

RARE BOOK
SF
377
.B116
1808

THE
ORCHARDIST:
OR, A
SYSTEM OF CLOSE PRUNING AND
MEDICATION,
FOR ESTABLISHING THE
SCIENCE OF ORCHARDING,
AS PATRONIZED
BY THE SOCIETY FOR THE ENCOURAGEMENT OF
ARTS, MANUFACTURES, AND COMMERCE.

BY
THO. SKIP DYOT BUCKNALL, Esq.

*Extracted from the 11th, 12th, 13th, and 14th Vols. of
the Society's TRANSACTIONS, with Additions.*

LONDON:

PRINTED FOR G. NICOL, BOOKSELLER TO HIS
MAJESTY, PALL-MALL.

1797.

National Oceanic and Atmospheric Administration

Rare Books from 1600-1800

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages
Faded or light ink
Biding intrudes into text

This has been a co-operative project between NOAA central library, the Climate Database Modernization Program, National Climate Data Center (NCDC) and the NOAA 200th Celebration. To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x 124 or at Library.Reference@noaa.gov

HOV Services
Imaging Contractor
12200 Kiln Court
Beltsville, MD 20704-1387
April 8, 2009

TO THE RIGHT HONOURABLE
JAMES BUCKNALL GRIMSTON,
BARON VERULAM,
LORD VISCOUNT GRIMSTON.

MY LORD,

As your Lordship gives a steady attention to all the parts of Agriculture which can produce either pleasure, profit, or emulation; I take the liberty of dedicating the Orchardist to your Lordship.

Much of my time has been engaged in the planning, methodizing, and introducing to the Public a valuable and extensive branch of rural, or rather domestic, economy. In the seven years

DEDICATION.

in which it has been practised, enough has been done to prove the absolute utility of the method; and under your Lordship's patronage, I have no doubt the system will be brought into general repute.

I have the honour to be,

My Lord,

Your Lordship's

most obedient servant,

THO. SKIP DYOT BUCKNALL.

*Hampton Court,
9th December, 1796.*

THE ORCHARDIST.

The SILVER MEDAL and THANKS of the Society were voted to THOMAS SKIP DYOT BUCKNALL, Esq. for the following Observations relative to the

PRUNING OF ORCHARDS.

SIR,

THE great improvements this country has received by the institution of the Society for the Encouragement of Arts, Manufactures, and Commerce, giving an emulation to gentlemen to come forward, and communicate whatever may have a tendency to benefit the public, make me desirous of laying before the Society some hints on the pruning Orchards, which subject appears to me to have been greatly neglected; but is capable of being metho-

dized into a system to suit the meanest capacity, and does not require the skill of a gardener; being reducible to a few general heads, concentrating in the principle of making every tree in an orchard healthy, round, large, and beautiful.

How far the hints may be worthy of the patronage of the Society, I cannot say; but should feel myself highly gratified, if they could gain a place in their useful publications; for by that means they will become known in the country, and, if put in practice, would in great measure remove from the London markets the quantities of speckled and stunted fruits constantly seen there; which in a great degree arises from the trees being overloaded with wood, that, obstructing the rays of the sun, causes an almost perpetual vapour, the cold of which, in the spring, stunting the fruit in the first growth, the evil must remain, let the weather set in ever so fine afterwards.

Every costermonger knows it is the fine fruit which sells the orchard; for, of the inferior sorts, many bushels do not produce above a penny to the grower, after the expences of gathering and bringing to market are borne. The following experiment was made in the spring and autumn of 1790, on six acres of land fully planted with apples and cherries, on an old hop-ground, at Sittingbourne, in the county of Kent; and although the lease had eighteen years to run, I put myself to near £10. expence, merely to shew the tenant what could be done, and which has fully answered the intended purpose.

If this has the honour of meeting with approbation, it may give an emulation in the country upon a subject almost overlooked, yet which is of essential concern; and if, by example, I can prove the present method erroneous, a little experience will insensibly lead to perfection; and then the practice will become general

over the kingdom, and very properly comes under the article Agriculture; the various improvements of which owe their rise to useful hints, stimulated by the encouragement of the Society.

I subscribe myself,

SIR,

Your most humble servant,

THOS. SKIP DYOT BUCKNALL.

Conduit-street.

Mr. MORE.

SIR,

I NOW trouble you with a short recital, for the inspection of the Society for the Encouragement of Arts, Manufactures, and Commerce, on the pruning Orchards. I shall hereafter be assiduous in collecting useful hints from real practice, to throw the HUSBANDRY OF ORCHARDS under proper regulations, that the subject

may become worthy the attention and patronage of the Society.

I am, SIR,

Your most humble servant,

THOS. SKIP DYOT BUCKNALL.

Conduit-street.

Mr. MORE.

Observations on pruning Orchards.

THE bark of trees, properly considered, consists of three divisions; the outer, rough; the middle, soft and spongy; the inner, a whitish rind, being that which joins the bark to the wood; and this last is supposed to contain the liquid sap. It is constantly observed, that when the stem of the tree grows too fast for the bark, it causes blotches and lacerations; which evil is properly avoided by scoring the bark with a sharp knife: but care should be taken not to cut through the whitish rind before mentioned; for that

heals very difficultly, generally ulcerates, and by being cut through, gives the insects* an opportunity of getting between the wood and the bark, where they are very destructive.

Any surgeon knows that a wound extending to the fine membrane, covering the bones of the human body, requires much more skill to cure than a flesh wound; and the case is similar.

Pruning is an important article with regard to the health of trees, and their bearing; and if judiciously done, they will come into bearing sooner, and continue in vigour for nearly double their common age: but the systems of pruning are so wordy, that the common farmer cannot understand them, and the gardener thinks the orchard beneath his care,

* Insects, such as ants, earwigs, and many species of millepedes, with numerous microscopic creatures, of which I know no name; but each of which obstruct the healing of the wounds, by their constant eating and fretting the tender bark.

for which reason it is left to nature and the winds; for the farmer, afraid of doing wrong, never troubles himself about it, unless, seeing a branch half broken, he takes his bill and knocks it off, perhaps four or five inches from the trunk, leaving an unsightly stump. Do not imagine this is intended as any reproach; for there are no set of men who spend their time more judiciously in their vocation, but they cannot run into speculations; if they did, little rent would be paid. I give no attention to fruit branches and wood branches, as being unnecessary in the present instance; and beg once for all, that no branch shall ever be shortened, unless for the figure of the tree, and then constantly taken off close at the separation, by which means the wound soon heals. The more the range of the branches shoot circularly, a little inclining upwards, the more equally will the sap be distributed, and the better will

the tree bear; for, from that circumstance, the sap is more evenly impelled to every part. Do not let the ranges of branches be too near each other; for remember, all the fruit and the leaves should have their full share of the sun; and where it suits, let the middle of the tree be free from wood, so that no branch shall ever cross another, but all the extreme ends point outwards.

The best compliment your neighbour can make is, that your trees are handsome, but too thin of wood: be it so; and you may say, True, farmer, but I have the best price at market, and that will always be the sure test of perfection.

My tenant, Mr. Boulding, planted the orchard in 1772: being on a rich soil, it throve surprisingly. That vigorous growth occasioned the after decay of the trees; for the wind having great power over them, split them down; the ladders, in gathering, broke them; the wood

being soft, many causes concurred to injure them; and the injudicious manner in which the lacerations were taken off, added to the evil; for there generally follows gum from a wound, which being sweet in fruit-bearing trees, the wound becomes filled with vermin, which obstructs the healing, by their constantly eating and fretting the young bark.

Being informed of the situation the orchard was in, I went down in the spring of 1790, and found the branches so intermixed and entangled together, that in many places they had cut each other nearly half through, causing wounds and blotches; which, on the return of the sap in the spring, always affects the leaves, by inclining them to curl, and is a proof that the sap is vitiated.

Having examined the circumstances, I told the tenant I would come down in the autumn, when proper persons must be found to execute the business, and we

would reinstate the orchard, and bring it to its former splendour; for it should be observed, the orchard used to be much admired. Accordingly, I went the first Tuesday in November, and for two hours walked over the ground with the men, instructing them what I would have done, that we might begin the next morning, work with spirit, and lose no time. We had saws, bills, and knives prepared on purpose; and, though I am a good hand myself, soon perceived neither of us could cut true enough with a bill to take off the branch, without leaving a stump or improper wound; for it is essentially necessary that every branch should be cut perfectly close and smooth; for which reason we took the saws, and afterwards smoothed the place with a knife. My servant's business was, with a painter's brush to smear over the wounds with a medicated tar, hereafter described.

It is impossible the bark can grow over

a stump, because there is no power to draw the sap that way; for which reason always cut a little within the wood. I was constantly directing to cut quick, close, and smooth: we kept together, first walked round the tree; then I pointed out every branch that came near to the ground or had received any material injury, or where the leaves were much curled; for where the leaves curl, the fruit is always specky; and every branch, which had the least tendency to cross the tree or run inwards, was taken off. Then we gave a little attention to the beauty of the head, leaving all the branches as nearly equi-distant as possible: next we examined if there were any remaining blotches, opening or scoring them with the knife; and where the bark was ragged from any laceration, paring it gently down till we came to the live wood. Each of these was touched over with the medicated tar.

Having gone thus far, we should have rubbed off the moss and scored the trees : but I had not time for that part of the business ; I only wish I had secured a person on purpose. In the cutting we followed the surgeons rule : go to the quick, but do not wantonly make any wound larger than necessary.

We sometimes had our doubts whether a particular branch should be taken off. The idea I brought it under was this : consider whether it will be in the way three years hence ; if it will, the sooner it is off the better.

When trees are much thinned, they are subject to throw out great quantity of young shoots in the spring, which I requested the tenants to be particularly careful to rub off : it is necessary that they be rubbed, and not cut ; for cutting increases the number.

As our work drew near a conclusion, one of the tenants said, We understand

our business so well, that I wish we had another job; upon which my servant observed, You had better keep in your own parish, for the people are much dissatisfied. The truth is, we had no comforters; for the country was against us. If the land had been under my own culture, I should have taken off half as much more; but I did not choose to offend the persons whom I wished to instruct.

