of Scotland, the increase of these wages is far beyond "10 to 20 per cent"—In several of the southern counties, I grant, that labour, in general, has not advanced above 25 to 30 per cent. within the period he has mentioned; and I cannot avoid remarking, Sir, that when we contrast this with the circumstances of the northern provinces, we may justly draw a conclusion highly flattering to the cultivators and other improvers of the latter. See what a great philosopher (Dr. Adam Smith) has advanced upon this subject: "the liberal reward of labour, therefore, as it is the effect of increasing wealth, is also the cause of increasing population."

I have, with great satisfaction, read the judicious observations of *Agricola Norfolkensis* (in your 60th number) on the quantities of seed-corn most advantageously applied to the various species of soils.—If I rightly understand the Norfolk corn measures*, my opinions are in unison with his, except with regard to the quantity of seed-oats.—He has informed us, that he sows only three bushels per acre, either in the drill or broad-cast husbandry.—This quantity, except of potatoe-oats, *drilled*, is, I think, too small; though, perhaps, the more favourable climate of Norfolk requires less seed than we apply in the north.—In this district we vary the quantity according to the variety, or kind, of the oat, sowing of Poland, about seven; of Dutch, six; of common, five; and of potatoe-oats, four Winchester bushels per acre, on our inferior and middling lands.

I am sure, Mr. Editor, that A. N. after reading this heterogeneous epistle, will think, that if I should, at any future period, be so unguarded and imprudent as to censure him for treating more than *one* subject in *one* letter, he may, without the smallest impropriety, refer to this "mixty maxty"—"hotch pòtch"—production of my own brains, and remind me to "cast the beam out of my own eye," &c.—With ardour I hope, however, that we shall not again "nettle" each other.

I am, Sir, yours, &c.

AGRICOLA NORTHUMBRIENSIS.

* It would, probably, render your Magazine more useful to your readers, if all your correspondents would adhere to the standard Winchester bushel, and the stone of 14 lbs.

CRITICAL CATALOGUE.

- I. *A Treatise shewing the intimate Connection that subsists between Agriculture and Chemistry. Addressed to the Cultivators of the Soil, to the Proprietors of Fens and Mosses in Great Britain and Ireland; and to the Proprietors of West India Estates.* By the Earl of Dundonald. 4to. Edwards.

WE have often regretted that the confined limits to which we must be prescribed in our Critical Catalogue, have obliged us to pass over unnoticed until a late period, some of the most important productions connected with the subject of our Miscellany. As, however, time and opportunity are afforded, we shall not neglect to bring forward to the notice of our readers, works of acknowledged utility, and it is in compliance with this desire, that we have now submitted the *Treatise of the Earl of Dundonald* to their attention. It is recommended to us in the title page by this admirable motto.

"Let us cultivate the ground, that the poor as well as the rich may be filled, and happiness and peace be established throughout our borders."

The first section treats of earth in general as a compound: the five following of different species of earths. Our author next proceeds to shew how the chemical effects of air, water, and heat, operate on vegetable matter, and then enters into an explanation of the connection of coal, lime, iron, and acids, in the process of nature when unfolding her latent treasures. In the sequel we have an examination of the effects of draining, fallowing, paring and burning, and the method pointed out of analyzing the different earths or substances in various soils. He then concludes with a rapid view of the general effects of the principles he has laid down in several situations, and particularly explains the cultivation of forest, with a view to the production of other more valuable crops.

The parts we have selected for the attention of our readers, relate first to the application of lime and chalk, and next to the expedient of fallowing.

"Particular Effects resulting from the application of Lime and Chalk to Ground."

"Lime is known to have a tendency to sink below the upper surface, and to form itself into a regular stratum between the fertile and the unfertile mould. After breaking up pasture ground that formerly had been limed on the sward, it is frequently observed in this situation:—this has been generally ascribed to its specific gravity, and to its acting in a mechanical manner. In gravelly, or sandy soils, there can be no doubt but that the diffusibility and smallness of the particles of lime will induce it mechanically to sink through the larger particles of the sand or gravel, and to remain at rest on the more compact stratum which may resist its passage.

"When lands of this description have been limed, and kept constantly under annual crops, the greater mechanical process of the plough will operate against the lesser one of subsidence, and keep the lime diffused through the soil: but in clayey or loamy soils, which are equally diffusible with lime, and nearly of the same specific gravity, the tendency

which lime has to sink downwards, cannot be accounted for simply on mechanical principles.

"In lands of this description, under the plough, the lime is dispersed or mixed with the soil, until such time as these lands are laid down with grass seeds. After remaining in this situation at rest for a certain number of years, on breaking up, a floor of calcareous matter will frequently be found lying immediately beneath the roots of the grass. This effect, contrarily to the general opinion of its being disserviceable, is of great utility, as the staple or depth of the soil is always increased and rendered less retentive of water in proportion to the distance which the lime penetrates downwards; and thus by increasing the depth of the soil, a greater scope is afforded for the expansion of the roots and nourishment of vegetables. These effects of lime in soils, except in those that are gravelly or sandy, cannot be accounted for simply on mechanical principles, but may probably be explained on such as are chemical.

"Lime is capable of being dissolved in water, in six hundred times its own weight. Chalk, *i. e.* lime combined to a certain degree with fixable air, is insoluble; but chalk is capable of solution by a greater proportion of fixable air, either in consequence of its disengagement from vegetable matters decaying in the soil, or from the changes which the carbonaceous matter therein contained may undergo. When chalk in this manner is rendered soluble, the solution will sink through the surface mould to a more compact stratum, through which it cannot pass: in this situation it will lose the superabundant proportion of fixable air by which it previously had become soluble, and will again return to the state of chalk, forming a stratum infinitely more pure and unadulterated than could possibly have been formed, had the process been merely mechanical: in which case, contrary to the fact, all the argillaceous, magnesian, siliceous, and ferruginous matters, of equal degree of attenuation or size of parts, would have sunk with the lime.*

"The abundant use of lime has undoubtedly occasioned the consumption of a large proportion of the vegetable and animal matters in the soils to which it has repeatedly been applied; still the evil is not so great as at first it may appear. For although a considerable proportion of these matters has been disengaged in a gaseous state, or otherways made to contribute to the growth of plants, still the lime, or chalk, by entering into certain combinations, has formed and accumulated a large stock of insoluble matter, capable, by certain saline substances, of being again brought into action, and of being rendered conducive to vegetation."

"Following."

"It has been frequently noticed in the preceding pages, that alkaline salts act more powerfully on some kinds of peat and inert vegetable matters than on others, particularly on those which become oxygenated by being exposed to the action of air. This points out, that the practice of fallowing ground containing much vegetable matter, by repeatedly exposing fresh surfaces to the action of the air, occasions the peat, or vegetable matter, to be more easily dissolved, or acted upon by alkaline salts; but when no such application is made, the insolubility of the vegetable matter is by fallowing increased, which, to certain grounds, may prove, instead of a benefit, a real injury.

* Chalk and clay are nearly of the same specific gravity, and sand of greater specific gravity than lime.

"The putrefaction or solution of vegetable substances is more readily promoted by a close or stagnated state of the air, than by a constant supply and addition of oxygen or pure air, as happens to vegetable substances when subjected to the operation of fallowing.

"Clover, faint foin, cabbages, turnips, leguminous crops, hemp, and those plants which overshadow the ground, and cause a stagnation of air, prevent thereby the excessive exhalation of moisture, and promote the putrefaction or decomposition of vegetable matters contained in the soil: such crops will therefore prove more economical and beneficial to subsequent crops, than the present system of fallowing.

"By fallowing, not only one year's rent and labour are lost, but likewise the vegetable matter contained in the soil, is thereby rendered less fit to promote the growth of subsequent crops. Fallowing should be practised but sparingly; its principal use is in altering the mechanical arrangement of the soil, either by pulverising it, or making it more compact, (both of which effects, according to circumstances, are thereby produced) and in destroying root, seed weeds, or insects. These objects being attained, recourse should never be had to the same operation, unless it becomes requisite from the failure of crops, or other incidental causes, which are best provided against by substituting the culture of drill crops instead of fallow.

"To soils which contain much inert vegetable matter, it is probable that advantages would be derived from umbrageous green crops without fallowing, equal to those experienced, when hemp is made to precede a crop of wheat; without which preparation this crop would not have answered the expectation of the farmer.

"It is therefore obvious, if ground receives benefit by being overshadowed, the same ground must receive injury by a direct contrary mode of treatment."

The project his Lordship has chosen, appromixates so much to a great variety of papers we have had the honour to insert, by the assistance of our correspondents, that it would not become us to say, it was not among the most important to the progress of Agriculture in this country. We may perhaps be permitted to state, that in some parts, there is a deficiency of practical information by which the theory would be most advantageously illustrated. By way of explanation, we will only notice one instance in which this omission is apparent. It occurs in the division on insects, page 61; where the noble author observes, that the common earth worm which is inoffensive, may be made to rise to the surface and become useful; but he does not point out the mode of disturbing the dark mansions of this humble reptile, by which he is made to expose himself to open day, and to supply the feathered tribe with the means of subsistence.

II. *A Treatise on the Culture and Management of Fruit Trees, in which a new method of Pruning and Training is fully described; to which is added a new and improved Edition of "Observations on the Diseases, Defects, and Injuries in all kinds of Fruit and Forest Trees;" with an Account of a particular Method of Cure. Published by order of Government. By Wm. Forsyth, F. A. S. and F. S. A. Gardener to his Majesty, at Kensington and St. James's, Member of the Economical Society at St. Peterburgh, &c. &c. Vol. I. 4to. 372 pages.*

THE author of this Treatise, we are sorry to say, has deceased in the short interval since our introductory strictures on this work. About

twenty years ago he was invited to become the King's Gardener at Kensington, and readily accepted the proposal. The gardens of this agreeable retreat were first formed by Mr. Wise, and were subsequently improved by Messrs. Bridgman, Kent, and Brown; the latter familiarly known by the name of Capability Brown. Messrs. Kent and Brown had introduced into these grounds the highest improvements in artificial scenery, by moulding art into the nearest resemblance to nature, and the merit of the former has been expressed in the harmonious numbers of Maſon, who, into a few lines, introduces the instructive lessons of his friend.

