

THE COMPLETE ENGLISH BREWER;

OR, THE
WHOLE ART AND MYSTERY
OF

BREWING,

IN
ALL ITS VARIOUS BRANCHES.

CONTAINING

Plain and easy Directions for Brewing ALL Sorts of
Malt Liquors in the *greatest* Perfection, from the
smallest to the largest Quantities.

ALSO,

INSTRUCTIONS for the Choice of BARLEY and HOPS,
and all other Ingredients and Utensils used in
Brewing.

Together with the very best Methods of
CASKING, CELLARING, FINING, BOTTLING, CURING
AND
RECOVERING FAULTY OR DAMAGED LIQUORS.

The whole made easy to every Capacity, and calculated
not only for the Use of PUBLICANS in general,
but PRIVATE FAMILIES in particular.

By GEORGE WATKINS,
Who has practised Brewing, in all its Branches, upwards of
Thirty Years.

L O N D O N :

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P R E F A C E.

THE superior excellence of malt-liquor above wine, in point of wholesomeness, and the consideration of its being a product of our own kingdom, are reasons why every man who wishes well to his fellow-creatures and his country, should promote, to the best of his power, the estimation and consumption of it. The landed interest in this kingdom cannot but be affected very considerably by the quantity of malt-liquors for which there is a demand; and more now than at another time, because the distillery is prevented from the free use of grain. Our hearty ancestors knew no other wine, but that from corn or from the apple; and, if we

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enquire

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enquire into their constitutions, we shall find them, I am apt to believe, better than our own.

As evident as it is, that the general interest of our country is concerned in the question, whether our tables shall be supplied from the grain our own fields produce, or the vineyards of strangers, or our enemies; yet all the pleading in the world will be ineffectual, so long as wine is pleasant, and beer less agreeable. Therefore he who would supercede, in some measure, the use of wine, by putting malt-liquor in its place, must trust to a knowledge in the subject, not to arguments: the best of these will be received with a deaf ear; but the least advance in the improvement of the rival liquor will be sure to have its effect.

THAT our malt-liquors may be greatly improved is certain; for at present they are generally made either
either

either by ignorant or interested people. Those who brew in the common way in the country, for their own families, make but a coarse liquor; and as to the publick brewers, who regard the look and flavour of their drink, and nothing else, they put in ingredients which render it unwholesome. The art of brewing is not known in families, and is not practised by brewers with that simplicity we could wish. It appeared, therefore, to the author of this little treatise, that it might be useful in many respects, to lay before the private family the best secrets which the brewers keep carefully to themselves; and to lay down the certain principles of this easy operation, in a way that every body may understand them.

A good season, good malt, good hops, and a proper kind of water, are the requisites without which fine beer can never be made: but these are all in the persons power
 A 3 who

who brews ever so small a quantity; and with these, and cleanliness, which is as necessary in the brew-house as in the dairy, there will be no fear but that the observance of the rules here laid down, will be rewarded with all the success that can be desired; and that every family may have, with little trouble, and at a slight expence, that barley-wine, as Cæsar calls it, in a degree of perfection, that shall put the breweries of the wine-cooper out of countenance. Those who set out amiss, have nothing to consider, but how to disguise faults, or recover imperfections; and the common books of brewery abound with receipts to this purpose. But it is always better to prevent evils than to cure them; and no drink of the malt kind, will ever be so good, as that which is made merely and only from that ingredient, with the hop and water.

UPON

UPON the whole, whoever will set about brewing, with the proportions of the ingredients we have directed, with a careful hand, clean utensils, and proper vessels, will be able, at least, to equal the drink he meets with in the best houses; probably to exceed it: and, if he will be very heedful of the management of the hop, to boil it little, but steep it well before-hand, he will find his drink secure in the great article of keeping. This management of the hop is one very great consideration: and we shall close this prefatory admonition, with one more invariable rule, which is, That whoever would have their strong and small beer both good, must brew them separately, and not together.



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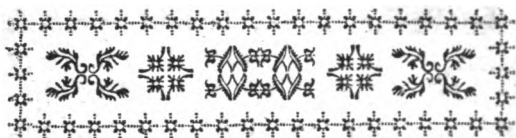
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THE



T H E

A R T and M Y S T E R Y

O F

B R E W I N G.



I N T R O D U C T I O N.

T HE making of good malt-
 liquor remains a secret in
 the hands of a few per-
 sons; and, notwithstanding the print-
 ing of many treatises, the public are
 yet wholly unacquainted with it.
 The Art of Brewing has hitherto
 seemed, like the Art of Gardening,
 a thing which many pretended to
 B teach,

teach, but which none, except an accustomed hand, could practise with success. Perhaps the mystery in both cases is on the eve of being brought to light. Certainly, I persuade myself, that, by my own experience, and by carefully observing the practice of such as brew well, I have informed myself of several lesser articles, which never were yet published, but on which the success of the work entirely depends: and perhaps any one who will follow the same path, will do the public equal service in the other article.