I went down again in the spring of 1791, to see the effect, and found the tenants much pleased with the operation, and did not find one wound in an hundred but what was in a clear healing state: and the healing of the wounds is the business; for nothing but prejudice can make a person think, that a tree overloaded with wood will produce good fruit: you may as well expect a crop of large turnips without hoeing; and I am in great hopes that pruning will become as general as hoeing; and I am sure it is as necessary.

The medicated tar above mentioned, as used in the foregoing experiments, was composed of one half of an ounce of corrosive sublimate, reduced to fine powder, by beating with a wooden hammer, and then put into a three-pint earthen pipkin, with about a glass full of gin, or other spirit, stirred well together, and the sublimate thus dissolved. The pipkin was then filled, by degrees, with vegetable or common tar, and constantly stirred, till the mixture was blended together as intimately as possible; and this quantity will, at any time, be sufficient for two hundred trees.

To prevent danger, let the corrosive sublimate be mixed with the tar as quickly as possible, after it is purchased; for, being of a very poisonous nature to all animals, it should not be suffered to lie about a house, for fear of mischief to some part of the family.*

* We find the sublimate dissolves better, when united with the same quantity of spirit of hartshorn,

SIR,

THIS is to certify, that our father planted the orchard about the year 1773, on an old hop-ground, with apples and cherries, and took great care of it; and the trees grew wonderfully; but by being suffered to run with little pruning, and the branches breaking by the wind and other causes, the trees became galled, and were decaying; which being mentioned to our landlord, Thomas Skip Bucknall, Esq. he came down the first Tuesday in November, 1790, and walked over the orchard with us, and an experienced woodman, for two hours; giving his instructions how he would have the work done; and we began at daylight the next morning, and kept constantly to our work until the Saturday night following.

or spirit of sal ammoniac; perhaps the best way.
Desire the apothecary to mix it with the tar.

The progress was thus: we stood and examined the tree, then cut out every branch any way decayed or galled, or where there appeared any curled leaves. That being done, we thinned the tree to give it a uniform head, and that the air and sun might freely pass through: afterwards, we took off all the stumps which had been injudiciously cut before. We never shortened a branch, but took it off close to where it shot out from the other part of the tree.

Mr. Bucknall constantly attended, and was determined that we should cut close, smooth, and even, holding the left hand under the branch, that it should not shiver the bark. We also took off every branch which crossed the tree, leaving none but those whose extreme branches tended outwards. We were sometimes in doubt whether a branch should be taken off or not. The rule Mr. Bucknall established was, Consider, will that

branch be in the way three years hence : if it will, the sooner it is off the better ; and it is surprising how soon we got into such a method, that we went on with as much unconcern, as with any of the common labours of the field. A servant was employed to smooth, with a knife, all the places where the saw had been, and to rub them over with the medicated tar ; and that was done directly, that the wind should not dry or split the wood. Formerly, when we used to take off a large branch or two, the wounds generally cankered ; which made us leave them in the encumbered state they were in, rather than run any hazard ; but, to our great surprise, the wounds, after this operation, all healed ; which we can no otherway account for, but from what Mr. Bucknall says, that the medication destroys the vermin, and by cutting quite close to the remaining branch, the flow of the sap draws the sides of the wounds

together. Be that as it may, the trees are perfectly healed; and we are so well satisfied, that we intend to thin some of the trees a little more next autumn, and strongly recommend the practice.

With regard to the fruit, last year was a failing year in the county; but we had as much as our neighbours, and the fruit was certainly clearer from specks. We were also directed to be very careful to rub off all the suckers which might come out in the spring, and did it accordingly. All the trees have bloomed exceedingly fine, and perfectly strong and healthy. Should any further circumstance occur, we will inform the Society of it. We are, with great respect,

SIR,

Your obedient humble servants,

ROBERT BOULDING.

JAMES BOULDING.

Sittingbourne, May 27, 1792.

Mr. MORE.

SIR,

THIS is to certify to the Society for the Encouragement of Arts, Manufactures, and Commerce, that, some time since, I apprised Mr. Bucknall, that his orchard, in the occupation of Mrs. Boulding, lying in this place, was in a very declining state; and in autumn, 1789, having some business with him, I again repeated to him my thoughts relative thereto; and that, if something was not done to recover the trees, I suspected that great part, if not all of them, would certainly die. In the following spring, Mr. Bucknall came to Sittingbourne, and pointed out to the Mr. Bouldings (Mrs. Boulding's sons) and myself, that where there was any blotch on the tree, or the bark, severed therefrom, the wound was full of vermin; which, he said, was the cause of the trees doing so badly; and

thereupon undertook to prune one of them, and used a medicine he bought in the town ; but soon breaking his knife little was done. He said, he could easily reinstate the trees, and bring them to health ; and, if Mrs. Boulding would find three or four men, that he would come down again and prune them, and would be answerable the trees should not sustain any injury.

Accordingly, when Mr. Bucknall came down again, and pruned the trees, I attended whilst several were done, and saw them all after they were done ; but must mention, in justice to my own veracity, that I thought they made the trees appear too much like scare-crows. But now the trees have good heads, and are very full of fruit ; I think, far beyond the crop in general ; and the wounds healed, except three or four cherry trees, which were so far gone, that Mr. Bucknall did not choose to touch them, but left them for example,

saying, "see the difference!" and they are now almost dead.

I have but one more observation to make, and that I wish to impress upon the minds of the Society : that, in walking over the orchard this day, there is no one branch shortened ; and I now see, that the merit of the pruning consists in destroying the vermin, keeping the branches at a due distance, and leaving the extreme shoots perfect, that the tree may grow as round and large as possible.

I have the honour to be,

SIR,

Your very humble servant,

BR. FAUSSETT,

Attorney at Law.

Sittingbourne May 27, 1792.

Mr. MORE.

SIR,

THIS is to certify, that I have been long acquainted with the orchards planted by the late Mr. Thomas Boulding, on the lands of Thomas Skip Bucknall, Esq. containing about six acres, situated in the parish of Sittingbourne; that the trees thrrove well for some time—I suppose, for the first ten or twelve years. After that time, many died; and many were wounded with the canker in the bark, from the bottom of the body even to the top arms: and the orchards, though in an infant state, seemed going very fast to decay (though as well managed as any in the neighbourhood the whole time). In November, 1790, Mr. Bucknall came to Sittingbourne, and was several days assisting and directing his own servants, and Mrs. Boulding's people, in pruning the trees. After pruning, a medical prepa-

ration was applied to the wounds: the the work seemed to be well done; but it was the opinion of many, that the trees were thinned too much.

I have several times since viewed the trees; and, by his desire, went over the orchards this morning. I find the greatest part of the trees in a very good thriving way: those that were in a very bad state seem recovering fast; the wounds in the bark, and those occasioned by pruning, are healing very fast. I am so convinced of the propriety of the treatment, that I intend practising the same myself. I beg my respects to the Society; and am,

SIR,

Your most humble servant,

JOHN LAKE.

Bapchild,
May 28, 1792.

Mr. MORE.

SIR,

IN answer to your request of the 13th ult. concerning the present state of the orchard which I now occupy, as tenant, and under the direction of Thomas Skip Bucknall, Esq.

The orchard is now in good condition; and, by experience, I highly approve of pruning the trees; though this last season was very unfavourable for all kinds of fruits, still the fruit, the produce of this season, far exceeds the quality of that of my neighbours. The Flemish cherry was every tree blighted, owing to the sharp frosty mornings, when in bloom; therefore produced no fruit this year. The produce of the English cherry, May-duke, amber-heart, Turkey-heart, white-heart, and black-heart, very large, fine, and plentiful, far exceeding that of my neighbours. The apples far exceed all this part of the county; the produce

plentiful, and very fine in quality; free from specks, and of a fine size: that of my neighbours, the produce small, fruit small, and very specky; therefore, of a very bad quality.

I am, SIR,

Your obedient servant,

ROBERT BOULDING.

*Sittingbourne,
Nov. 17, 1792.*

Mr. MORE.

SIR,

I BEG the favour of you to make my acknowledgments to the Society for the Encouragement of Arts, Manufactures, and Commerce, with many thanks for their attention to me, in adjudging their Silver Medal, as a reward for the assiduity I have shewn, to bring the pruning of Orchards to such a determined state as to make the trees healthy, beautiful, and productive.

I flatter myself that, from the proofs of the utility of the method, and the countenance it has received, an emulation will be excited in the country for bringing that branch of Agriculture to vie with others, which owe their rise to the honourable patronage given by the Society to every object which promises to produce any public utility.

I have the honour to be,

SIR,

Your most obliged humble servant,

THOMAS SKIP DYOT BUCKNALL.

*Hampton-Court,
Dec. 4, 1792.*

Mr. MORE.

The Thanks of the Society were this Session given to THOMAS SKIP DYOT BUCKNALL, Esq. for the following Communications on PRUNING ORCHARDS, in addition to those printed in the eleventh Volume of the Transactions.

SIR,

I HAVE been twice this summer to view the Orchards at Sittingbourne, and desire the favour of you to acquaint the Society for the Encouragement of Arts, Manufactures, and Commerce, that, to fulfil the promise conveyed in the memorial I did myself the honour of presenting to them, I now send further observations, to throw the husbandry of Orchards under such culture as to preserve the tree, and improve the fruit.

The appearances were much to my satisfaction, and I saw great reason to be

pleased with the operation of pruning ; yet several of the cherries were much gummed. I examined to see whether the gum was from fresh fissures, or those formerly medicated ; and, to a certainty, the former medications were perfectly healed ; and I did not observe, but that the cherry bears the knife very well, with the aid of the medication. I pointed out these circumstances to the tenants ; and desired they would look to them, and open the blotches which had affected the trees since pruning.