" Say lovely lawn, that felt his forming hand,
How soon thy surface shone with verdure new;
How soon obedient Flora brought her store,
And o'er thy breast a shower of fragrance flung:
Vertumnus came, his earliest blooms he bore,
And thy rich sides with waving purple hung.
Then to the sight he call'd yon stately spire,
He pierced the opposing oaks luxuriant shade,
Bade yonder crowding hawthorn low retire;
Nor veil the glories of the Sylvan mead."

The beauty of these will be a sufficient apology for their introduction, and they will shew, that our author when he succeeded to his situation, had little to do, but what is connected with pure horticulture. He had the good sense to discover this, and made a series of experiments on the growth of fruit and forest trees, with the advantage of the frequent assistance of his Majesty, which has occasioned a most important acquisition to his department of vegetable produce.

It has now been universally acknowledged, that the scanty crops, both from wall and standard trees, has been occasioned in this country from the defective mode of pruning and trimming. The present work, is not merely an obscure detail of theoretic principles, but the facts connected with the subject of inquiry are stated, so as to enable others accurately to follow the experiments.

The first twenty-eight chapters are exclusively devoted to the management of fruit trees. The remainder of the work is applied to observations on the diseases, defects, and injuries in all kinds of fruit and forest trees. In the Appendix are inserted various letters between the author and the commissioners of the land revenue, and the Lords Commissioners of the treasury, on a composition for curing diseases, defects, and injuries in trees, on which Thomas Andrew Knight, esq. has made some strictures in a short pamphlet, which was reviewed in our Publication for November last. (Vol. 9, page 360.)

Without touching on this controversy, we shall content ourselves with concluding our review by giving the following extracts. The first in the 24th chapter, on the size, situation, and soil of the orchard: the choice of trees, the preparation of the ground, planting, &c. To which is added, an annual wash for trees.

" Orchards are appropriated to the growth of standard fruit trees only, where a large supply of fruit is wanted; and generally consist of apple-trees, pear trees, plum trees, and cherry-trees; but a complete orchard should have besides quinces, medlars, mulberries, service-trees, filberts, spanish-nuts, and barbaries; as also walnuts and chefnuts; the two latter

of which are well adapted for sheltering the others from high winds, and should therefore be planted in the boundaries of the orchard, a little closer than ordinary, for that purpose. In choosing your trees, too much care cannot be taken to admit of none but such as have good roots, fair clean stems, and proper heads. In selecting your pears and apples especially the latter, be careful to procure a proper assortment for the supply of your table during the whole year: a very few of the *Summer* sorts will suffice, more of the *Autumn*, and still more of the *Winter* will be required; as upon this last, you must chiefly depend for supply from the month of January to July. See the Method of preserving Fruit in Chapter XXV."

"In cyder-making counties, such as Hereford, Worcester, Gloucester, Somerset, and Devon, they have large orchards of apples; and in some counties (Kent in particular,) there are orchards wholly of cherries. In general orchards, however, there ought to be a much larger proportion of apples than of any other fruit. Orchards in proper situations are very profitable; beside, the trees have a delightful appearance when in blossom, and also when the fruit is ripe."

"What has been said respecting the situation and soil of a garden, is also applicable to an orchard. The situation of an orchard should be rather elevated than low; on a gentle declivity, and open to the south and south-east, to give free admission to the air and rays of the sun, (to dry up the damps and disperse the fogs,) which will render the trees healthy, and give a fine flavour to the fruit. An orchard should also be well sheltered from the east, north, and westerly winds, by plantations, if not naturally sheltered by rising grounds. The plantations of forest-trees should neither be too large or too near the orchard; as they would in that case prevent a free circulation of the air, which would prove injurious to the fruit trees. But if the ground will not admit of such plantations, I would advise planting cross rows of fruit trees, as directed for gardens. I would also recommend planting some of the largest growing trees nearest the outsidess, exposed to those winds; two or three rows of which should be planted closer than ordinary, which would greatly shelter those in the interior parts of the orchard. Walnut and chestnut trees, as has already been observed, are well adapted for this purpose."

"As to the size of an orchard, it may be from one to twenty acres or more, according to the quantity of fruit wanted, or the quantity of ground you have fit for the purpose."

"That soil which produces good crops of corn, grass, or garden vegetables, will also do for an orchard; but a loamy soil is to be preferred: though any of a good quality, not too light or dry, nor wet, heavy, so stubborn, but of a moderately soft and pliant nature, will be found to answer the end. Shingly and gravelly soils disagree very much with fruit trees, unless there be loam intermixed.* They will succeed much better on a chalk bottom. On such a soil I have seen roots twelve feet deep, and trees thrive well; if the bottom be clay the roots should be

"* Where no better is to be had, the holes should be dug at least three feet deep, and filled up with good mould; if mixed up with rotten dung, rotten leaves, or other manure, the trees will in time amply repay the expence; the dung used for this purpose should be that from the melon and cucumber beds, mixed with the mould from the same, when the beds are broken up in autumn or winter; it should be laid up in heaps, and continue so for one year at least; but should be frequently turned, and have some good fresh mould mixed with it."

cut-in, once in four years, to prevent them from penetrating the clay, which would greatly injure the trees. The soil should be from two to three feet deep; before planting the trees it should be trenched two spits deep, and ten feet broad where the rows are to be planted, and a spit below loosened unless it be clay, which should be trodden down. If it be pasture ground, it should be ploughed and well summer-fallowed, till the grass be killed, otherwise, when it is laid in the bottom in trenching, which it generally is, it will be very apt to breed grubs, which will do much mischief."

"Some only dig holes large enough to receive the roots, especially in grass ground which is to be continued so; others prepare the ground by deep ploughing if the orchard is to be of great extent. The sward, if pasture, should be ploughed in, some time in spring; give it a good summer fallow, plowing it two or three times, which will rot the turf. A fortnight or three weeks before planting, give the ground a good deep ploughing to prepare it for the reception of the trees; the best time for planting on a dry soil is in October, but if wet, the latter end of February, or the month of March, will be a fitter season."

"In planting, endeavour to suit the trees as well as possible to the soil, and so plant them at proper distances from each other, which may be from forty to eighty feet, according to the size of the trees when full grown. Fruit trees, as has already been observed, when planted too thick are very liable to blights and to be covered with moss, which robs the tree of a great part of its nourishment, besides spoiling the flavour of the fruit. Procure your trees from a soil nearly similar to, or rather worse than that where you intend to plant them; for trees transplanted from a rich soil to a poorer never thrive well, but if from a poor to a richer soil they will generally succeed."

"If trees are planted in the quincunx order and at the distance of 80 feet, the ground between the rows may be ploughed and sowed with wheat, turnips, &c. or planted with potatoes. Ploughing or digging the ground, provided it be not done so deep as to hurt the roots, by admitting the sun and rain to meliorate the ground, will keep the trees in a healthy flourishing state. It will be necessary to support the young trees by tying them to stakes until they are well rooted, to prevent their being loosened or blown down by the wind. The spring after planting, if it prove dry, dig up some turf and lay it round the stem of the young trees with the grassy side downwards, this will keep the ground moist and save a deal of watering: if the trees have taken well this need not be repeated, as they will be out of danger the first year. The turf should be laid as far as you think the roots of the trees extend; and when it is rotted it should be dug in, which will be of great service to them."

"Trees that are of different sizes when full grown, should not be planted promiscuously; but if the soil be properly adapted, plant the larger in the back part or higher ground, or at the north ends of the rows, if they run nearly north and south, and the others in succession according to their size. Fruit trees planted in this manner will have a fine effect when grown up; but if they are planted promiscuously, they will not appear so agreeable to the eye; and besides the smaller trees will be shaded by the larger, which will injure them and spoil the flavour of the fruit."

"Orchards should be dunged once in every two or three years. The stems of trees where cattle feed, should be high enough to prevent their

eating the lower branches; and fenced in such a manner as to prevent their being barked or injured by the cattle rubbing against them, particularly when young; which may be done by triangles of wood, or the trees may be bushed with thorns, &c. The trees are to be pruned and managed as already described, for apples, pears, plums, &c. &c."

"If the soil be wet, it must be drained as already directed for a garden. When the surface of the ground is wet and has a little descent, it may be formed into a kind of ridges, by making a furrow from one foot to two deep between every two rows, sloping the ground regularly on each side, from a reasonable distance to the bottom of a furrow. These hollows will carry off the water and render the surface dry and healthy. If pasture, the turf may be first pared off, and afterwards relaid when the furrow is made."

"In orchards where cattle are not permitted to go, I would prefer dwarf trees to standards, taking care to proportion the distance of the rows to the size of the trees. But in orchards kept for pasture it will be necessary to plant standards."

"Burning of rotten wood, weeds, potatoe-haulm, wet straw, &c. on the windward side of the trees when they are in blossom, will be found a good preservative from blights, caterpillars, &c."

"I would recommend washing the trees annually in the month of February or March, with the following mixture, which will destroy the eggs of insects, and prevent moss from growing on the trees and branches: it will also help to nourish the tree, keeping the bark fine and healthy; and will have the same effect on it as a top-dressing has upon grass land."

"Mix fresh cow-dung with urine and soap-suds, and with this mixture, wash over the stems and branches of the trees, as a white-washer would wash the ceiling or walls of a room; taking care to cut off all the cankered parts, and to scrape off all the moss, before you lay the mixture on. In the course of the Spring or Summer you will see a fine new bark coming on. When the old bark is cankered, you must pare it off with a draw-knife, or such a long knife as I have had made on purpose, especially for wall-trees; where the draw-knife cannot be applied next the wall. The knives and other tools for dressing decayed trees will be described hereafter.* When you see it necessary to take all the outer bark off, you must cover the stem, &c. with the composition and powder, patting it gently down, as in cases where large limbs are cut off."