Upon the strength of these observations, and the certainty of some practice, I hope to lay down, in a plainer manner than has hitherto been done, the general rules of brewing; and to direct even the least parts of the operation in such a way that all shall understand them: so that every one shall be able to brew good, wholesome and pleasant drink,
and

and also to keep it in that order, without the addition of hurtful ingredients.

The old writers are all very deficient on this head; for the art in their time was not arrived at its perfection: and among the moderns few have written on it with clearness. There is a great deal of practical knowledge in the writings of ELLIS; but it is so mixed with idle opinions, that few of his readers can separate what is worth their notice: Mr. COMBRUNE deserves all the praise his patron has bestowed on him; but he is philosophical more than practical: And the improvements of the DUBLIN SOCIETY are excellent; but they relate only to a part of the business. Therefore, notwithstanding all that has been done, a plain, compleat, and practical treatise is yet wanting: and this, supported by experience, is what we here propose to lay before the reader.

Of the Ingredients in Brewing.

THE natural and proper ingredients in malt-liquors are only three, WATER, MALT, and HOPS. Every one thinks he understands these; and yet there are such differences in every one of them, that, without a much more strict attention than is usually paid to them, good drink cannot be brewed, unless by chance: and this will not happen once in fifty trials.

C H A P. I.

Of Water.

WATER may be distinguished into four kinds, SPRING, RIVER, RAIN, and POND; and what is the worst in appearance often makes the best drink.

No water can be fouler than that of the THAMES; yet the clearest

est porter is brewed with it. Many have said no other but Thames water would make this species of drink : but that is plainly an error ; for even in London there are porter-brewers served from the New River : however, none is better for it than that of the Thames : and in most cases the very purest and finest water is, for brewing, the worst of all.

Our forefathers brewed their strong pale-October with WELL WATER ; but the expence in malt was very great, and the beer would have been wholesomer and better if they had used river-water. The common foul water of large rivers, which differs little from that of ponds, would not have done ; but the water of a clear rivulet best of all.

This may in some measure serve as a direction to the brewer in general terms ; and he will find it true, that very soft water, such as rain-water, and that of ponds, and

6 *The Art and Mystery*

very hard, such as that of springs and wells, are proper in but a few cases: and that for high-coloured drink, river-water is the best; and for the pale kinds, that of brooks or rivulets, with a swift current. He cannot always have this exact choice, but he must come as near it as he can.

C H A P. II.

Of the Differences of Malt.

ALL common malt is made of barley, and owes its difference to the manner of making and of drying. There are malts made of wheat, of oats, and even of beans; but we are here speaking of the common kinds, which are all of barley. These may be arranged under three heads; the BROWN, the PALE, and that middle kind which is called AMBER. The malt with which porter is brewed, is of the
brown

brown kind; and is higher dried than any other. It is to be sold at the same places with the rest, under the name of porter-malt: and, what is very particular, it is made of an inferior kind of barley. The degree of fire with which it is dried gives that agreeable taste and colour; and the art of the brewer, who thoroughly understands his business, makes that peculiar drink from it; not the water or any other ingredient. Great dealers have opportunities of great experience; and what they see wrong in one brewing, they can make right in another. This is the whole secret: what has been hitherto wanting, is the publishing the result of their experience.

The difference of the three malts is owing to the degree of fire, and the time allowed to dry them. The pale malt is dried very slow, and with a small fire; the brown is done quick; and the amber is of a mid-

dle quality; dried with a moderate degree of time and heat. In general, the brown malts are to be brewed with the softest waters, because these best take out their strength and flavour: the pale malts should be brewed with spring-water, to preserve their fine colour; and the amber with a midling water, such as that of clear small rivers.

Which ever kind of malt be used, it may be judged by these methods as to its goodness. 1. By its lightness, which may be thus known. Take a little of it in the hand, carefully considering its weight in comparison of barley; for, when made as it should be, it is much lighter than the barley: and the lighter it is, provided it be sound, the better. 2. To judge of this more exactly, chuse out some fine sound and entire grains of the malt, and put them into a glass of pump-water. If the malt be good, they will swim on the surface. Barley sinks
in

in water; and if the malt be not well made, it will sink in the like manner. This is a trial of the same nature with the first, but more accurate. 3. Chuse a fine grain of the malt, and draw it hard over an oak board, cross-wise of the grain: if it be good malt, there will be a white line upon the board like a mark of chalk.