Mr. R. and J. Boulding informed me that the medication had been objected to, on account of the tar. I should not have thought this of consequence sufficient to mention to the Society, if it had not been represented by William Pattenson, Esq. in a paper published in the XIth Volume of their Transactions, that to smear the stems of trees with tar, to keep cattle from biting them, is injurious : certainly,

in the sense there conveyed, the observation is perfectly right; and to explain the difference, I must beg the indulgence of the Society; for to suffer any doubt to remain either in the science or practice, would entirely destroy the whole system.

THE FORMATION OF GUM.

From the stems and leaves of trees a constant and copious evaporation is regularly going on, as may be proved by the air-pump. Now any sudden check striking the tree stops the pores, and obstructing the perspiration throws all the sap into disorder; which soon becoming vitiated, and nature having no other way of relieving itself, forces a fissure through the bark, out of which oozes the almost stagnated sap, which, there condensing, becomes gum very soon; after which the bark, wanting its due portion of nourishment, begins to crack and split; from that time the tree runs fast into ruin.

Therefore any smearing, or other cause which may impede a just circulation and perspiration, must injure the tree; but the medication cannot produce any of these evils; for it is applied merely as a plaster, and is never extended further than on the bare wood, or torn bark, and where the gum is oozing through the bark. I desire to assure the Society, that in each of these cases, the medication, from its drying qualities, becomes supremely salutary, and the wounds heal in half the time they can do when exposed to heat, cold, moisture, and vermin: for the misfortune is, being left exposed, the wounds do not heal; there the evil lays.

Mr. Boulding, in his certificate, says, "When we took off a large branch or two, the wounds generally cankered; which made us leave them in the encumbered state they were in, rather than run any hazard."

Mr. Lake also remarked, "Many died;

“ others were wounded by a canker in
“ the bark, from the bottom of the body
“ to the top arms.” Mr. Fausset says,
“ I apprised Mr. Bucknall that his or-
“ chards in the occupation of Mrs. Bould-
“ ing were in a very declining state; and,
“ in autumn 1789, having business with
“ him, I again repeated my thoughts re-
“ lative thereto; and that, if something
“ was not done to recover the trees, I sus-
“ pected that great part, if not all of
“ them, would certainly die. He (Mr.
“ Bucknall) said he could easily reinstate
“ the trees and bring them to health,
“ and would come down for that purpose,
“ and be answerable the trees should not
“ sustain any injury; and he did come
“ down in the spring following.”

My agent Mr. Fausset, the tenants,
Mr. Lake, and the Bouldings, all concur
in saying that the trees were in an actual
state of decay (see page 19). This is a
circumstance necessary to be fully esta-

blished, as one may see they did recover, and wonderfully. This induces me to say, that from the certainty of success and easy application, the medication surpasses any thing for such pruning as Orchards require. Where trees have been so long neglected as to become hollow, I would recommend the composition prepared by Mr. Forsyth, because the hollow parts require a substance to fill them up; and I have the happiness of saying that Mr. Forsyth and I go on the same principle; each planning for the general good of society, and the improvement of art.

And, as I have long wished to introduce the name of Orchardist, I here desire it may take place; and for the encouragement of those who are willing to undertake the art, say, that it is easily learnt and highly pleasurable; for what can be a greater gratification, than to see nature improving under our hands?

It is a mistake to cut of the heads of

trees, and engraft them, merely to procure young wood; pruning being better; as an old tree cannot continue in health after such loppings: for the head being gone, the roots become inactive; and more mischief takes place out of sight than can be repaired in years. Taking off the head is not the mode for establishing health, unless you would wish to change the fruit. Do not attempt to force a tree higher than it is disposed to grow, for that will not improve the fruit: in cold and exposed situations, this injunction must be carefully attended to. The rule should be—keep the branches out of the reach of cattle, then let them follow their natural growth; for each different species of the apple, and other fruits, have a growth peculiar to themselves. With regard to general pruning, do it as soon as the fruit is off, that the wounds may tend toward healing before the frost comes on; but do not

suffer a broken or decayed branch to continue at any season.

If I may make use of an exploded idea, the substantial form of the tree is the same before and after pruning; that is, the tree continues of the same size, and all extreme shoots keep at the same distance, which is an improvement no one has brought into practice; for each person employs his strength to knock the heads of the trees to pieces, mutilating them, till he leaves the tree in a more decaying state than when he first attempted the pruning it. Having spoken thus freely, I must, in justice to the age, say, there are few professional men who are not expert at wall-fruit pruning; because, it being their profession, they attend to what they are about; and it is worthy of observation, how much the wall-fruit plantations have been improved within the last thirty years,

HINTS ON PLANTING.

The prevention of a disease is preferable to the cure; therefore, if possible, choose the trees the year before they are to be planted, and see that they are properly pruned in the nursery, by taking off, perfectly close, all rambling and unsightly branches, leaving the heads to three or four good leading shoots; from this forecast, the trees will not require pruning for some time, and, having no wounds to heal the year they are transplanted, will greatly accelerate their growth. Be sure the trees are young; and do not plant any galled, fretted, or cankered plants; for it is certain that there is a vapour arises from cankered trees, which affects the sound ones.

When the trees are taken up, keep the roots as long as is convenient, which will give them a disposition to run horizontally, from which, the roots being more

under the influence of the sun, the sap is richer, and produces the sweetest, fairest fruit. Prepare stakes before the day of planting, for the trees must be well staked and defended from cattle; and other precautions with which the planters are well acquainted.

Choose your ground carefully, that your plantation may be screened on the east, north, and west sides, and open to the south: and tell the nurseryman, that he must attend to the natural growth of the different fruits, and mark them, that they may be planted thus—one row of the tallest strongest growers on the three cold sides, and that row should be planted twice as thick as any other; then one row more of the next free-growers, parallel to the last rows; and so go on gradually, declining in size till you come to the centre.

What I mean by twice as thick, place a low rambling free-growing fruit-tree

between each of the other; for the intention here is to raise shelter; and it would be advisable, on the outside of these outer rows, to run a shaw or belt of underwood, more than a pole wide, of four or six rows of the freest growing trees which the country produces: be assured the wood will more than pay the expence. Observe, half of these trees forming the shaw should be cut down in about fourteen years, to become stools; the other half cut at a proper distance of time; so that the belt, for the whole duration of the orchard, shall be of young wood, and perfectly feathering down to the bottom. Were I to recommend, the shaws should be of sweet chesnut; and there are some beautiful slips of chesnut about three miles west of Maidstone. The hawthorn, likewise, properly trained, has a wonderful good effect in blunting or absorbing the baneful quality attendant upon the blighting air; and there are several fine

hedges of hawthorn planted for that purpose about Maidstone ; also at Mr. Fairman's, at Lynsted, and other places in the county of Kent ; which I beg those interested in the business would observe, to establish the principle of shelter, being more necessary than at present imagined.

Be not tenacious of the size or shape of the orchard ; for, in some situations, by taking a little more or less ground, much good may result. Before the ground is laid out, let the mind be active to secure the little risings or inflections, to catch the sun, and exclude the cold. The Scotch fir, or other valuable trees, may be happily introduced at a distance for shelter : all together would greatly protect the fruits in autumn, and embellish the appearance of the country.

Such a plantation may be expected often to bear a crop, when the whole neighbourhood fails ; and every one knows the value of a good crop in a failing year.

These ideas are on a large scale, for the supply of the London markets: and, though I can bring no proof that such an orchard exists, the hints here given are to point out, that position is an essential circumstance, both for the whole plantation, and every individual tree. Always remembering, local circumstances must govern the business: follow nature; that leads to pre-eminence.

If I have expressed this clearly, the Orchard will appear as it were inclosed on three sides: the larger trees are to keep off the blighting winds; and leaving the plantation open in the middle and to the south, is to dissipate the stagnant vapours which stunt the fruits in the spring; besides, the ground being open in the middle, the verdure or crop under the trees will be more valuable: this mode of planting will also appear handsome, and each tree enjoy the happiest influence of the sun and air. The custom of intermixing

fruit-trees by chance, is always unsightly and detrimental ; for the strong growers constantly stunt and spoil the more delicate fruits, by overtopping them ; whereas by this mode, the delicate fruits fall to the centre and the south.

In new plantations be careful not to place the trees too deep ; more mischief arises from that one source, than all the other combined causes : but when the trees are too deep, a method may be introduced for raising them, or for setting them upright when they lean ; also for making the barren trees fruitful, provided they are in high health ; if not, the sooner they are grubbed up the better. Also avoid planting too thick, for sunshine and shade are unalterably the cause of sweet and sour fruits.

When the top or pole of a tree separates, by the weight of the branches, bore with an half inch auger, a hole quite through the upper part of the cleff ;

and introduce an iron bolt, with head, nut, and screw ; first cutting the bark, and some of the wood, with a chisel, so as the head on one end, the nut and screw on the other, may be perfectly hid under the bark. Use the medication, and the bark will soon grow over the iron ; and this support will probably prevent the injury extending further. We this year so secured a large tree in Mr. Lake's garden, out of the cleff of which were taken more than a pint of snails, &c. I have no doubt if the bark is a little cut away, and the medication applied occasionally, but the cleff will perfectly close : and mention it for observation to those, who, under the same circumstances, may wish to preserve a valuable tree.

I have been careful in expressing the manual operations in a plain and short manner, that the practice might appear easy. As for the natural and philosophical accounts of the bark, the formation of

gum, the power of vapour, the advantages of warmth, &c. with the relative causes of decay in vegetation, I have entered more fully into them, in hopes of inducing gentlemen to take up the practice, and establish the profession of an Orchardist.

Lastly, I beg the Society not to deem any of these circumstances visionary ; for I have so long dwelt upon the subject, as to be fully persuaded of the efficacy of the whole practice ; and that it may be rationally expected from judicious pruning, that the crooked trees may be made straight, the sterile fruitful, and the old handsome ; as the power of nature may thereby be regenerated, the disease removed, all the branches supplied with young and bearing wood ; so that we may almost say, the causes of decay are banished : but to support these assertions, the trees ought from their earliest infancy to be in good hands, pro-

perly manured, and root pruning introduced.