"If the above wash be repeated in Autumn after the fall of the leaf, it will destroy the eggs of a great many insects that hatch in Autumn and Winter. This washing will be found of great service to all kind of fruit and forest trees whatever."

The next extract is on a subject not the least important, being the selection of cions and grafts, which appears in the following terms in the 22d chapter.

"The shoots used in grafting are called cions or grafts, and in the choice of these the following directions should be carefully observed. 1st. That they are shoots of the former year, for when they are older they never succeed well. 2dly. Always to take them from healthy fruit-trees, for if the trees from which they are taken be sickly, the grafts very often

* See plate XIII.

partake so much of the distemper as rarely to get the better of it, at least, not for some years; and when they are taken from young luxuriant trees, whose vessels are generally large, they will continue to produce luxuriant shoots, but are seldom so productive as those which are taken from fruitful trees, whose shoots are more compact and the joints closer together; at least it will be a great number of years before the luxuriant grafts begin to produce fruit, even if managed with the greatest skill. 3dly. You should prefer these grafts which are taken from the lateral or horizontal branches, to those from the strong perpendicular shoots, for the reasons before given."

"The grafts or cions should be cut off from the trees before their buds begin to swell, which is generally three weeks or a month before the season of grafting; therefore, when they are cut off they should be laid in the ground with the cut end downwards, burying them half their length, and covering their tops with dry litter to prevent their drying; if a small joint of the former year's wood be cut off with the cion it will preserve it the better, and when they are grafted they may be cut off at the same time, the cions must be cut to a proper length before they are inserted in the stocks; but till then the shoots may remain of their full length, as they were taken from the tree, which will better preserve them from shrinking; if these cions are to be carried to a considerable distance it will be proper to put their ends into a lump of clay, and to wrap them up in moss, which will preserve them fresh for a month or longer; but these should be cut off from the trees earlier than those which are to be grafted near the place where the trees are growing."

"Having given directions for the cions and grafts, we next come to that of the stock, which is a term applied to the trees intended for grafting; these are either such old trees as are already growing in the place where they are to remain, whose fruit is intended to be changed; or young trees which have been raised in the nursery for a supply to the garden: in the former case there is no other choice than that of the branches, which should be such as are young, healthy, and well situated, and have a smooth bark; if these trees are growing against walls, or espaliers, it will be proper to graft six, eight, or ten branches, according to the size of the trees, by which they will much sooner be furnished with branches again, than when a less number of cions are put in; but in standard trees, four, or at most six cions, will be sufficient."

"In the choice of young stocks for grafting, you should always prefer such as have been raised from the seed, and that have been once or twice transplanted."

"Next to these, are those stocks which have been raised from cuttings or layers: but those which are suckers from the roots of other trees should always be rejected; for these are never so well rooted as the others, and constantly put out a great number of suckers from their roots, whereby the borders and walks of the garden will be always pestered during the summer season; these are not only unsightly, but they also take off part of the nourishment of the trees."

"If these stocks have been allowed a proper distance in the nursery where they have grown, the wood will be better ripened and more compact than those which have grown close, and have been drawn up to a greater height. The wood of these will be soft and their vessels large, so that the cions grafted into them will shoot very strong, but they will

be less disposed to produce fruit than the other: and when trees acquire an ill habit at first, it will be very difficult to reclaim them afterwards."

We do not presume to expect, that our readers whose time and whose talents are most usefully engaged, will condescend to inquire into subjects of antiquity, or into the state of foreign attainments, even with respect to agriculture itself, if not explained in our native language; yet we think it will not be unacceptable, if in our Critical Catalogue we continue occasionally to avail ourselves of the opportunities we enjoy, and to indulge ourselves in some slight and brief discussions on the ancient practice of agriculture, and on the modern husbandry, as explained by foreign authors. With a view to the former, we shall give some short extracts from the following works, in the collection of the British Museum.

Agricolationum opera varia. A. D. 1504. fo.

The Manner of planting and preserving young Trees for Timber and Fuel, by R. Ch. Lond. A. 1612. 4to.

Waies for improving barren Land, by J. Sha. Lond. A. D. 1657. 4to.

A Direction to the Husbandman. Lond. A. D. 1634. 4to.

New Discoveries, and Old Secrets revived. No date. 8vo.

With respect to the latter, we shall not neglect to supply some short disquisitions on every important publication in agriculture, whatever may be the language in which it appears; which, with the additional assistance we have lately obtained, we can promise our readers, in the perfect confidence of being faithful to our engagement.

HISTORY.

Agriculture.

PROCEEDINGS OF AGRICULTURAL SOCIETIES.

Greenock Agricultural Society.

THE Greenock Society for encouraging Agriculture, have offered the following premiums, which are to be confined to the members.

Waste Land.—To the person who shall bring into cultivation any piece of ground heretofore waste, to the extent of at least half an acre.—

For that piece in the highest state of improvement	£3 0
Second	2 0
Third	1 0

Breed of Cattle.—To the person who shall produce to the Society,

The best three year old Bull	£5 5
The best three year old Cow	5 5

The calves to be in the possession, and reared by the person claiming the premium, for the space of at least two years and a half, but may be originally brought from any part of the country.

Whitby Stand and Pickering Lynn Agricultural Society.

Sir R. B. JOHNSTONE, President.

RICHARD LISTER, } Esqrs. Vice Presidents.
JOHN BEILEY, }

At a meeting held at Mrs. Smelt's, the Elephant and Castle, Scarborough, the 23d of August, 1804,

It was Resolved,

That a show of Rams be held at Mr. William Kendall's, Innkeeper, Brompton, on Monday, the 1st of October next.

For the best aged Ram, a premium of	-	-	-	£3	3
For the best two-shear, ditto	-	-	-	3	3
For the best shearling, ditto	-	-	-	3	3
For the best Tup Lamb	-	-	-	1	1

Hackness, May 22, 1804.

At the show this day at Hackness, the premiums were awarded as below.

Mr. GEO. GIBSON, of Yedingham, }
Mr. JOHN SIMPSON, of Hunmanby, } Judges.
Mr. MATTH. ROBINSON, of Sneaton, }

For the best two year old Bull, to Mr. John Cooke, Ayton.

For the second ditto, Mr. Henry Leadley, Harwood Dale.

For the best yearling, ditto, Mr. Francis Dixon, Bedale.

For the second ditto, Mr. Allanfon Grime, Suffield.

For the best two year old Heifer, Mr. John Gray, Hackness.

For the second, ditto, Sir Richard Johnstone, Hackness.

For the best two-shear Ram, Mr. Francis Dixon, Bedale.

For the best shearling ditto, Mr. John Marshall, Suffield.

For the second ditto, Mr. Francis Dixon, Bedale.

For the best Gimmer hogs, Mr. John Watson, Scalby.

For the second ditto, Mr. Doyle Sanders, near Whitby.

For the best Boar, Mr. Thomas Marshall, Scarbro'.

For the second ditto, Mr. William Maw, Hackness.

For the best Cow, Mr. Gabriel Johnson, Ayton.

Improving Waste Land, George Osbaldeston, Esq. Hutton Bushel.

For maintaining the greatest number of Children without Parochial Relief, William Robinson, Broxa.

For the Male Servant in Husbandry, William Buttery, Newbiggin.

For the Female Servant ditto, Mary Halden of Harwood Dale.

For the best Bull, not more than two years old, without the restriction of being bred in the District.—Mr. John Cooke's Bull not meeting with a competition, the Gentlemen of the Committee unanimously agreed to present Mr. Cooke with 3l. 3s. for shewing so fine a beast.

Essex Agricultural Society.

Chelmsford, 3d Sept. 1804.

At a general meeting of this Society, held on the last Monday in September, 1803,

It was Resolved,

That Premiums for Dibbling and Drilling Wheat and other Corn, in the year 1804, be adjudged as follows:

To the person who for the Crop of the year 1804, shall dibble in the greatest number of acres of Wheat, in proportion to the whole quantity of land sown with that grain, so that the same be not less than twenty acres—the Silver Medal.

To the person who for the Crop of the year 1804, shall dibble in the greatest number of acres of any other Corn, in proportion to the whole quantity of land sown with such other Corn (except Beans), so that the same be not less than forty acres—the Silver Medal.

To the person who for the Crop of the year 1804, shall drill in the greatest number of acres of wheat, in proportion to the whole quantity of land sown with that grain, so that the same be not less than twenty acres—the Silver Medal.

To the person who for the Crop of the year 1804, shall drill in the greatest number of acres of any other Corn, in proportion to the whole quantity

of land sown with such other Corn, so that the same be not less than forty acres—the Silver Medal. And that the Drill-holders of the successful Candidates be allowed one guinea each.

No claim to be admitted for any of the Crop Premiums, unless a certificate be delivered to the Secretary *seven days* previous to the general meeting for the distribution of prizes, stating the number of acres dibbled or drilled by each Candidate, and signed by two respectable farmers in that district.

Notice is hereby given, that the persons who intend to become Candidates for the above-mentioned premiums, are requested to transmit to the Secretary, on or before the 17th of September instant, an account of the number of acres sown with each sort of grain, distinguishing the quantity dibbled or drilled, and signed as above directed.

JOHN GOULDING, Secretary.

Notice is hereby given, that the Anniversary of this Society will be held at the Shire-House, in Chelmsford, on Monday the 24th of September inst. at eleven o'clock in the forenoon, when the several Members are requested to attend.

N. B. The Medals already adjudged as Stock Premiums, will be delivered at this meeting.

Dinner as usual, at the Black Boy Inn.

JOHN GOULDING, Secretary.

Bath and West of England Agricultural Society.

At a General Meeting of the Bath and West of England Society for the Encouragement of Agriculture, Arts, Manufactures, and Commerce, holden at Hetling-house, Bath, on Tuesday, the 11th of September inst.

BEN. HOBHOUSE, Esq. M. P. Vice-President, in the Chair.