The smell may after this be consulted; for sometimes malt, though well dried, has a scent from the fuel, or from foul water used in the steeping. It should be perfectly free from this; and if sweet, light, and answering to these several characters, we may be assured it is in perfection.

For the sake of such as are inclined to make their own malt, I shall here add the method of doing it, and the differences of the grain from which it is to be made.

C H A P. III.

*Of chusing proper Barley for making
of Malt.*

THE principal ingredient in brewing being the malt, and this being a preparation of barley, it is fit we begin with examining the nature of that grain; and the methods of bringing it into the state of malt.

Gentlemen in the country, who are curious in their malt-liquor, may bring it to the highest possible perfection, by beginning in this manner at the very source, that is, with a right choice of the grain: and the knowledge of the rules by which this is to be chosen, will also be useful to those who, not having these opportunities, buy their malt in the usual way: since the same characters which distinguish the excellence of that made at home, will serve also as marks by which common
mon

mon purchasers may know the degree of goodness in what is sold.

We have two or three kinds of barley raised in England; but the common long-eared sort is the best and fittest for making malt. The greater is the perfection of the barley, the finer will be the malt. The finest and most perfect of this kind is such as has grown upon a light rich loam, and has been raised from seed obtained by exchange from a distant farm, and different soil. The prime seed of such a crop should be selected for making of malt: it should be fresh, heavy, large, and perfectly sound, and such as has suffered no accident from wet in the field, nor from dampness in the mow.

To the country-gentleman who manages some of his own land, there will be very little trouble, and no loss, in thus chusing the best of his produce for the supply of his cellar: and those who

make their own malt, and do not raise the grain themselves, should be careful to pick such as is here directed in the market. If there should be a trifle of difference in the price, it should never be grudged, for it is nothing in comparison of the advantage it will be to the liquors. We propose to give the best and most perfect method of brewing, and would not have our instructions fail for want of a little care in the first articles.

C H A P. IV.

Of making the Barley into Malt.

THE right kind of barley being chosen, no care can be too great in the making it into malt.

The first operation is the covering it with water, to soak it in the cistern; for this purpose the clear water of a running brook or small river should be chosen; or, if such cannot be had,

had, pump-water must be taken; but then it must stand exposed to the air four and twenty hours before it is used. If muddy river-water, or pond-water, be employed for steeping the barley, it gets a taint which it will never afterwards recover. The first impression upon the grain is made by the water wherein it is steeped; and, if this be foul or ill-tasted, the same flavour will be communicated to the drink, whatever other care is used.

When the barley is thrown into the water, there should be two hands-breadth of water above it, for less will not soak it properly. The generality of the corn will sink; but, after a good stirring, there will some swim on the surface: these are bad grains. They should be skimmed off: they will serve poultry or the hogs, but they will never make good malt.

In this water the barley is to lie about three days and nights. The
difference

difference of the barley will make a difference of twelve hours or more in this matter; for the best soaks soonest. But about what is here named as the general standard: to know when it is soaked enough, take up one corn from the middle of the quantity, and hold it steadily between the fore-finger and thumb of the right-hand, by the two ends; press it gently, and the softness will shew whether it is enough. If it continues firm upon pressing, and the skin does not break, it must lie longer; if it crushes together, and feels mellow, and the skin cracks, it is enough. It must then be suffered to remain no longer in the water, for it would now begin to loose part of its sweetness.

The grain being soaked enough, the water is to be drawn leisurely from it. After this it is to be put into a hutch, and lie together thirty two hours: after this it is to be turned thoroughly up once in six hours

hours on the floor: when it begins to spire, it must be turned every four hours with great care; and must be spread thin in a kind of beds on the floor, to prevent its spiring or shooting too fast, but still in such thickneses in the beds as will preserve moisture enough to make it continue shooting in this gradual manner. When it is shot enough, it must be turned once in two hours; and the root will then soon wither. After this it must be laid thicker; and turned now and then. The care is, that the root does not grow any more; nor the spire shoot out at the opposite end: but then there is also danger of mouldiness from this degree of damp without growth; and this is equally to be avoided; the frequent turning is the great article; and the workman must take care to keep a clean floor.

When the malt is made thus far without any accident, it is the common

mon practice to lay it on the kiln at once: but the true way is, to gather it all up in one heap, and then let it lie twelve hours. After this it is to be turned; and this is to be repeated every five hours, till it has been done four times. The malt will be then ready for the kiln; on which it will be dried in a few hours. As soon as it is dry, it must be removed from the kiln, and spread thin, that it may cool and harden at leisure. This compleats the malt, and it is fit for use. There is no great difficulty in the making it; but those who do not chuse that trouble, will still find the use of understanding how it is done; for upon the right management of these several articles depends the goodness of the malt that is offered to sale, or upon the ill conduct of some of the articles its faults. If it has not been sufficiently steeped in the first water, there will be a hardness in the whole grain; if bad water has been

been used, it will have a muddy smell; if it has been suffered to shoot from the point opposite to the root, which is what the maltsters call acrospiring, it will be poor, thin, light, and husky: but if all the care here directed has been taken, it will be tender, sweet, and mellow; and will have all the good characters we have given for the choice of malt.