I am, SIR,

Your obliged humble servant,

THOMAS SKIP DYOT BUCKNALL.

Hampton-Court,
15 Nov. 1793.

Mr. MORE.

*Orchardist's Tools recommended by Mr.
Bucknall.*

Two Pruning-knives, a Saw, two Chisels, a Mallet, a Spoke-shave, and a Painter's Brush. With the chisels and spoke-shave work upwards, or the bark will shiver: the saw must be coarse set, all the other tools sharp and smooth; and to shew the size and form of the pruning-knives, three are reserved in the Society's Repository for the inspection of the Public.

I have since introduced the blade-bone of a doe, to rub off the rotten bark, moss, &c. being better than the iron of the spoke-shave, as few persons have sufficient discretion not to cut too deep. I do not know the reason, but the bone of a doe is thinner and harder than any other animal, of the same size, I am acquainted with, and the thinness of the bone makes it the more proper for the purpose.

THE PREMIUMS OFFERED BY THE SOCIETY
TO ENCOURAGE PLANTING ORCHARDS.

74. To the person who shall plant an Orchard after the month of August in the year 1796, in the most judicious manner, not less than four acres, the **GOLD MEDAL**, or **FIFTY GUINEAS**.

75. For the next in merit, the **SILVER MEDAL**, or **THIRTY GUINEAS**.

The proof of the value of the improvement of the orchard, shall depend on the clear product of the greatest quantity of fine marketable fruit, to be produced during three successive years after the year 1812, and sold at any public market in England or Wales. Each person who proposes to become a candidate for these premiums, must send an account of the number of trees, their culture, pruning, and every circumstance which can in the least throw any light upon the subject; which information will be registered,

with a view to form a system of rational culture.

76. And that gentlemen may be induced to come forward, and make and preserve such plantations,—the person who can produce an ORCHARD which, at the end of three years after planting, shall shew the greatest promise of success, shall be entitled to the GOLD MEDAL, OR THIRTY GUINEAS.

The merits of the two first-mentioned premiums being to be ascertained by the fruit; the merit of the third premium must be ascertained by the judicious number of trees planted, the straightness, clearness, and freedom of growth of the several trees; and that all the young branches run free, and at due distances from each other, without any galling or canker.

Certificates of the forming the Orchard, the soil and aspect of the plantation, the sale and product of the fruit for which the claims for the premiums,

Classes 74 and 75, are intended to be made, must be delivered to the Society on or before the first Tuesday in November, 1815; and the Certificate in claim of the premium, Class 76, must be delivered to the Society on or before the first Tuesday in November, 1799.

N. B. However expert the Orchardist may be in general information and attention, much will depend on soil, exposure, culture, and an easy communication to convey the fruit to market; for every field, however valuable in other respects, may not be proper for an Orchard.

Any wood the Orchardist may choose to raise for shelter to such plantation, is not to be measured as part of the Orchard, as the wood will more than support its own expence.

** * * The candidates for planting all kinds of Trees are to certify, that the respective plantations are properly fenced and secured, and particularly to state the condition*

the plants were in at the time of signing such certificates.

Any information which the candidates for the foregoing premiums may choose to communicate, relative to the methods made use of in forming the plantation, or promoting the growth of the several Trees, or any other observations that may have occurred on the subject, will be thankfully received.

The Thanks of the Society were given to THOMAS SKIP DYOT BUCKNALL, Esq. for the following Communication relative to ORCHARDING; which may be considered as supplementary to his Papers on the same subject, already published in the Eleventh and Twelfth Volumes of their Transactions: and the Society, convinced that it will be of great advantage to have the Orchards in the several parts of the kingdom brought to the highest possible degree of perfection, have this year offered very considerable Premiums for that purpose. See Classes 74, 75, 76.

SIR,

I BEG you will convey my best acknowledgments to the Society for the Encouragement of Arts, Manufactures, and Commerce, for the regular attention they

E

have been pleased to shew to the Papers I have had the honour to lay before them, on the system of Close-pruning and Medication, as expressed in my letters, inserted in the Eleventh and Twelfth Volumes of their Transactions; and for the very handsome Premiums offered by them, in consequence of those communications: and I hope, like the other useful branches, which have been at first fostered, and then brought to perfection by their attentive care; this will produce elegance throughout the plantations of fruit-trees in the kingdom, and general good to the community at large.

In this I will add such further hints as may conduce to guard the planter from disappointment. Let it be observed, I do not retract in the least the stress I before laid on shelter, nor the necessity of the soil being well chosen, a good loam, if possible, with proper aspect.

It is generally imagined, that when

the trees are planted, the troublesome part of forming an Orchard is over: but the fact is far otherwise; for a greater difficulty remains, which is, to determine what proper use to apply the ground to: for if it is cultivated by the plough, little good can be expected; for the injuries which young trees constantly receive from implements in husbandry bruising and destroying them before they can have got full possession of the soil, generally hurts them most essentially; and if, by a superlative care, they should surmount the evils so brought on, the crops of corn being regularly carried off the land, impoverishes the ground so much, that the trees are soon stunted, and run to moss.

There is not any culture we are acquainted with, equal to hops, for raising an Orchard; and when the proper time comes for grubbing up the hops, the trees may be secured, and the land turned to grazing. I would recommend the hops

should not all be taken up at once, better the hills were destroyed in part, and the ground might be planted to good purpose with potatoes; and if this were two or three years in doing, I am persuaded the trees would continue in better health, from the shelter being taken away gradually. I lost, on some land in the occupation of Mr. Lake, several valuable trees, by the cold being let into the plantation too suddenly. Remember there is no objection to this, further than a little loss of land for the time, which is much beneath consideration, when compared to the advantages of keeping the trees in a thriving state. However, let the agriculture be what it may, the land should never be ploughed, or dug deep, directly over the roots of a young planted fruit-tree; for as the roots collect their best benign sap from their extreme points, if those points are broken off from the upper side of the roots, that tree is compelled to sub-

sist on nurture drawn from the understrata, and consequently the sap will be of an inferior quality.

It may be regularly observed, that, where trees stand in such a situation, that the hogs and poultry are constantly running over the ground, those trees very seldom fail of a crop, which is the best proof that manure is necessary ; and any manure will suit an Orchard : but there are several sorts of manure which are overlooked, such as the sweepings of cow-houses, slaughter-houses, emptying of drains, and every thing filthy ; and these are more disposed to facilitate the growth and health of fruit-trees, than the manure from the stable. Where it can be had, watering, in dry weather, tends much to keep the tree in health, and secures its bearing, by swelling the buds for the next year's crop ; which, being strong when they first come out, are not so liable to blight. Do not think me too minute in

saying, much of the business depends upon slight observations.

An essential circumstance to be attended to is, that the fruits be ordered of those sorts which thrive in the neighbourhood where the plantation is intended to be made, and a strict regard shewn to that purpose, as the beauty and value of the whole Orchard will greatly depend upon the trees being well suited. There is a striking instance of this at Sittingbourne, and its neighbourhood: the lemon pippin is invariably a fine thriving tree, and the summer pearmain as constantly ragged and out of health; and this observation may be applied throughout the whole range of fruit-bearing trees, according to the soil and situation.

The ancient Orchards of Kent, which were mostly grubbed up about fifty years since, produced the Kentish pippin, lemon pippin, russet, cat's-head, and other hardy keeping fruits; but as the age refined in

luxury, the more delicate apples were introduced. The sharp north-east winds, in many situations, were certainly too severe for these productions: though I entertain no doubt but this appearance of a caprice or particularity in nature, may by attention be in part corrected, though any attempt to point out the cause would lead me too far from the present subject.

Care should be taken, not to suffer trees to bear much fruit while young: it should be gathered as soon as seen, except about half a dozen to shew the size and quality. The young trees being kept clear, will give them, if I may use the expression, the habit of producing larger and finer fruit: but that is not the material reason; by being kept clear, the leading and collateral branches run stronger each year; and be assured, if the tree can be brought to a proper size, there will be no doubt of its bearing

afterwards. Observe among those gentlemen who pride themselves for being masters of fine stock, either horses, cattle, or sheep, and you will find, the governing principle with each of them, is to run the young stock to as *long bone* as possible in the first year; knowing, from experience, that having once secured bone in their respective young stock, flesh, figure, and symmetry, will follow of course. Such trees as suit the soil may, by easy means, be induced to grow to a size beyond what we imagine: let the land be grazed or manured,* and gather the fruit before it can be applied to any use. How long this custom should be continued, each Orchardist must judge for himself; but no one will have the

* With hogs, where convenient, that soilage being very congenial to fruits, making the trees grow larger than any other manure I am acquainted with, except the slaughter-house and dog-kennel.

least chance for the prize who does not take off the fruit for some time at least.

There is no impropriety in deeming the heads of fruit-trees, as so many hemispheres : only suppose it possible, by any art, to induce each of the branches of one tree to grow two inches longer than those of another tree in the same year ; that free-growing tree will, in eighteen years, double the head of the other : so much for size. Health is the certain consequence.

No young planted or newly engrafted tree, should be suffered to run *mop-headed* ; for until each branch has acquired a determined leader, that tree will make no progress ; and a tree, like an animal, if it takes a stunt, it is difficult to throw such energy into the system afterwards as will make it free-growing.

It has been objected, that if no leading branches are to be shortened, the nursery-

man could not form the stems to support the head.

Undoubtedly, while the plants are in the nursery, the slightest practitioner knows that the head must be cut down, to give strength and symmetry to the stem; and it is also necessary that most of the grafts be shortened, or the wind will blow them out; and during the time the plants are in an infant state, shortening helps to swell out the buds. It was never meant to exclude shortening, until the plant was become a tree; and it is perfectly within the nurseryman's art to produce all his standard fruit-bearing trees with stems large and smooth, buds full and round, leaves broad and open, without the tree being much disposed to canker, or gum; and this is given as the character of a perfect and valuable tree.

Moss.