The report of a Committee on a survey of Lord Somerville's flock of sheep of the Spanish admixture was read, and referred to the attention of the November Meeting.

Resolved unanimously,

That the thanks of the Society be conveyed to T. Escourt, Esq. M. P. for his Treatise entitled, "*An Account of the Result of an Effort to better the Condition of the Poor, &c.*"—And to Mr. Creaser, Surgeon, Bath, for his ingenious Treatise on a Disease in Sheep called the *Hydatids*; as well as for his promise to offer to this Society a number of other Essays on Veterinary Science.

The thanks of the Meeting were voted to B. Hobhouse, Esq. for his conduct in the chair.

By order of the Society,

NEHEMIAH BARTLEY, Secretary.

N. B. The Secretary as usual will receive Ewes to be crossed with the Spanish—particularly by a prime Ram from his Majesty's flock.

Mr. Baker, in a letter to the Bath and West of England Agricultural Society, says, that "the method found out for curing the black rust in wheat, is to let such rusty wheat stand uncut three weeks or more after the usual time at which people in general cut such wheat." He attributes the infection to "small insects falling upon the stalk in foggy or misty weather; insects of a poisonous nature, that cause the stalk to swell, and the knots of the stalk to close; by which means the sap, which should go to nourish the grain, is prevented; and that by letting it stand as aforesaid, the sun and air will destroy these insects; the knots will then open, and as they open, the sap passes up and feeds the grain, which, by letting it stand a proper time, will recover and become much more full, and will be nearly as good in quality as though no rust had happened to it."

An interesting paper from Lord Somerville, on the relative value of different breeds of sheep was read at the meeting of the Bath and West of England Agricultural Society; the substance of which is as follows:—In the year 1800, Lord Somerville exchanged his flock, consisting entirely of

the long-woolled sort (as he found them annually degenerating and becoming less profitable) for one hundred and fifty Ryeland ewes, to which, in the following year, he added some South-down ewes, and some rams and ewes of the Marino breed, that he brought from Spain. These rams each subsequent year have been, and continue to be put to ewes of the South-down and Ryeland breed; from each of which crosses a valuable species of sheep has been obtained, both in fleece and carcase; the value of which has been thus detailed by his Lordship. The South-down store ewes, at 3lb. per fleece, and 1s. 10d. per lb. will pay 5s. 6d. per fleece, which at 6½d. per acre, in good upland pasture for seven months, and five months at 14 or 15 per acre, will pay 33s. or 40s. per acre. Ryeland and store ewes, 2½lb. per fleece, at 2s. 2d. per lb. untrimmed, nine sheep per acre, and turnips as above, will pay 2l. 3s. 10½d. per acre. South-down and Marino ewes of the half breed, at 4lb. per fleece, clean washed, and 3s. per lb. will amount to 12s. per fleece, which, at 7½d. per acre for seven months amounts to 4l. 10s. per acre for the pasture land, with turnips, as above, for winter keep. Ryeland and Marino ewes of the half blood, at 10d. per acre for seven months, and turnips for winter keep, at 3½lb. per fleece, and 3s. and 2d. per lb. amounts to 6l. 10s. 5d. per acre. The pure Marino fleeces have never sold at less than one guinea each; the average weight of which has been more than 6lb. each in the yolk; and on the above allowance of pasture for seven months, and turnips, as above, in aid of that pasture, the return will amount to ten guineas per acre. The flock has been kept on 188 acres of land, besides the run of 83 acres of turnips; but it is to be observed, that in the same ground 16 plough oxen, occasionally, but twelve constantly, were depastured till the after-grass. To this is to be added the run of yearling calves, and a large stock of pigs; and that the green crops of the spring and summer of 1803 were unusually deficient in these districts. The sheep stock amounted to 302 lambs, 783 store sheep; total 1085. The produce is as follows:

Wool, 12 packs, 1 score	•	* £446	0	0
216 store-sheep fold	•	409	3	0
132 fat sheep do. and used	•	238	16	2
Letting rams	•	524	10	0
		1618	9	2

N. B. No sheep have ever been kept fattening older than four teeth. The fat sheep were all sold after being sheared, and the price of mutton, from the deficiency of keep, was not more than 4½d. per pound at one part of the season.

Retford Agricultural Society.

Sept. 18, 1804:

JOHN DENISON, Esq. M. P. President.

The Anniversary Meeting of the Society will be held on Thursday, the 4th of October, at the White Hart Inn, East Retford, when the following fifteen premiums for the encouragement of Agriculture and Industry will be determined and adjudged, viz.

1. Three guineas for the best six ewes.
2. Two guineas for the six next best.
3. Three guineas for the six best wether shearlings.
4. Two guineas for the six next best.
5. One guinea for the best wether shearling (the person not being a candidate for the six best wether shearlings.)
6. One guinea for the best boar.
7. One guinea for the best sow.

The sheep to have had the same keeping as the rest of the flock; the ewes to have been in possession of the owner since Michaelmas last, and to have brought up their lambs since last Spring.

* 500 fleeces, at 15s. 3d. per fleece, amounted to £392.

The wether shearlings and the pigs to be in the possession of, and also to have been bred by, the respective owners.

Mr. Rayne, of Stone-hill, Mr. Lyfter, of Sturton High house, and Mr. Short, of Martin, to be judges of the sheep and pigs.

8. One guinea and a pair of buck-skin breeches to the ploughman who, with two horses and no driver, shall plough half an acre of ground in the best manner.

9. One guinea and a hat, to the second best ploughman.

10. One guinea for the third best.

11. One guinea to the plough boy, not more than sixteen years of age, who with two horses and no driver, shall plough half an acre of ground in the best manner.

12. Fourteen shillings, for the second best plough boy.

13. Seven shillings to the third best.

14. Two guineas to the person who shall produce, from hives in his own possession, the greatest quantity of honey in one year, ending October 4, 1804.

15. One guinea to the person, who shall produce the next greatest quantity of honey.

Mr. Lyfter, of Sturton High-house, and Mr. Barker, of Mattersey-hill, to be judges of the ploughing and quantity of honey.

The Candidates to send in their names to the Secretary on or before Tuesday, the second day of October.

The ploughing matches will take place on Mr. Turnell's farm, at Ranby, in the parish of Batworth, and the ground will be ready at nine o'clock in the morning; and should any person begin to plough later than ten o'clock, he cannot be a candidate for any of the premiums.

The sheep and pigs to be shewn at one o'clock, in the small grass inclosure at West Retford.

The foregoing premiums to be confined to persons resident within the Hundred of Bassetlaw; and it is to be understood, that the premiums are to be withheld from such stock as shall, in the opinion of the Judges, be unworthy of encouragement.

The three following premiums will be determined on Saturday, the 8th of April, 1805, and the Candidates to send in their names to the Secretary, on or before Saturday, the 1st day of April.

1. Five guineas for the best short horned bull, to be used in the district the whole of the year 1805.

2. Three guineas for the next best short-horned bull.

3. Five guineas for the best stallion, of the cart breed, to attend in the district the whole of the season of 1805.

NATH. MASON, Secretary.

Agricultural Society of Mans, in the Department of La Sarthe.

It may be interesting to some of our Readers to be afforded an opportunity of making some comparison between the institutions of this island and of the Continent, in favour of rural economy. We shall, therefore, occasionally give a short account of the proceedings of foreign Societies; but we shall satisfy ourselves on the present occasion with merely detailing the leading objects to which the institution we have named has recently directed its attention.

Twenty memoirs on useful subjects have lately enriched the collection of this Society.

They have considered the means of improving the Robinia or false Acacia, and the most successful means of promoting its propagation.

The expedients most conducive to bring to perfection that noble animal the horse.

The important alliance indissolubly formed between Chemistry and Agriculture.

The peculiar circumstances conducive to the improvement of the Canton of Saint Calais.

The inconveniences which have arisen to Agriculture, from the excess of cold consequent on the destruction of certain ancient forests.

On the six different species of earth prevailing in the Department, in consideration of some questions proposed by the Minister of the Home Department.

The plantations of forest and fruit trees, and the means of curing their diseases.

The political and financial regulations requisite for the encouragement of the husbandman.

The conversion of wood into charcoal. And,

Lastly, the application of bark for the preservation of human life, under various disorders.

The Harvest.

Sept. 4.—For some days of this month we have had a series of heavy rains, and great apprehensions were entertained for the harvest. Accounts from the country now state a very promising appearance, and the weather has now set in remarkably favourable to an extensive produce.

Sept. 15.—The harvest has become pretty general in the environs of Carlisle: the beautiful vales of Caldew and Eden, wave with yellow grain. On particular emergencies reapers have been paid 3s. 6d. a-day; ordinarily, three shillings.

A Gentleman who has travelled over a good part of England and Scotland, says, he was surprised to see a great deal of ripe grain not begun to be cut. A very dilatory and dangerous practice at this period; beside heavy rains, destructive *shake-winds* may be expected, and when the grain stands, after it is *dead ripe*, a great deal is lost even in the reaping and leading in.

The hop plantations in Kent, Sussex, and at Farnham, have, within the last two or three days, entirely recovered from the effect of the late cold nights, and seem now to bid defiance to the weather. The duty is estimated at 160,000l.

Having heard with great concern, the various reports as to the injury done to the present wheat crop by the blight, several gentlemen, conversant with the subject, within the last ten days, have minutely examined and taken samples of crops in various parts of Wilts, Hants, Berks, Gloucester, and Worcester. They report, that in many instances, where the crops appeared much affected, and the straw black, the ears contained the full number of grains, and nearly of the usual size; except in two fields, where the grain was scarcely half the size; in another, which was as promising as any in the country, the crop has been very much laid down and blighted, yet a sample which was taken was found equal in bulk to prime wheat of the last year. In many parts the wheat has not been in the least, and in others, only slightly affected; though in some places, but partially, considerable injury has been done. It was fortunate that the crops were so far advanced before the blight came; and we think we may, on this report, with great pleasure congratulate the public in having the benefit of nearly a fair average crop of wheat in quantity.

Accounts from all parts of the country speak of the beneficial effects which the fine weather has produced upon the harvest. In many parts the wheat has been wholly got in, and in others it is getting in, in as good condition as could be wished, and much improved, both in quantity and quality, beyond former expectations.

Several farmers in the Weald of Sussex celebrated harvest-home in the course of last week; and we are happy in being assured that the crops, both of wheat and oats, yield a fair average quantity, and that the quality of both these grains turns out much better than was some time since expected.

General Scarcity, a short time since, reviewed the crops, particularly of wheat, and pronounced the greater part of them his own: *General Complaint* and *General Remonstrance*, however, fortunately stood forward to

dispute his claim; and through their timely interposition, *General Plenty* was induced to shew himself, to the discomfiture of *General Scarcity*, who has been happily driven from the field, and is adjudged to be dismissed the service!

The corn harvest has commenced pretty generally in Wales, with a very flattering prospect of plentiful crops.

The hop harvest, which is at present general in the county of Hereford, in consequence of the late fine weather, has proved much more favourable than was expected. The crop, both in quantity and quality, is expected to equal any preceding year. Six hundred and fifty-seven pockets were weighed at Worcester on Saturday se'nnight, of which the average prices were, from 4l. to 4l. 12s. New hops from 3l. 12s. to 4l. 3s.

A devout and poetical farmer thus expresses the favourable appearance of the harvest in Northumberland:—"Nothing can exceed the luxuriant appearance of the present harvest. The eye is filled with wonder and delight in viewing the undulating grain swelling on the sight, opening its sicken cell, and maturing by the Divine goodness for our use. The prospect claims from man his gratitude, and holds out to his anticipating mind a sure promise of plenty and abundance."

Most of the hop planters of Sussex have now begun picking, and a finer sample never went to market, than their early pockets and bags this year will produce. The estimated growth, according to present appearances, is said, by judges, to be upon the average, about ten hundred weight an acre.

The harvest is now nearly all housed throughout the kingdom, in fine condition. The damage by blight and smut is ascertained to be inconsiderable. The mild, warm weather has occasioned a rapid growth of after-grass, clover, and turnips; so that there is no apprehension of want of winter-feed for cattle.—The Welch corn-markets look downwards.

Fairs.

At Carlisle fair, there was a tolerably good shew of cattle, which in general met with but a dull sale: some large beasts, in good condition, however, did not continue long on hand, but were disposed of at a fair price. There was a poor shew of horses: the best sort fetched from 20 guineas to twenty-five pounds.

At Dunfermline fair there was a particularly fine shew of black cattle. Fat was in great demand, and went off at good prices, viz. from 9s. to 10s. per Dutch stone, sinking offals. Lean cattle were not in such request, and a great many of the inferior sort untold.

The great wool fair of Ballinasloe, was well attended; a large quantity was offered for sale, and went off at from 16s. 6d. to 17s. 6d. per stone.

At Bristol fair there was a large shew of cattle, particularly of the lean kind, which sold high. Horses were not numerous, and but few good ones, and the prices dear. The quantity of leather was small. The following is the list of prices:—Crops, 23½d. to 2s. Welsh hides, 2s. to 2s. 1d.; fadler's hides, 2s. to 2s. 1d.; Irish and Dutch, 22d. to 2s.; horse hides, 22d. to 2s.; buffalos, 18d. to 21d.; backs, 22d. to 2s.; bulls, 20d.; kips, 2s. 2d. to 2s. 4d.; best pattern skins, 2s. 10d. to 2s. 11d.; Welch do. 2s. 8d. to 2s. 10d.; Irish and Dutch do. 2s. 2d. to 2s. 4d.

At Harleston lamb fair some prime lambs sold as high as 25l. per score, but that price was given only for a few picked lambs; the best flock was Mr. Wilkin's, of Bowthorpe; his half-bred South-downs fetched 22s. 6d.; good Norfolks sold from 18s. to 21s. there were but few Scots beasts, they were forward in condition, sold at high prices, and all cleared off the first day.

At Harlow Bush fair, in Essex, there was but a thin shew of good beasts of any kind. The Welch droves were greatest in number; the whole were

higher than at Barnet fair. The horse fair was well stocked with roadsters and cart colts, which sold freely, though at high prices.

At Horringer sheep fair there was a very considerable shew of crones and lambs, the latter of which were generally sold something under the Ipswich fair prices, but the sales were upon the whole extremely dull, and nearly two-thirds were driven home undisposed of.—Some of the Earl of Bristol's half bred Leicesters reached 28s.; Mr. Tharp's South-downs produced 26s. and Mr. Canham's Norfolks 23s.; but the general run of the latter breed, which were most numerous there, sold from 17s. 6d. to 21s. Prime crones went at from 12l. to 20l. per score.

At Britford fair, the shew of sheep and lambs exceeded that of any late year by at least 3,000l. the whole number amounting to 20,000. The heavy rain during the preceding night, and the whole of the fair-day, giving assurance of great improvement in the turnips, and a plentiful supply of pasture, the purchasers bought freely—ewes at 20s. to 30s. some 32s. and one lot of 100 at 36s. the most general prices 28s.—Lambs 13s. to 20s. some as high as 22s. but the most general price 17s. There were a few good horses, and plenty of forest colts: the former were eagerly bought at high prices; the latter proved of so little value, that it may be said the buyers had them on their own terms.

At Ipswich Lamb-fair, there was not so large a quantity of stock has as been seen in some former years; nor were the prices equal to the expectations of the growers, considering the great plenty of feed, and the almost universally promising appearance of the turnip crops throughout this and the adjoining counties. On the first two days the sales were brisk, but a large quantity were driven home unfold. The prices varied very much, but the Earl of Bristol's, and Mr. Arthur Brookes's wethers (half-bred Leicesters) certainly topped the whole fair, the former, under the judicious management of his Lordship's steward, Mr. Shillito, obtaining 28l. and the latter as high a price as 27l. per score, and were both generally allowed to be extremely handsome, as well as in fine condition.—Mr. Lanchester's (Barton) sold for 22s. Mr. Howard's (of Fornham) South-downs, which were also in high condition, obtained 25s. each, and Mr. Pawley's (of Tidgate) 23s.; Mr. Scott's ewes (of Barrow) of the same breed, produced 17s. 6d.—The South-downs of Lord Albemarle (who had 83 score at the fair) obtained 20l. per score for the wethers.—Mr. Wolton's half-bred South-downs of Playford) were sold for 19s. 6d. and Mr. Cotton's (of Kelgrave) for 19s.; Mr. Derisley's (of Croxton) half-breeds produced 14s. 6d. Thus much for the new fashioned breeds introduced into this and the neighbouring counties, of which it is almost treason, among agriculturists, to speak slightly; nevertheless, one circumstance was particularly observable, that by far the greater proportion of Norfolks were sold than those of the South-down or mixed breeds, the former being readily disposed of, whilst those of the latter kind, especially, if not in first rate condition, and suitable for the butcher, were driven home again. Indeed, to speak generally, those which obtained such a great pre-eminence in price, were for the most part selected parcels, and not sold in entire flocks.—The Duke of Grafton, being no convert to the new systems in breeding, still adheres to the Norfolk sheep, and sold his wethers at the above fair for 20s. each; Mr. Archer's (of Barton Mills) of the same breed, esteemed very handsome, produced 22s. (whilst his half-bred Southdowns reached only 18s.); Mr. Beeton's (Hardwick) 22s.; Mr. Palmer's (of Herringwell) 21s.; Mr. Cros's (of Sutton) 20s. and Mr. C. Mathews's (of Stowlangtoft) the same price; Mr. Simpson's (of Nowton) 19s.; and Mr. Gwilt's (of Icklingham) heath Norfolks, 14s. 6d.—Upon the whole, the scarcity of money seemed to have a far greater influence than any other cause on the sales at this fair, which, considering all circumstances, were much below several former years. Not a single drove of Scotch beasts attended the above fair, to the great disappointment of many who wished to purchase.

Brecon leather-fair exhibited a large quantity of leather, which sold very brisk, at an advance of about 4d. per lb.

At Brampton fair there was a very indifferent shew of horned cattle, which met with a dull sale, and low prices; but by much the greater portion was returned unsold. Of swine and sheep there was a respectable shew, and they were sold cheap.

The fair at St. Lawrence, near Bodmin, was much smaller than we have for some years remembered it; the cattle went off at reduced prices.

At Monmouth fair there was a very good shew of fat and other cattle; few of which, however, were sold. Cheese averaged from 3l. to 3l. 3s. per cwt. but little was done in the market. In short, there were few purchasers of any description; nor has it been remembered, that at any fair at this season of the year, has so little business been transacted.

Witton St. Giles great sheep fair was held on the 14th of September. The number penned amounted to 58,000, and this large number met a brisk sale. The average prices were full four shillings per head dearer than at the last Bridford fair. The greatest demand appeared to be for South-down lambs, which were eagerly bought up. A Mr. Hodgson obtained the high price of 25s. and 6d. for 300 South-down live lambs. Messrs. Pokes, Whale, and Sparks, purchased at least 12,000. Mr. Arthur Mift was offered ten guineas for one of his beautiful new Leicester rams for the season, which he declined. There were but few good horses shewn for sale, and those sold at very high prices. There was a large quantity of new cheese at the fair, and nearly forty tons remained unsold. The average prices were: thin new cheese from 54s. to 58s. per hundred weight; old cheese, of which there was but a short supply, from 78s. to 80s. per cwt.

At Durham fair a great number of cattle were exposed for sale. In-calving, cows sold at late prices, but all other descriptions declined much, and numbers were not sold.

On Wednesday, at the second autumnal fair, at Carlisle, there was a tolerable shew of cattle, and some briskness of sale among the superior kind, which did not disappoint their respective owners; but those which were of a contrary description could hardly be disposed of at any rate. Milch cows were not numerous, and sold well. Some good horses were bought up before they reached the fairs. Such as were exhibited on the spot met with a tardy sale, and fetched an indifferent price.