One of the greatest obstructions to good orcharding is moss, which is merely the result of poverty and neglect, reflecting a discredit on the owner. Where trees are much overrun with moss, a strong man, with a good birch-broom, in a wet day, would do great execution. But to enter more into the business, what is moss? a plant; and, like other plants, may be eradicated on the first appearance; for that purpose, on young trees, the best method is to rub all the branches, spring and autumn, with a hard scrubbing-brush and soap-suds; and the action of rubbing will so far invigorate the tree as to overpay both trouble and expence. There is no damage can befall the tree from rubbing; and let it be performed as a groom does a horse's legs. Others use oil, which gives a fine smoothness to

the bark ; but I should say the suds first, and oil about a month afterwards.

Certainly the best soil to plant on is a fine deep loam ; and no one, for profit, would think of planting on a strong clay, chalk, or a cold sharp gravel : but where a gentleman, for the embellishment of his residence, would wish for an Orchard on either of these soils, never dig into the under-strata ; for that would be placing the trees in so many well-holes, where certain destruction must ensue : therefore, rather plant the tree above ground, raising over it a little mound of good fresh mould, about as large as an extensive ant-hill, under a curve of eight inches by sixty, and sow the top with white Dutch clover.

CANKER.

In pruning, the Medication ought never to be omitted ; for, from experience, the mercury is found to be so strongly ope-

rative in removing the baneful effects of canker in the more delicate fruit-trees, that it may be presumed to enter into the economy of the plant, giving a smoothness to the bark, and freeness of growth ; proofs of which will be produced to the Society in a few years, by persons who have attentively considered the subject.

I shall here give an abstract of the system of Close-pruning and Medication, as before laid down, that it may be seen at one point of view.

Let every stump, the decayed or blighted branches, with all those which cross the tree, or where the leaves curl, be taken off close, smooth, and even ; pare down the gum close to the bark, and rather a little within, but not to destroy the rough coat ; open the fissures, out of which the gum oozes, to the bottom ; cut away the blotches, and pare down the canker ; then anoint all the wounds with the medication, smearing a little over the

canker, which was not large enough to be cut; wash and score the tree, and rub off the moss; but do not shorten a single branch: follow the surgeon's rule, go to the quick, and no more; act with observation, and each practitioner will improve the science.

A tree under such care, must, with its remaining free shoots, run large, which requiring a great flow of sap, will keep the roots in constant employ, and from that very source necessarily establish permanent health.

SIR,

IN this public manner I desire of you to accept my thanks, and assure the Society they will always command my best regards.

Your humble servant,

THOS. SKIP DYOT BUCKNALL.

Hampton-Court, April 20th, 1795.

Mr. MORE.

P. S. Canker, in great measure, arises from animalculæ, something like the cochineal fly; and where the only object is to remove the canker, I find hogs' lard preferable to tar; but where the wet is to be guarded against, tar is surperlatively better.

THE PREMIUMS EXTENDED BY THE SOCIETY
TO ENCOURAGE PLANTING ORCHARDS.

75, 76, 77. The following Premiums for Orchards, from Class 72 to Class 74, inclusive, are extended one year further. The Claims for the Premiums, Classes 72 and 73, to be delivered to the Society on or before the first Tuesday in November, 1816; and the Certificate in claim of the Premium, Class 74, must be delivered on or before the first Tuesday in November, 1800.

72. To the person who shall plant an Orchard after the month of August in the year 1797, in the most judicious manner, not less than four acres, the GOLD MEDAL, or FIFTY GUINEAS.

73. For the next in merit, the SILVER MEDAL, or THIRTY GUINEAS.

The proof of the value of the improvement of the Orchard, shall depend on the clear product of the greatest quantity of

fine marketable fruit, to be produced during three successive years after the year 1813, and sold at any public market in England or Wales. Each person who proposes to become a candidate for these Premiums must send an account of the number of trees, their culture, pruning, and every circumstance which can in the least throw any light upon the subject ; which information will be registered, with a view to form a system of rational culture.

74. And that gentlemen may be induced to come forward, and make and preserve such plantations,—the person who can produce an ORCHARD which, at the end of three years after planting, shall shew the greatest promise of success, shall be entitled to the GOLD MEDAL, OR THIRTY GUINEAS.

The merits of the two first-mentioned premiums being to be ascertained by the fruit ; the merit of the third premium

must be ascertained by the judicious number of trees planted, the straightness, clearness, and freedom of growth of the several trees; and that all the young branches run free, and at due distances from each other, without any galling or canker.

Certificates of the forming the Orchard, the soil and aspect of the plantation, the sale and product of the fruit for which the claims for the premiums, Classes 72 and 73, are intended to be made, must be delivered to the Society on or before the first Tuesday in November, 1816; and the Certificate in claim of the premium, Class 74, must be delivered to the Society on or before the first Tuesday in November, 1800.

N. B. However expert the Orchardist may be in general information and attention, much will depend on soil, exposure, culture, and an easy communication to convey the fruit to market; for every

field, however valuable in other respects, may not be proper for an Orchard.

Any wood the Orchardist may choose to raise for shelter to such plantation, is not to be measured as part of the Orchard, as the wood will more than support its own expence.

To enforce the necessity of manure, I say, should a malt distiller choose to become an Orchardist, I think, from his power of manure, he would have such a command over the soil, that had he a convenient market for his fruit, he must command the premiums.

*The GOLD MEDAL was this Session voted to
THOMAS SKIP DYOT BUCKNALL, Esq.
for his extension of Observations on OR-
CHARDING, as communicated in the fol-
lowing Paper.*

SIR,

IN this year's Paper I desire to introduce to the Society some valuable additions to the science of Orcharding.

First—The removing trees of the age of twenty years or upwards, to supply any deficiencies; by which means the rows in the plantations will be fully kept up, and the Orchard remain perfect, with trees of the same age and sort as those which have decayed or died.

Secondly—The engrafting of new bark upon trees that have been injured by cattle, carts, &c. ; and thus trees kept in a perfect state, which otherwise would have

died, or soon gone to decay. But I wish previously to impress on the minds of the Society, that, in the whole extensive Orchards throughout the kingdom, most of the standard fruit-trees may be prevented becoming rotten, hollow, or much decayed, until, by great length of time, a dryness, want of energy, or by their own weight, they fall into actual dissolution; and as it is allowed that large trees yield the most productive crops, either individually, or per acre, attention should be given to run the trees to size; for at present there is no competent idea to what extent trees may be induced to grow, by a suitable manure and proper management.

The baneful effects of canker may be nearly banished from the more delicate fruit-trees, and the oozing of gum in great measure prevented in the different species of the cherry, and other stone-fruits.

In the first Paper I did myself the honour of presenting to the Society, I represented that “ pruning is an important article, with regard to the health of trees, and their bearing; and, if judiciously done, they will come into bearing sooner, and continue in vigour for nearly double their common age.”— That attentive care which chooses the proper soil; places the trees at due distances, according to their natural growth; keeps the branches free and open, that the sun may pass over the ground; all being perfectly pruned and regularly cleaned, so that the tree may become healthy, round, and large, and carefully apply the manure and culture most proper for fertilizing the lands appropriated to Orcharding: when these advantages shall be really united, it may reasonably be expected that the fruits must be larger, finer coloured, freer from specks, and of a richer quality; whence such fruits must have a pre-eminence in

the markets ; or, if originally intended to be thrown into the mill, the cider will be more in quantity, stronger, and higher flavoured ; proofs of which may easily be brought. As I apprehend the Orchards and standard fruit gardens of this country may soon be estimated at three hundred thousand acres, and should expect from the improvements attempted to be introduced, that in ten years time, each acre, on an average, will increase, by the improved culture, to more than one pound per acre in value per annum : I hope it will not be thought arrogant in me to say, that I look upon myself as being the actual means of benefiting my country to the amount of more than three hundred thousand pounds a year.

And if Orchardists will consider this position to be founded in truth, it will be an incitement to their exertions. The premiums offered by the Society to promote the proper planting and culture of

Orchards, it is expected, will spread emulation among the planters ; and (aided by the extensive improvements of inland navigation, by which fruit and cider may be conveyed from one extremity of the kingdom to the other), the culture of Orchards may be regarded as a national concern.

When pruning shall be fully understood, and generally practised, the benefits resulting therefrom will appear to be much more the effect of judgment than the result of actual labour ; for I have often mentioned, among my friends, my expectation, when the trees are properly brought into order, the whole system will be little other than penknife-pruning, except what may arise from accident or neglect. So far from wishing to have large limbs wantonly taken from trees, the rule is, “ keep the branches out of the reach of cattle, then let them follow their natural growth.” This would soon be verified, if a few proprietors and cotta-

gers considered the nature of this business, and began pruning their own trees from the first planting, by way of example. When the cottager comes to prune his master's trees, then will each concur in opinion, for it depends more upon the mind than upon the hand ; and yet there is no mystery,—the master speaking, the cottager comprehends his directions, and thus the work would go on properly. In Mr. Boulding's certificate,—“ we were sometimes in doubt “ whether a particular branch should be “ taken off or not ; the rule established “ was, consider, will that branch be in “ the way three years hence ; if it will, “ the sooner it is off the better ; and it “ is surprising how soon we got into such “ a method, that we went on with as “ much unconcern as with any of the “ common labours of the field, each un- “ derstood what the other said.”

I have taken much pains to correct prejudice, and establish a rational culture ;

and have no doubt but it will become general: yet, I must confess, I should like to see it fully established in my own time. The whole system is grounded on the regular operations of nature in the productions of vegetation: the advantages are fully explained in the respective Papers; and, for the mere labourer, there is a short abstract and instructions in Vol. XIII, page 170, of the Transactions of the Society of Arts, &c. and page 61 of this production. I have reconsidered every thought, and find them all centre in the single word HEALTH.

My chief inducement in writing on the art of Pruning, was to rescue so valuable a branch of Agriculture from neglect, or from the more destructive manner in which the work has hitherto been performed. Observe in my new system, “the trees continue of the same size both before and after pruning, and all the extreme shoots keep at the same

“ distance, which is an improvement not before brought into practice.”

I have undertaken to produce four apple-trees within the same inclosure, each of which shall cover ten poles of ground, long before they fall into actual decay ; and for that purpose have measured four trees on the north side of Sittingbourne, in an orchard belonging to a gentleman at Maidstone ; and, with proper management, there is no doubt but they may be brought to that size. As they stand close to the road, where they will be under general observation, I should think, if a visible improvement becomes apparent in trees thus marked for public trial, it would counteract the negligent habit of still suffering large trees to continue so incumbered ; these trees are of great magnitude, and cannot be less than an hundred years old ; are in high health ; yet much over-run with stumps, dead wood, moss, &c. I remem-

ber the ground more than forty years, and think if my system had been introduced when that orchard was first planted, there would have been, instead of four trees, at least ten times that number, and of equal value. I have had a long correspondence with the gentleman, either to purchase the orchard, or to have the liberty of pruning those trees *gratis*; and, under such permission, I have determined not a branch shall be touched, but with consent of the tenant: I must not say more upon this subject until I know the result. If I am disappointed, there are other trees in the neighbourhood, of the same age, but they are neither so healthy, nor so well suited for my purpose.

Several times I have been asked, how much an old tree ought to be pruned?—The proper answer would be, if it be very old, and much incumbered, do not let in the cold winds; but, with care, take off the stumps, with all the decayed,

rotten, and blighted branches, leaving the rest to the discretion of each person, who will soon see how much is necessary; self-conviction being the best school for improvement. The truth is, whoever would form Orchards to produce credit to himself and profit to his successor, must not suffer the trees to become old before the operations commence, but determine that pruning, cleaning, and rubbing off the rotten bark, should be begun in the nursery, and regularly continued to the extremity of old age; from which method very little wood need be taken off at a time; and, by using medication, the wounds will heal, without causing any more blemishes than the tree was subject to at the time the limb was taken off; for it is not the first cutting which blemishes the tree, but the corrosion, arising from neglect.

Let each person, therefore, determine that no standard fruit-tree should be suf-

ferred to remain incumbered with rotten and decaying branches ; for these, admitting the water into the tree, and contaminating the balsamic virtues of the sap, lay the foundation of sure destruction to the tree, and furnish to insects a *nidus* under the rotten bark, in which they deposit their eggs.

I mentioned to Mr. Fausset, in the year 1789, as appears in page 19 preceding, that the greater part of the mischief affecting my trees, arose from insects, vermin, and microscopic animalculæ, getting under the bark, which has the last year been more fully elucidated by William Hampson, of Dewnap, Esq. Vol. 13th of the Trans. of the Society of Arts, &c. p.172, under the article *Caterpillar* ; and the prevention is there so properly pointed out by him, that, in the character of Orchardist General, I wish strongly to enforce the practice. I have often seen whole crops of the more delicate apples destroyed by

the foliage being eaten off in the spring: the hardy fruits are not so liable to these disasters, for the strong health of those trees in a great measure secures them from such depredations.

Last summer, in Kent, I had much conversation with some very intelligent men, on the subject of Orcharding and general Agriculture. A gentleman on the hills shewed me some large trees, and asked my opinion.—I replied, Do nothing; for you can gain no credit by them, from the energy or active powers of vegetation having been long exhausted in those trees: but I pointed out some young ones, where pruning might be happily applied, and he might make a trial on one of the large ones.

At Brambling, I visited an Orchard at the request of the owner: the trees required more cleaning than pruning; and I requested he would be careful to attend the operation himself, and his Orchard

would become more valuable, by the quantity and quality of the fruit. I recommended him to inclose the ground, which contained about six trees, with hurdles, and he might easily unite that spot with his pig-sties, and suffer the hogs to be constantly running over that ground; and, from the manure thus obtained, the trees would receive a visible energy, which would soon appear in the growth of those trees, when compared with the others; and that the improvement of the trees was to be the criterion for him to act by: for the freer the trees grow, the more effectually they recover the pruning, by throwing out young wood. And I remarked, that if the Orchard was my own, I would open the gate, without reward, for the drovers to bring in the yearling cattle, which pass the road from October to Midsummer, for three years; and such practice would double the value of the fruit: I mean, to what it will be

ten years hence, for the trees are visibly going off, though now they are just in a state to be recovered.

Last year I recommended cleaning by soap-suds. A gentleman at Wandsworth uses oil, which has a wonderfully good effect. I should think the oil might be applied about a month after the suds. As I am, in large concerns, a friend to cheapness for the bulk of mankind, I imagine any damaged oil would do: oil certainly is beneficial to trees.

These observations are sufficient to shew that I am attentive, and vary the advice, according to the state and value of the trees. Some gentlemen in my neighbourhood have made very handsome exertions; but I wish to bring the improving trees into universal practice, and keeping them in bearing to a great age; and would recommend that persons, for their own satisfaction, should select a certain number of trees, according to

their fancy, and mark them in pairs, as to their age, freeness of growth, and other circumstances, suitable to trial, prune and manure one, and leave the other in the state of nature; but, for experiment, do not prune two trees, standing next to each other, in the same year, when the pre-eminence of the practice will soon appear:—such a mode is bringing Orcharding to a fair trial; and, if I had been so prudent as to have managed my trees alternately, two-thirds of the growers in East Kent would have acquired the science before this time. It may appear that I argue this subject too strongly; but, when we recollect that the Society has been thirty years engaged, and shewn most assiduous and laudable exertions, aided by many high premiums, to ascertain the comparative advantages of the drill and broad-cast husbandry, we must cease to wonder that the science of Orcharding has not made greater progress.

It is recommended, that the rows of trees should not stand north and south, but a point of the compass towards the east; as the sun will then shine up the rows soon after ten o'clock, which in the spring of the year, will serve to dissipate the vapours collected in the night: these vapours stunt the fruit in the early stages of its growth; and, where the shaws are properly attended to, this position will best enable them to divide and blunt the power of the winds, and prevent blights; and the shaw might be a little brought over the south: but, as each situation has a predominant wind, this is only hinted to put the planter upon his guard: the shaw also will greatly protect the fruit from the severity of the autumnal winds, at which season half the crop of fruit is thrown from the tree before it is ripe; and the heads at that time of the year being loaded with fruit and leaves, many trees are actually torn out of the ground,

or so lacerated as to be spoiled, which a proper shaw might prevent. Judicious shelter should be the first object thought of in forming an Orchard on a large scale.

Had I been possessed of ground near my own dwelling, I should ten years ago have planted an extensive experimental Orchard,—it would have given me much pleasure; but there is no land attainable; and experiments cannot well be conducted at a distance, to any great credit, where the only object is to raise emulation by way of example.

When I pruned the trees in my Orchards at Sittingbourne, in the year 1790, they being young, I cut freely, for they were greatly encumbered and decaying; and half the wounds were made by taking off the stumps, and cutting down the canker and gum, as certificates fully prove; and I was certain the trees would be greatly improved by the pruning. But I must mention they have not been touched

since, lest any person who may examine the Orchard, by way of observation, might confound the former and new wounds together.

Let no one be afraid of the expence, for that is trivial; fourpence-halfpenny per tree once in three years would overpay it, after the trees have been brought into order, if the master would only take care they are kept clean, and the casual accidents duly attended to. According to my ideas, the age of a tree is not to be considered; for the judgment must be taken from the energy and freeness of growth, as many trees are in a more declining state at sixteen years, than others at an hundred. Since I have mentioned comparative age, observe, from sixteen to twenty is a critical time for the delicate fruits: if they continue in health beyond that period, they generally go on well afterwards; and upon some future occasion, I shall introduce Root-pruning.

Were it necessary more fully to enforce the practice of pruning, suppose an order was given, that all peach-trees should remain unpruned for five years : from thence be assured, there would scarcely be a high-flavoured peach in the kingdom; all either sour or insipid. The apple or cherry do not require the same care the peach does ; yet each are well worthy of attention. I observed, in a former paper, “ that sunshine and shade are unalterably the cause of sweet and sour fruits.”

Those acquainted with the wine-countries know that the natives bestow much labour in manure, culture, pruning, and more particularly in bringing the grapes to perfect ripeness ; and I do not see why, in Britain, some part of that attention should not be given to the apple.

It is proper here to recommend to nurserymen, to be attentive to their grafts,

for more depends upon it than is imagined; as, from the grafts being full, well wooded, clear, and properly chosen, the fruit will be both larger and higher flavoured. Though the soil and culture may be the same, the health of the wood of the tree is also most materially affected during the whole time of the tree's existence, by the proper maturity the scion was in at the time it was first put into the stock.

As this is to be my last essay, I wish to send it out as perfect as I can, and beg excuse for the great length. Let any person whose mind has, by precept, been turned to philosophical inquiries, consider the following statement: when an Orchard has become old and much encumbered, so that the trees, from being too thick, totally overshadow the ground; if one of these trees die, the four next surrounding trees will, from that instant, each of them, throw out their branches

to fill up that void space ; for the sap of those four trees, tending towards the opening by the active influence of the sun and air, gives an energy of growth to those parts of the trees, while the remaining branches, still being encumbered, must of consequence decline in vegetation, as the energy is, for the greater part, drawn the contrary way. These things happen every day ; but on the unobserving eye make little impression. This intuitive energy of nature is not confined to vegetation, for it pervades all nature : then why not suppose, if a part of a tree is decayed, and you take it out, that nature is capable of filling up the void space ? that she is capable, is most undoubted, and she will do it too, if there is any energy left, by supplying younger and better bearing wood than that which is taken away.

Where the trees are so close and encumbered, that the agricultural vegeta-

tion cannot thrive under them, the fruit from such an Orchard will hardly be large and high-flavoured; neither will it keep so well.