At a fair held at Middleton, in Teesdale, there was the greatest shew of cattle and sheep ever exhibited at that place; there were many buyers, and the greatest part was sold at rather reduced prices.

At various fairs in the county of Sussex, during the latter part of the month, the price of cattle has rather decreased, but that of hogs has somewhat augmented.

St. Giles Hill fair, near Winchester, was very numerously attended by dealers in cheese, &c. and never was a greater quantity known to be pitched for sale at any former fair. New cheese sold at from two to three guineas per cwt.; the average price of old, 3l. 15s. and some prime cheese fetched four guineas. There appeared to be a good shew of horses, but very few buyers, the price being so enormous.

Miscellaneous Intelligence.

A respectable farmer at Altcar, near Ormskirk, has produced from a single pea, one hundred and sixty pods, the produce of which dined three people.

An experienced sportsman, well known in Norfolk, has taken much pains to deprecate amongst his connections, the general practice of wantonly destroying martins, swallows, and other species of the feathered tribe which feed upon the wing, and are only to be seen in this country during the breeding months of summer. They have for some years been observed to decrease in his neighbourhood, which he attributes to the practice of shooting the

old birds, by which the nestlings are destroyed; and great numbers are also lost in their migration across the sea in winter. It has been satisfactorily ascertained, that in proportion to the decrease of these birds, the parts they have quitted become inundated with noxious insects, which commit alarming depredations on vegetation in general. A single bird of this tribe is supposed by naturalists to swallow daily several hundred of moths, flies, and other insects.

A mineral substance has, not long since, been found in the parish of Gorran, and from the present productiveness of the mine, it bids fair to reward the enterprising discoverers, and ultimately tend to benefit the arts. For the purpose of umber it may be applied with considerable advantage, and in the burnishing of gold and silver it is equal, if not superior, to haematites. A specimen from the above mine, analysed, contained

72	o	Silica
12	5	Oxide of Iron
9	5	Oxide of Manganese
3	o	Alumina.

97 o

Vipers have abounded in almost every part of the county of Sussex during the harvest, to a most uncommon degree, and several lives have been lost in consequence of their bites.

An inhabitant of Astracan has made a very valuable discovery. A plant, which grows every where in Europe and Asia, in marshy and damp places, and on the banks of rivers, called by the botanists *Butomus Cimbellatus*, produces, after a very easy preparation, flour, of which bread may be made almost as white as wheaten bread. The inventor has sent a proof both of the flour and of the bread, to the Minister of the Interior, and in return, received from the Emperor a very valuable present.

Machinery, for the purposes of trade and the arts, was never employed to the extent we now see it. At Wisbeach, in Cambridgeshire, there has been a steam engine erected for grinding corn, which possesses the power of eighty horses, and has been finished at the expence of twenty thousand pounds.

The following is an account of an experiment made by Mr. Curwen, of Workington-hall, in the culture of forty acres of beans, in consequence of the gold medal offered by the Society for the Encouragement of Arts, &c. for the culture of beans and wheat.

The beans were sown the beginning of February, and cutting the 20th of August; then all bound and led off to an adjoining field, to prepare the ground for wheat. After cutting, they remained two days spread upon the ground; then were bound, and set with the stalks upwards. This crop was raised from seed cut in the same manner.

By this process a month is gained, which gives opportunity of well clearing the ground, and getting in the wheat upon wet ground, before the season breaks; which is of much importance.

If this method succeed, and there is every reason to believe it will, it must greatly facilitate the culture of the beans, upon grounds reserved for fallow.

The beans were drilled at thirty-six inches a-part, and planted after the manner of potatoes. The crop is most abundant. One bean produced 70 pods, containing 300 beans.

The Society of Arts, Manufactures, and Commerce, has given notice of a reward for a method of generating yeast. The subsequent particulars are from one of the most successful experiments, made under the inspection of the Committee of Chemistry of that Society.

Four quarts of ground malt were put into a stone-ware vessel, and mashed, with about an equal quantity of hot water, in the usual manner for brewing.

When the mash had stood about an hour, the wort was drawn off, and three quarts of boiling water poured on the grains: when this had stood a due time, the liquor was suffered to run off, and the whole liquor boiled half an hour; being then set to cool, it was poured clear from the sediment, and then put into a room where the heat was regularly kept up to summer heat, or nearly eighty of Fahrenheit's thermometer.

It stood in this degree of heat till some signs of fermentation appeared on the surface; which came on in about three days.

Another brewing was then made, as above described; and when of a due heat, stirred into the former liquor. In about twenty-four hours, some yeast appeared, and another brewing was then made, and when of a due heat, mixed with the two former ones, and well beat in, the heat being still kept up to the degree above-mentioned; in about two days more five ounces of excellent yeast were collected from the surface of the liquor.

Some of this yeast being mixed with a proper proportion of flour, water, and salt, answered all the purposes intended for bread; and might certainly have been equally well applied to brewing in the common method. In fine, being pure and good yeast, it will answer all the intentions of that useful article.

A Mr. Balis, a young engineer, from Devonshire, has invented a threshing machine, upon an entirely new principle, an experiment of which was made on Wednesday evening last, in Mr. Buck's wheel yard, on three waggon loads of a mixed crop of peas, oats, and barley, from off Mr. Gee's land; one waggon load, supposed to contain near six coombs, was thrashed perfectly clean in $28\frac{1}{2}$ minutes, without the appearance of the straw being damaged.

An experienced farmer advises the proprietors of orchards to feed bullocks in them during the winter, which will cause a more abundant supply of cyder in the ensuing year, than can be produced by any other method. This practice has now become general in the lower parts of Somerset and Devon.

A solution of two parts of alum and one of blue vitriol, is much in use to prevent the blight in wheat, and is considered as very effectual.

The hops in Kent, as well as the Worcester and Sussex plantations have materially suffered from the late cold winds and wet weather; which although in a much less degree than in the year 1799, yet a comparative deficiency in quantity is to be fully expected, from their general small size, which anticipate, from their present appearance, to be of a very fine quality.

There was a pocket of new hops in town from Sussex, which was sold at 91s. per cwt. by John and Thomas Hesketh, hopfactors, at the Half Moon inn, in the Borough.

Six hundred and fifty-seven pockets of hops were weighed at Worcester—average prices from 4l. 12s. to 4l. ditto new hops, from 3l. 12s. to 4l. 3s.

Last week a mushroom was got in a field belonging to Mr. Stringer, of High-Hoyland, Yorkshire, which measured $23\frac{1}{2}$ inches in circumference, in diameter $11\frac{1}{2}$ inches, and round the stalk $5\frac{1}{2}$ inches: it was perfectly sweet and good.

A wager of two guineas was laid between two butchers, about the weight of a skin: one laid the other that the skin of the sheep was the weight of his cow hide, allowing him 20lb. The owner of the cow-hide won by the cast of the beam—supposed not to be more than an ounce. The cow was killed by Mr. Moses Sewell, butcher in Egremont.

Some gooseberries were gathered in a garden of Mr. Allen, of Hill-Head, near Ravensworth, three of which measured four inches in circumference, and one of them weighed 8 dwts. 12 gr.

Any improvement in the management of the most industrious insect, must be acceptable. The following method of putting two hives of bees together, that are too light or too weak for separate stocks, has been tried with success:—Take one, two, or more pounds of sugar, as weight may be required,

and to each pound put four ounces of water; heat the solution just enough to reduce the whole of the sugar to a liquid state, and then put it into a bladder, to the neck of which tie a watering-pot spout. At night, or early in the morning, invert the weakest hive between the pegs of the hive into which you intend to drive its little inhabitants; first setting down the other hive close by; then immediately pour the contents of the bladder over these bees. This will neither make them fly nor fight. Put the other hive upon them, mouth to mouth, and they will all go down to clean themselves, for the sake of the sugar, and by that means become familiarized. Let them stand six days, then set the top hive in its proper place; knock out the bees that may remain, at some small distance, and they will all join the other hive.

Great success has been attributed to an expedient which was first employed in Yorkshire, to prevent a blight in wheat. An ounce of arsenic cautiously pulverised, is put into four pints of pure water, and an equal quantity of urine. The seed wheat is immersed in this preparation until the downy substance at the extremity of the grain is saturated with the liquid. We need not mention the extreme care with which such a process should be adopted. Some farmers prefer, on this account, what they consider as equally effectual, viz. a mixture of two parts of allum, and one of blue vitriol. Our letters from Sussex mention, that an ingenious husbandman, in the neighbourhood of Lewes, has discovered the means of avoiding this destructive principle, by the use of which he proposes to secure the wheat, at a small premium, from this noxious enemy.

An exotic sheep of a very singular appearance was offered for sale in Smithfield market. It was of a gaunt shape, it had four horns, was spotted like a dog, and the natural cloathing also much resembled the hair of the canine species.

This being a very plentiful season for grapes, the bunches may be very much aided in ripening, by being put in roomy bags of fine paper, first oiled with linseed oil, which will also preserve them from wasps and from frost.

The spirit of improvement is rapidly extending itself in South Wales: in addition to the various instances lately noticed, an intended application to Parliament has been announced, for an Act to improve the port, quays and docks at Carmarthen, and for several other purposes.

On the 12th of Sept. an oak tree, upwards of 200 solid feet, perfectly sound, and of a dark blue colour, was taken out of the earth in the grounds of Sir R. Cavendish, Bart. of Doveridge, Derbyshire, on the banks of the river Dove; it is supposed to have lain there ever since the deluge.

A Gentleman of Dublin has been offered *eight thousand guineas, by one person for a crop of nine acres of Egyptian wheat*, which was recently standing.

There is now in a garden at Collington, near Edinburgh, an apple tree which has blossomed thrice this season. The first is nearly ripe, the second set, and the third in blossom. There was, likewise, taken from a field at the same place, a stalk of oats which produced 243 grains.