Last autumn, the delicate fruit-trees were much incommoded with a whitish mould or mildew, which I have regularly observed to take place in what is called muggy weather; this is what lays the first foundation of canker; it was very prevalent about seven years back. I have long known it to arise from animalculæ settling on the wounded parts of the tree, and the shoots of the present year; and before pointed out the cure, which is rubbing off with the lard medication, and I recommend to have the shoots cut at a large bud. For when they have been thus affected, there are but few of them will stand the cold of the winter; they generally die off about half way up. I have formerly quite removed the canker from some nonpareils, which, after three

years medication, threw out shoots a yard long : this induced me to say, that the mercury gave an energy to the plant ; I mean, by the mercury curing the disease, the plant recovered its energy : any one may satisfy himself that it is animalculæ, by rubbing a little of the mildew between his thumb and fore-finger, when the insects actually break, and produce a matter like the cochineal fly (*coccus mali*).

Another circumstance worthy observation is, the custom of attempting to check the too great flow of the sap, particularly in pear-trees, by cutting a circle through the bark, with the intention to make the tree fruitful ; much better would it be, by natural means, to lead the sap regularly through all the branches ; the action of the sun would then properly impel it to the extreme parts of the tree, for swelling the buds, and supporting the fruit ; and this even flow of sap is what produces fruitfulness, and is implied, in

a former paper, "The more the range of
"branchesshootcircularly,themoreequal-
"ly will the sap be distributed, and the
"better will the tree bear," (page 7).

Let me intreat those interested in fruit plantations, to unite in establishing and exalting the science of Orcharding, to make it one of the handmaids of Commerce: it is certainly the poor man's friend, the rich man's pleasure, the pride and ornament of the respective spots attached to each habitation. View the trees in spring unfolding and raising their beautiful blossoms and leaves up to the eye of Heaven, and in autumn gently bending their pliant branches for the industrious hand to gather the fruits. Do not wonder that I should show a little enthusiasm for the welfare of a science which I have actually created, and from which I have received much satisfaction.

The ancients had their goddess Po-

mona, to whom they paid divine honours; which goddess was no other than an ideal superintendency supposed to preside over Orchards; which is a most convincing proof that they held the culture of fruits in high estimation.

Through the whole process I have confined my instructions to standard trees; but now say, they are equally applicable to fruits in general, descending from the most valuable and expensive fruits even to the hawthorn, whose blossoms in spring, and fruit for the birds in autumn, make it worth some attention in parks, and such plantations.

For the full establishment of the art, nothing more is necessary, than to gain two or three capital land owners in each district, who occupy their own estates, and influence them to examine the system, and follow it, from which much improvement must result. In every science

the principles must be understood, before the practice can become general.

I am, SIR,

Your most humble servant,

THOS. SKIP DYOT BUCKNALL.

*Hampton Court,
Jan. 6, 1796.*

Mr. MORE.

The following Account of an Experiment made by Mr. Lake, and the Extract of a Letter from William Fairman, Esq. will throw great light on the Method of removing large Fruit-Trees, and engrafting new Bark on such Trees as may have been injured by the bark being stripped off by sheep, or any other accident; and it will be seen that, in the same Letter, Mr. Fairman gives a decided opinion on the appearance of the Fruit-Trees pruned under Mr. Bucknall's immediate inspection. Also, an Account from Sir John Morshead, Bart.

Removing large Fruit-Trees.

Mr. LAKE, of Bapchild, in the year 1790, asked me if I could help him to remove about sixty cherry-trees. I did not think his reason to alter their situation sufficient to justify the expence, and at-

tempted to dissuade him from it. But he persisting, I said, if you will order a semi-circular board, such as the bricklayers turn their arches upon, of three feet six inches diameter, in which cut a centre, and with a small spade dig a trench round the tree below the roots; afterwards cut the ends of the roots with a sharp knife, and fill up the trench again. The year after thin the head very much, that the wind may have no power over it; and the next year so dispose the young suckers as to lay the foundation for a handsome head in future; and with these precautions you may venture to carry the trees farther than you want. But do not lighten the head the first year, as you will want the power of the head to make the roots work and throw out young fibres, and, at the time the trees are taken up, the roots will have many fibres; and as from this practice neither roots or head will have any wounds to heal the

year the tree is removed, its growth will be greatly accelerated when the tree comes into the new situation.

All this was regularly done, and the trees removed in September, 1794. For further information, I refer to Mr. Lake, who is a good Orchardist, and will gladly answer any question; but am fearful, from the severity of the frosts of that winter, he will not be able to send proper certificates of the success till next year; for when I was there in May, 1795, they were very backward. However, this removing of large trees must come into this report; because I beg of every planter, who wishes to do something worthy of the premiums, that he will order a certain number of trees more than his new plantation requires, and place them in a retired part, to keep up his plantation; and then he will say, "a friend in need is a friend indeed;" for such trees cannot be bought. If they are to come far, all the precautions are

lost, from the fibres of the roots getting dry. I have practised this before, and will answer for the success.

Engrafting Bark on injured Trees.

In July I spent two days with Mr. Fairman, at Lynsted, in conversation on the science of Orcharding and general Agriculture; and he mentioned a misfortune which befell one of his Orchards in the preceding winter. Some fatting sheep, in the severity of the frost, tore off the bark from many trees, actually quite round. Mr. Fairman was so hurt by the accident, that he was determined to do something, if possible, to save the trees; and it came into his mind to try whether, if new bark was bound upon the wounds, it would adhere.

I am, SIR,

Your most humble servant,

THO. SKIP DYOT BUCKNALL.

Hampton Court, March, 1796.

MR. MORE.

H

SIR,

Mr. BUCKNALL having an Orchard in my neighbourhood, I took an opportunity a few days since of examining the trees which were pruned under his immediate direction; and, I must confess, I was highly pleased with the beautiful form and appearance of most of them, finding my ideas were so skilfully anticipated: I expected to have found he had been too free with his instruments; from knowing his motive for pruning is to produce the fruit larger, clearer, and higher flavoured.

As I am an extensive grower of fruit, having about sixty acres chiefly on my own estate, the business cannot be indifferent to me; and I shall be happy in following any information tending to the improvement of so valuable a branch of the agriculture of our county.

My inducement for troubling you is, to introduce a method of recovering apple-trees, which may have been stripped of their bark by sheep, or any other accident ; and, for the information of the Society, I must desire you will acquaint them that, in the severity of the spring of 1794, some fatted sheep were turned into a valuable Orchard of mine, of about twenty years growth, and they in a short time actually stripped the bark from several of the trees, entirely round the bodies, leaving the wood bare for at least sixteen inches.

I was so much hurt by the accident, as to determine to do something for the preservation of the trees, and save them if possible. The first step which I took was to take off the arms from several of the trees which were most injured ; and, from the largest of those arms, I flaved off slips of rind of about two or three inches in width, and placed four or five

of them perpendicularly round the naked part of the body: but I should observe, that I first cut away all the rind that was bitten, and then raised the rind up, top and bottom, and put the ends of the slips under, that the sap might circulate; and afterwards bound them exceedingly tight with rope-yarn: I then applied a composition of loam and cow-dung, with a little drift-sand, over which I tied some old sacking; which was the whole of the process.

Mr. Dyot Bucknall, perceiving this method very likely to succeed, requested I would help to give a recital, the heads of which we wrote on the spot, and he assured me he had sent them to you: but lest he may have made any mistake, he wished I would send the account myself.

The experiment being made in the spring of 1794, a minute inspection at this time must determine the fate of it;

and permit me to assure you, it has succeeded far beyond my expectation : the slips adhere as close, and are as full of sap, as the rind on any other trees. They are now in their full blossom, strong, and vigorous, apparently as if they had received no injury. But I must observe, were I to make the experiment again, I could do it more dexterously : and I must mention an error I was guilty of in my haste, by placing some of the slips the wrong way upwards ; consequently the sap could not circulate.

I am, SIR,

Your most humble servant,

WM. FAIRMAN.

*Miller's-House, Lynsted, Kent,
May 16, 1794.*

Mr. MORE.

SIR,

Mr. DYOT BUCKNALL having mentioned in his report of this year, that some gentlemen of this neighbourhood had made great exertions in the science of Orcharding, and finding that the Society expect certificates of all matters that are to be introduced into their Transactions, I feel it necessary to inform you, that, in the autumn of 1794, I began to practice Close Pruning and Medication, according to Mr. Bucknall's directions, on a great variety of fruit-trees, of all ages, and that I find it answer far beyond my expectation; particularly in two very material points, the destroying of canker, and stopping the oozing of gum; and I am so well convinced of the great advantages to be derived from Mr. Bucknall's system of Close Pruning and Medication, that I shall continue to practice it on a large

scale myself, and shall also recommend it strongly to my friends and tenants in the county of Cornwall. I have the honour to be,

SIR,

Your most humble servant,

JOHN MORSHEAD.

*Hampton,
January 17, 1796.*

MR. MORE.

The Thanks of the Society were given to
WILLIAM HAMPSON, Esq. *for the following*
Communication on the subject of
DESTROYING INSECTS *in ORCHARDS,*
&c. which is here inserted, as serving to
confirm the doctrine laid down in the
foregoing Papers on ORCHARDING, by
THOMAS SKIP DYOT BUCKNALL, Esq.

SIR,

BY laying the inclosed paper before the
Society for the Encouragement of Arts,
Manufactures, and Commerce, you will
oblige,

SIR,

Your most obedient servant,

WILLIAM HAMPSON.

Dwensop, in Duckenfield,
near Manchester, Feb. 11, 1795.

*On the Means of preventing Caterpillars on
Fruit-trees.*

IT will not appear foreign to the subject, if some general observations which are well known to those who have the management of fruit-trees, and more particularly the apple, precede an account of the means here discovered for preventing the destruction often occasioned by the ravages of the Caterpillars. 1st. A winter, in which there is a severe frost for a long continuance, is accounted favourable to the succeeding fruit-harvest. 2dly. Young and healthy trees, which are continually distending the rind, and putting forth vigorous branches, are not often attacked with the Caterpillars; or if they are, it is when the foliage of an aged or sickly neighbour is exhausted, and then being urged by want of food, the worm throws out its silken line, which, carried by the

wind, clings to the branches of another tree, and by this means it effects a passage.