There is an account of a cabbage, reared by a gentleman near Manchester, weighing 78 pounds. Such an astonishing event must necessarily occasion no small degree of curiosity among the Sons of the Thimble.

The Society of Florists for the improvement of the English marygold, held their first meeting at Mr. W. Dickinson's, Queen-street, Sunderland, when Mr. T. Arlot was first and second in the first class, with Sir John Barley-corn, and Glory of Monkseaton; Mr. T. Turnbull with Turnbull's Miss Toad; Mr. John Butterwick first, second, and third, in the second class, with Glory of Hendon, Vallies of Love, and the Royal George; Mr. Arlot first, second, and third, in the third class, with Seek no Farther, Ton-knot, and Who-would-have-thought-it. Mr. Thomas Turnbull first in the fourth class, with Turnbull's Victory; Mr. F. Arlot, second, and third, with Incomparable and Nonesuch; and Mr. F. Arlot, first,

second, and third, in the fifth class, with Arlot's Delight, Favourite and Defiance.

We have thought it worth while, for the information of our friends in their market transactions, to quote from the official account of the intended regulations in the Stamp Duties on Bankers' Notes and Bills of Exchange.

PROMISSORY NOTES for the Payment of Money to the Bearer on Demand, (which may, within three years after the date thereof, but not at a later period, be re-issued from time to time after payment at any place) not exceeding

1 Guinea	—	—	3d
to 2 Guineas	—	—	6d
to 5 Guineas	—	—	9d
to 20 Pounds	—	—	12d

BILLS of EXCHANGE, Draft, Order, or Note, payable on Demand.

From 40s. to 5 Guineas	—	—	8d.
The same, other than on demand	—	—	1s.
to 30 Pounds	—	—	1s. 6d.
to 50 ———	—	—	2s.
to 100 ———	—	—	3s.
to 200 ———	—	—	4s.
to 500 ———	—	—	5s.
to 1000 ———	—	—	7s. 6d.
Upwards	—	—	10s.

Exemption.—Drafts and Orders for the payment of Money to Bearer on Demand, upon any Banker, or person acting as a Banker, and residing or transacting the Business of a Banker within 10 miles of the place at which such draft or order shall be drawn or given, and which place shall be expressed in or upon such draft or order.

Prices of Raw Hides, Hay and Straw, &c. for September, 1804.

	First Week		2d Week		3d Week.		4th Week.	
	s.d.	s.d.	s.d.	s.d.	s.d.	s.d.	s.d.	s.d.
Raw Hides.								
Best Heifers & Steers, pr ft.	3 8	to 4 4	3 8	to 4 4	3 8	to 4 4	3 8	to 4 4
Middling — —	3 4	to 3 6	3 4	to 3 6	3 4	to 3 6	3 4	to 3 6
Ordinary — —	3 0	to 3 2	3 0	to 3 2	3 0	to 3 2	3 0	to 3 2
Market Calf — —	10 6		10 6		10 6		10 6	
Eng. Horse — —	14s	to 17s	14s	to 17s	14s	to 17s	14s	to 17s
Pelts — — —	2 0	to 2 9	2 0	to 2 9	0 0	to 2 6	2 6	to 3 6
Lamb Skins — —	3 0	to 4 4	3 0	to 4 4	3 0	to 4 6	2 6	to 4 0
Prices of Hay and Straw.								
St. James's—Hay —	3 15 0		3 17 6		3 17 6		3 14 0	
Straw — —	1 17 6		1 16 0		1 19 0		1 16 9	
Whitech.—Hay —	4 12 6		4 8 0		4 0 0		4 0 6	
Clover — —	5 8 0		5 10 0		5 6 6		4 17 6	
Straw — —	1 12 6		1 18 0		1 17 0		1 12 0	
Newbury.								
Wheat — — —	44s	to 70s	50s	to 76s	50s	to 86s	54s	to 89s
Barley — — —	35s	to 36s	32s	to 35s	36s	to 38s	36s	to 38s
Oats — — —	25s	to 31s	27s	to 31s	24s	to 31s	24s	to 32s
Beans — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s
New ditto — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s
Peas — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s
Salisbury.								
Wheat — — —	70s	to 78s	7s	to 78s	68s	to 76s	68s	to 76s
New ditto — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s
Barley — — —	34s	to 40s	34s	to 38s	30s	to 36s	30s	to 36s
Beans — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s
Oats — — —	28s	to 34s	28s	to 31s	26s	to 32s	26s	to 32s
Peas — — —	—s	to —s	—s	to —s	—s	to —s	—s	to —s

Prices of Hops, Meat, Seeds, Leather, Tallow, &c. for September 1804.

<i>Price of Hops.</i>		<i>First Week</i>		<i>2d Week</i>		<i>3d Week</i>		<i>4th Week</i>	
<i>Bags.</i>		<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>	<i>s.</i>
Kent	—	64 to	74	70 to	80	60 to	75	60 to	82
Suffex	—	60 to	70	66 to	75	60 to	70	70 to	80
Essex	—	60 to	72	66 to	75	60 to	70	70 to	84
<i>Pockets.</i>									
Kent	—	70 to	88	70 to	88	65 to	80	76 to	90
Suffex	—	70 to	84	66 to	84	65 to	75	70 to	84
Farnham	—	80 to	112	106 to	140	80 to	105	100 to	126
<i>Seeds.</i>									
Red Clover per cwt.	—	30 to	94	20 to	90	30 to	95	30 to	95
White Clover, ditto	—	30 to	100	40 to	100	30 to	100	30 to	100
Trefoil, ditto	—	24 to	32	20 to	35	20 to	35	20 to	35
Caraway ditto	—	68 to	72	72 to	75	75 to	80	80 to	84
Coriander ditto	—	12 to	14	12 to	14	12 to	13	11 to	13
Turnip, (per bushel)	—	12 to	22	14 to	22	14 to	24	14 to	24
White Mustard Seed	—	8 to	10	8 to	10	8 to	10	8 to	10
Brown ditto	—	12 to	16	12 to	16	12 to	16	12 to	16
Canary Seed	—	7 to	8	7 to	8	7 to	8	7 to	8
Rape Seed, (per last)	—	780 to	820	780 to	820	780 to	820	760 to	840
<i>Meat at Smithfield,</i>									
To sink the offal, p. st. 8lb.		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Beef	—	4 4 to	5 4	4 4 to	5 4	4 0 to	5 0	4 4 to	5 4
Mutton	—	4 6 to	5 4	4 6 to	5 4	4 4 to	5 0	4 6 to	5 4
Veal	—	5 0 to	6 6	5 0 to	6 6	5 0 to	6 4	5 0 to	6 8
Pork	—	4 8 to	5 4	4 0 to	5 4	2 8 to	4 0	4 4 to	5 8
Lamb	—	4 8 to	5 4	4 8 to	5 4	5 0 to	6	4 4 to	5 4
Head of Cattle—Beasts about		4,000		2,000		2,000		1,500	
— Sheep		20,000		20,000		22,000		2,000	
<i>Price of Leather.</i>		<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Butts, 50lb. to 56lb. each		23 to	24	23 to	24	22½ to	23½	23 to	23½
Ditto, 60lb. to 65lb. each		24 to	25	24 to	25	25 to	26	— to	26
Merchants Backs	—	— to	22½	23 to	23½	22 to	22½	22 to	22½
Dressing Hides	—	22½ to	23½	23 to	25½	23 0 to	25½	22 to	23
Fine Coach Hides	—	23 to	24	23½ to	25	22 to	23	24 to	25½
Crop Hides for cutting	—	23 to	24	23 to	24	23 to	24	22½ to	23½
Flat Ordinary	—	22 to	23	22 to	23	22 to	23	22 to	23
Calf Skins, 30 to 40lb. p. doz.		23 to	34	28 to	34	33 to	36	34 to	36
Ditto, 50lb. to 70lb. do.		28 to	31	28 to	31	33 to	36	33 to	35
Ditto, 70lb. to 80lb. do.		27 to	30	27 to	30	30 to	32	30 to	32
Sm. Seals (Greenland)		45 to	50	45 to	50	45 to	50	45 to	50
Large do.		51 to	71 10s	51 to	71 10s	51 to	71 10s	51 to	71 10s
Tanned Horse Hides		18s to	32s	18s to	32s	20s to	32s	20s to	32s
Goat Skins per doz.		—s to	—s	—s to	—s	—s to	—s	—s to	—s
<i>Price of Tallow.</i>		<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
St. James's Market	—	4	6	4	4½	4	4	4	5½
Clare Market	—	4	6	4	6	4	4½	4	5
Whitechapel Market	—	4	5	4	5	4	3½	4	4½
Per Stone of 8lb. Average		4	5½	4	5	4	4	4	3
Town Tallow	—	76	6	75	0	74	0	75	0
Russia ditto (Candles)	—	74	0	73	0	73	0	73	0
Russia ditto (Soap)	—	69	6	69	0	69	6	69	0
Melting Stuff	—	60	0	60	0	61	0	60	0
Ditto rough	—	42	0	42	0	42	0	42	0
Graves	—	4	0	14	0	14	0	14	0
Good Dregs	—	11	0	11	0	11	0	11	0
Yellow Soap	—	82	0	82	0	82	0	82	0
Mottled ditto	—	90	0	90	0	90	0	90	0
Curd ditto	—	94	0	94	0	94	0	94	0
Candles, per dozen,	—	12	0	12	0	12	0	12	0
Moulds	—	13	0	13	0	13	0	13	0

AVERAGE PRICES OF CORN, by the quarter of eight Winchester bushels; and of OATMEAL, per boll, of 140 pounds Avoirdupoise:
From the Returns received in the Week, ended SEPTEMBER 14, 1804.

INLAND COUNTIES.

COUNTIES.	Wheat.		Rye		Barley.		Oats.		Beans.		Peas.		Oatmeal.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Middlesex	69	8	38	5	36	10	30	7	40	6	44	10		
Surrey	75	0	41	0	38	0	30	0	42	0	45	6		
Hertford	57	8	37	9	29	9	24	9	32	0	37	3		
Bedford	60	6	33	11	31	9	25	6	40	11	41	8		
Huntingdon	54	11			28	0	22	3	35	3				
Northampton	53	8			32	3	27	3	38	6				
Rutland	61	6			30	0	24	0	34	0			57	3
Leicester	59	11			32	3	24	10	34	10			36	10
Nottingham	67	5	38	0	30	0	27	8	40	6				
Derby	74	4					28	10	46	0			33	4
Stafford	64	3			35	0	29	2	48	11			40	10
Salop	59	2	42	8	37	0	27	6	48	0			66	4
Hereford	58	6	35	2	39	10	29	2	44	2	43	6	60	1
Worcester	58	5			40	5	31	7	46	6	44	6		
Warwick	67	2			41	6	31	8	50	4			48	9
Wilts	66	8			38	0	28	2	49	0	41	0		
Berks	71	0	48	0	36	6	28	6	44	0	43	4		
Oxford	66	5			36	1	29	3	40	0	44	4		
Bucks	62	8			36	9	28	8	39	2	41	3		
Brecon	63	11	40	0	38	4	24	0					38	9
Montgomery	56	10					23	5					52	11
Radnor	60	7			38	8	27	4					78	5

Maritime Counties.

Essex	68	8	38	6	35	2	32	0	38	6	41	0		
Kent	65	1	39	0	37	10	30	0	40	0	42	0		
Suffex	66	0			36	0	32	4					48	9
Suffolk	64	3			32	0	30	3	36	5	41	7		
Cambridge	58	10	35	0	20	0	22	2	36	8	37	0		
Norfolk	52	5	33	6	30	4	23	7	33	6	38	10		
Lincoln	61	9			31	1	26	5	41	0				
York	66	11	39	9	29	8	25	9	44	3			47	0
Durham	68	9					25	9						
Northumberland	59	8	39	7	30	0	26	1					20	0
Cumberland	63	2	45	10	31	5	27	8						
Westmorland	73	4	44	8	30	10	28	10					20	10
Lancaster	68	7					26	8	42	10	39	0	21	8
Chester	67	2											23	8
Flint	52	8			32	0	22	8						
Denbigh	69	8			40	6	25	8					45	10
Anglesea					28	0	19	0						
Carnarvon	63	0			30	8	20	6					42	11
Merioneth	70	5	48	0	38	0	25	4					39	9
Cardigan	52	11			27	0	20	0						
Pembroke	60	3			38	8								
Carmarthen	58	6			33	10								
Glamorgan	71	11			35	6	22	10						
Gloucester	61	7			39	7	26	2	44	0	42	8		
Somerset	67	5					28	11			50	6		
Monmouth	72	1												
Devon	72	5			31	9	29	6						
Cornwall	67	10			36	2	23	7						
Dorset	72	6			30	5	30	5	45	0				
Hants	68	10			30	5	30	5	39	11				

LONDON PRICES OF GRAIN for *September, 1804.*MARK-LANE, *Monday, September 3.*

Most kinds of Grain felt a farther depression on Wednesday and Friday, but to-day, owing to a short supply, rather better prices were obtained, particularly for Wheat of prime quality. We had some new Rye for seed at Market, which fetched more money than is stated in our currency. Barley comes in short supply, and is dearer. Malt is heavy, and but little in demand. Beans are dearer; but in Pease we have no material variation. The few arrivals of Oats of late, with a scarcity of those of fresh and good quality, has occasioned a further advance in that article. Flour is cheaper.

Price of Grain, on board Ship, as under.

Wheat	50s to 66s	Malt	65s to 72s od	Grey Peas	36s to 42s od
Fine	68s to 75s od	Oats	26s to 31s	Beans, new	40s to 45
Rye	38s to 42s	Polands ditto	—s to 33s 6d	Old ditto	—s 46
Barley	30s to 35s od	White Peas	40s to 45s od	Ticks	33s to 38

Monday, September 10.

We had a very circumscribed supply of English Wheat for to-day's consumption, and not much of foreign; this, added to the attendance of a pretty many buyers, produced an advance of 2s. and 3s. per quarter. New Rye fetches the price specified in our currency below. Barley is cheaper; but fine Malt, as well as Horse Beans and Ticks, are all dearer. Grey Pease are likewise something higher, but the other sorts remain without any noticeable variation. Oats still come sparingly to Market, and in consequence are dearer, and but few sales effected.

Wheat	52s to 71s	Malt	66s to 72s od	Grey Peas	38s to 41s od
Fine	72s to 74s od	Oats	22s to 27s	Beans, new	40s to 42s od
Rye	30s to 33s od	Polands ditto	28s to 29s od	Old ditto	45s od
Barley	30s to 35s od	White Peas	40s to 46s od	Ticks,	30s to s 40od

Monday, September 17.

Our supply of Wheat for this morning's Market has been short, and from that cause, prices have advanced full 2s. per quarter since last Monday. Barley is rather cheaper, but there is little fluctuation in Malt. Horse and Tick Beans are rather dull, but new White Pease of prime quality (Suffolks) are dearer. We have considerable arrivals of foreign Oats, with some English, which have rendered that article cheaper by 2s. and 3s. per quarter. In other articles, not named above, there is no particular variation.

Wheat	56s to 74s	Malt	64s to 70s od	Grey Peas	38s to 42s od
Fine	75s to 78s od	Oats	23s to 28s	Beans, new	34s to 40s od
Rye	38s to 42s od	Polands ditto	29s to 30s 6d	Old ditto	43s od
Barley	29s to 34s od	White Peas	43s to 47s od	Ticks	30s to 35s od

Monday, September 24.

In the article of Wheat, our supplies have been considerable, yet the quantity of fine was so short in comparison with second and ordinary, that the former was this morning 2s. per quarter dearer than last Monday; the latter, however, were dull of sale, and with no amendment in price. Barleys and Beans acquired rather more money, but Rye, Malt, and Pease, remain at nearly last currency. We have plenty of Oats; the fine maintain their prices, but the inferior are dull, and rather lower. Flour as last.

Wheat	54s to 70s	Malt	68s to 74s od	Grey Peas	37s to 40s od
Fine	72s to 75s od	Oats	24s to 29s	Beans, new	33s to 39s od
Rye	33s to 36s	Polands	30s to 31s od	Old ditto	42s od
Barley	52s to 37s od	White Peas	40s to 46s od	Ticks	30s to 38s od

PRICES OF COALS AT THE COAL EXCHANGE, LONDON,
For SEPTEMBER, 18c4.

Names of Coals.	Wed	Frid.	Mon.	Wed	Frid.	Mon.	Wed	Frid.	Mon.	Wed	Frid.	Mon.
	5th s. d.	7th s. d.	10th s. d.	12th s. d.	14th s. d.	17th s. d.	19th s. d.	21st s. d.	24th s. d.	26th s. d.	28th s. d.	Mon s. d.
Adair's Main	47	47	47				47 6	47 6				
Baker's Main												
Bedford Main												
Benton	47 6	47 6			46	50	49	49		49 6		
Biddick Main				49 6		48 6						
Bigg's Main	51	50 6					52	52		52 6		
Bladon Main												
Blyth	41 6											
Boundry												
Bourn Moor		45 6	46			47	46	46		47		
Brandling		45 6								47		
Bowes Main												
Byker												
Bedford												
Chous												
Cowpen	47	47	46 6		43 6	48 6	48	48				
Eden Main	40					47 6				48		
Eighton Main					44							
Flatworth												
Greenwich Moor												
Harraton												
Hartley	47			46		44						
Heaton Main	51	50 6								52 6		
Hebburn Main	51 6	49		51 6	51 6	52	52	52		51		
Holywell	42 6					47	47 6	47 6		43 6		
Kenton Main		51	51		51 6	52				49 6		
Montague Main		40										
Murton												
Murton Moor												
Newbottle												
New Tansfield												
Old Ducks												
Primrose												
Pitt's Tansfield M.	47 6			47 3		48	47 6			48		
Percy		50 6	51	48 6			51 6	52				
Rectory										50 6		
Ruffel's Main										44		
Simpsons Pontop		47		44 6		47 6	47	47				
Sheriff Hill								41				
South Moor		36 6										
Stanley Main												
St. David												
Team								52				
Temple	50 9		50			48 6				52 6		
Percey					51 6							
Tyne Main												
Eighton												
Walbottle Moor	39 6											
Walker		45 6			48	48 6				51 0		
Wall's End			52 6	52 6			53 6			54		
Willington	51	50 6		51 6	51 6	52	52	52		52 6		
Windsors Pontop		47				47 6	47	47				
Wylam Moor		45 6								43		
Wentworth												
Whitefield												
Wooler Main												
Warwick Main												
Warwick												

Nothing done.

TO OUR CORRESPONDENTS.

THE Communication of Chorographus was too late for insertion in the present month, being subsequent to the 18th inst. which is after the time we have been under the necessity of prescribing to our Correspondents.

We have received a letter from Veterinarius Alter, in which he has stated some general objections to the principles or practice recommended by Veterinarius. Although we have not lately had any Communication with the latter, (and regret the loss of his Assistance in the present Number) we have no doubt, if V. A. will condescend to point out the nature, object, and foundation of his objections, Veterinarius will gladly join in any cool and dispassionate inquiry; but, at the same time that we would court and invite the Talents of V. A. we must require that they should be exhibited in a form more suited to publication than that in which they appear in his last letter.

R. C., Rusticus, Topographus, Arbustivus, F. L. and G. B. are under consideration.

The Disquisition on Tythes, from Clericus, we have been exceedingly sorry to exclude, but we cannot undertake in our Rural Magazine, through every Number, to revive a subject so political in its tendency. It shall, however, not be neglected some more favourable opportunity: in the mean time, we acknowledge our obligations to the learned Author.

F. L., R. S., Plato, and Seneca Redivivus, we are under the necessity of rejecting, whatever may be the merit of the Communications, they being wholly unsuited to the nature and design of our undertaking.