Some time ago, having an intention to improve a number of apple-trees, which, owing to their being yearly infested with the Caterpillar, had been long neglected, I began in the following manner. It being early in the spring, I first caused the thick brown moss to be removed from the trunk of the tree, around which, but at a distance equal to the extremities of the roots, I spread warm rotten litter; and then, with the back of a pruning knife, scraped off the livid-coloured moss with which the branches of the tree were entirely incrustated. But what surprised me, and to which I would beg particular attention, was, that small detached pieces of moss hung upon the bough by fine threads, after it had been cleaned: this led me to think they belonged to some eggs or insects which lay concealed between the moss and the outer

bark, or between the outer and the inner rind: but being then without the help of glasses, my curiosity remained unsatisfied, although the effects discovered in the opening season justified my strongest apprehensions; for those trees which had been thoroughly cleaned, put forth strong and healthy shoots, and retained their leaves, when others, their neighbours, were eaten up: yet what convinced me beyond the least doubt, was a tree which through negligence had been left in part cleaned: the boughs which I had cleaned were untouched by the Caterpillar; on the contrary, the leaves of those boughs I had not cleaned, were soon consumed by them.

These facts being stated, the following remarks are naturally suggested. First, that the eggs of the Caterpillars lie, during the winter, concealed in such trees as are overgrown with moss, between the moss and the rind, or, where the rind is decayed,

in the cavities occasioned by such decay; a circumstance which, with the assistance of a microscope, I have since ascertained: but through mere neglect, having not preserved the eggs for future observation, I cannot say determinately they were the eggs of the Caterpillar; but this I can say, that the removal of those eggs prevented the leaves of the tree from being eaten. Secondly, that the proper time for destroying them would be before the eggs are hatched; for, by the time the Caterpillar is come out, the buds begin to open, and of course become its immediate prey; and as the butterfly-tribe are so numerous, and so perfectly free from restraint, the nature of the case will require an annual search to be made in such places as are thought favourable to them for depositing their eggs: there will be often found full-grown trees, which by being encumbered with branches, the power of the sun is not admitted to shrivel the old

rind as the new one is forming; consequently such trees become incrustated with decayed coats, the fit receptacles for preserving the embryo Caterpillars; and such trees whose wounds have been suffered to heal, so as to form an hollow, retaining moisture, which cankers the wood, and renders it easily perforated by the fly, are likewise liable to become a prey to the insects they have preserved.

The above observations are offered as hints only, on a subject capable of deriving more advantage from those who enjoy greater opportunities to investigate, and ability to inform, than what has fallen to the lot of their author; and it is with this presumption they are offered to a Society, the members of which have it in their power to employ them to the best advantage, namely, that of the public good.

End of the Papers taken from the Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.

APPENDIX.

ROOT PRUNING, &c.

I DID not present the hints on root-pruning to the Society, not having an opportunity of such extensive experiments as to establish the principles to my satisfaction; but as the Papers are now reprinted, I have here thrown out some general observations to illustrate the subject, it having been before introduced into the Transactions.

If the earth afforded as little resistance as the air, and a tree could grow therein, the roots of a tree would run nearly similar to the form of the head, for the roots are acted upon, or become torpid, just as the head draws them by the active influence of the sun and air. But from the roots being sheltered under the earth,

they are not subject to the same blights and accidents which affect the branches, though they regularly decline in growth whenever the branches lose their energy.

When a tree has stood so long that the leading roots have entered into the under strata, and are still tending downwards, they are apt to draw a crude indigestible fluid, which the organs of the more delicate fruit-bearing trees are incapable of converting into such balsamic juices as to produce fine fruit; and the powers of vegetation not being strong in the delicate fruit-trees, they can hardly assimilate such sap to any good purpose, from which the tree declines, and soon after runs rapidly into dissolution. To account for this decline, if you inquire of the best informed persons into the cause, why so many valuable trees die, you will get no other answer than “the trees did not suit with the soil.”

In hopes of preventing such evils, when

an Orchardist sees a valuable tree begin to show a sickly pinkeyness upon the leaves, or the fruit inclining to ripeness, before it has acquired its full growth; at the same time the bark becoming dry, hard, and disposed to crack, and yet he can discover no visible cause for these appearances; he should suspect the malady may arise from the roots. Let him therefore not hesitate, but directly open the ground for three or four feet, and with a chisel cut close every root the least tending downwards. Should there be any mouldy appearance or rottenness among the roots, such roots must be taken off; and the remainder washed clean, or the mould will extend. If the ground is inclined to be too wet, throw a few stones or brickbats under the stem of the tree.

As the roots invariably collect the sap from the extreme points, this cutting compels the horizontal roots to work and exert themselves; and if there be any

energy left, they will soon throw out fresh fibrés, and by that means collect a more congenial sap for the support of the tree. At the same time, to encourage a freer growth in the horizontal roots, cover the ground thinly over with proper manure, as far as the roots may be supposed to extend, and rub the stem and all the branches of the tree with soap suds ; and in very dry weather, throw a little water over the soil. This advice being attended to may save a valuable tree. Every one must allow the process is easy, rational, and certainly worthy of attention.

Be assured, when the downward roots are become so strong as to exert more energy than the others, the horizontal roots will, from that very circumstance, still the more decline in vigour, and as it were become torpid ; I do not say dead, for if the stronger roots are taken off, the horizontal ones will soon recover from the energy, taking that direction. I be-

fore have said, the sap collected by the horizontal roots produce the clearer, fairer fruit ; remember I am here speaking only of the delicate fruit-trees, and they certainly require a little attentive care.

It is a real misfortune to have a fine plantation of fruit-trees dying off in patches ; and this often happens without any attempt to save them, except by engrafting, which seldom answers but on young trees ; and then much time is lost, besides the uniformity of the Orchard cannot be recovered afterwards.

RECAPITULATION ON CANKER.

There is not a more powerful agent for producing canker than these descending roots ; but to those who will use the precautions recommended through the whole of this work, and enumerated in page 79, canker would cease to be the formidable enemy it appears at present, and become more subdued. Impress upon the mind,

canker arises from an improper soil, a vitiated sap, the generation of vapour, animalculæ, the want of a free circulation of the fluids; the last is often caused by injudiciously shortening the leading branches, which should be avoided. But the material circumstance now to be enforced is, that the medication will stop the progress of the evil on the parts where applied; though the canker may again break out on the other parts of the same tree, and that arises, in my opinion, from the *radical cause* already mentioned.

BLIGHT.

Here it is not improper to observe that in the 13th and 14th volumes of the said Transactions, very handsome premiums have been offered for preventing or taking off the ill effects of blight; let me repeat, the grand purpose for that also is to establish HEALTH; for in animal and vegetable nature the hardy and robust will combat

with the elements, while the delicate shall shrink under them.

MANURE.

In 1796, Mr. Bland, to improve his trees at Hartlip, planted the land for a full crop of potatoes, and before the halm declined folded his hogs in the Orchard, allowing but a small spot at first, adding a fresh bit as occasion required, until the whole ground was run over, and constantly supplied them with fresh water; giving them beans occasionally, upon the ground, and such other food as he thought proper. The hogs are most excellent gardeners, turning over the whole land, without overlooking a single potatoe. There needs no further enforcement of this practice, it being a cheap and easy way of procuring a great quantity of valuable manure.

LASTLY.

It is necessary to admit that several species of fruit-trees have for years declined, and that rapidly in some situations, where they used formerly to thrive, and were deemed as native. This becomes a subject worthy the consideration of the agricultural philosopher ; and I throw it out for investigation. Let it be determined, whether this decline arises from want of attention in the engrafter, a defect in the powers of nature, or neglected culture. The graft I have taken notice of before, and am disposed to ascribe the most material cause to result from neglect, for this plain reason ; in all my experiments, where the practice has been properly followed, the tree regularly assumed a clearer verdure, which is a strong indication of improving health. Mankind are more apt to refer defects to some hidden cause, than to resolve by an active industry to

attempt the removing of them by natural means. I have here fully stated the subject for general observation, and cannot place it upon better grounds, than leaving it to the experience of those intelligent persons who now seem disposed to take up the system of Pruning, and with whom I hope it will rise to perfection.

I am told the fruit-trees producing the Stire cider in Glocestershire, and many varieties in other countries, are much gone off; the same circumstance has taken place upon the continent of America. There appeared an address in the Whitehall Evening Post of Saturday, 1st Oct. 1796, from the Philosophical Society of Philadelphia, offering the following premiums, viz. 1st, 2d, 3d, 4th, and 5th, for the best methods, verified by actual experiments, to prevent the premature decay of the peach-tree, sixty dollars, &c. The account to be delivered before the month of April, 1797. I shall send

the Orchardist across the Atlantic ocean; and think myself happy, if the principles here introduced should so far improve the culture of the American fruits as to gain credit to the system.

*Letter from the Right Honourable Lord
Viscount NEWARK.*

DEAR SIR,

Portman Square, 27th May, 1797.

The best (perhaps the only) return I can make for your kindness, in instructing me in your management of fruit-trees, will be by communicating an observation I have made on that desideratum of the art, a proper styptic or application to heal the wounds necessarily made by the knife in amputating the larger branches. You observed, that “the tar was generally so thin as to run too much over the bark, and in that state it did not sufficiently adhere to prevent the wood from cracking.” I have applied, at Thoresby Park, in Nottinghamshire, a remedy; which is mixing pounded chalk or whiting with the tar, to give it a consistency, so as to make it work well with

K

the brush ; and I think if chalk or white-
ing was added to your Medication, it
would still have the same effect in de-
stroying the animalculæ, and more par-
ticularly protect the wood by a proper
adhesion.

I beg, from experience, to recommend
this, and if it meets with your approba-
tion, you have my leave to introduce the
letter in your Orchardist now republish-
ing. And am ever,

DEAR SIR,

Your faithful and obedient,

NEWARK.

T. S. DYOT BUCKNALL, ESQ. M. P.

FINIS.

ERRATA.

*Page 32, line 1, for as one may see, read as any one
may see.*

Page 64, line 15, for 1796 read 1797.