The time of drying of malt varies according to the kind intended to be made, for the difference of colour depends on the drying quick or slow. For brown malt, four hours will be sufficient, because of the briskness of the fire that is used. For amber malt, the fire being smaller, there will require about seven hours: and for the pale malt, the fire being very weak, the time will amount to twelve.

Thus, from the same parcel, either of these kinds may be made only by the different degree of fire.

C H A P.

C H A P. V.

Of the Hop.

THE next article is the choice of the hop; and in this there is as much care to be used as in either of the former. The soundness, the colour, and the scent, are to determine this choice principally: but I have found a great deal also to depend upon the internal condition.

He that would brew good drink, must look at no hops that have not the two great requisites, of a good colour, and fine flavour; and, when these recommend them, he should tear one or two open, and examine the seeds. The leafy part of the hop is only a kind of fine fragrant covering for these; and the seeds have also their value: these will be either perfect or imperfect, or even wholly wanting within, according to the
time.

time at which the hops were gathered; and according to the care used in drying them.

If the hop has been gathered too young, the seeds will be small, shrivelled, and almost tasteless: if it has hung too long, or if it has been carelessly cured, they will be fallen out.

When the hop has been gathered at a right degree of ripeness, and has been carefully dried, these seeds will be found under the scales in a considerable quantity, and they will be full, and well-tasted. This is a great article in the value of the hop, though it has been mistaken by some writers; and in general is little regarded, except by the most judicious.

The newer the hop is, always the better it will prove; for the finest part of its flavour is lost in some degree in keeping, though it be ever so carefully preserved. Older hops may make beer that will keep very well;

well; but it will want the delicate flavour which the fresh ones give. The same fine flavour may be also lost by over-boiling, though the hop has originally been ever so good. This will be shewn hereafter. Upon the whole, the hop should be new, light, perfectly clean, free from any ill smell, and should have its own fine fragrant flavour and agreeable bitter in perfection.

The difference in price between the best and the poorer kinds is not worthy to be considered, when we recollect the vast difference in the beer.

Having thus acquainted ourselves with the nature and qualities of the several ingredients, we are to consider the liquor that is proposed to be made of them; and the methods by which, according to those qualities, it may be obtained in the greatest perfection.

C H A P.

C H A P. VI.

The Purpose of Brewing.

WHAT we propose in brewing is, to obtain an infusion of the malted corn, impregnated with all its agreeable qualities; and not loaded with such parts of it as are unpleasant or unwholesome: to this we add flavour from the hop; and the same ingredient gives it the quality of keeping.

What we expect and desire to obtain from the malt, is its agreeable balsamic quality; and from the hop its light bitterness, and its delicate flavour. This was always the intent and purpose of brewing; but it has in general been attempted in an irregular and injudicious manner. By long soaking in hot water, that is, by too long mashing, we have been accustomed to draw from the malt, beside its pure balsamic spirit, its heavy

heavy earthy parts, which have overpowered the others; and, by boiling the hop a long time in the wort, we have been used to evaporate that fine part, on which its high flavour depends; preserving only its heavy and disagreeable bitter. Thus, instead of a mild, light, cordial, and balsamic liquor, such as is proposed to be made by brewing, we have had a heavy, heady, harsh, and austere drink, which has brought on those very disorders that the other would have cured.

Every art has its proper principles; and the better these are understood, the more successfully the art itself will be practised. We hope to explain those of brewing in a clear and plain, as well as certain manner; and, upon that regular knowledge of the subject, to direct the practice, in a manner that all may understand, and that will be certain to make the best, the pleasantest, and the

the wholesomest liquors of the several kinds and denominations.

C H A P. VII.

The Principles of Brewing.

WE are to obtain the finest and best qualities of the malt: now all the parts of plants give their fine qualities to water by a light infusion; and, if too much heat, or too much mashing them together be used, the coarser parts are also drawn out, and these drown the finer: the liquor is no longer of the same nature, taste, or flavour; and the very intent of what we are about is lost, by overstraining the means. There cannot be a plainer instance of this than we see every day in tea; we desire to make from this herb a pleasant, light, and cordial liquor; and for that purpose we pour hot water upon the leaves: this, after standing a very little time, produces what
we

we desire; but if we boil the leaves in the water, or boil the liquor after we have made it by infusion, either way we spoil it: in boiling the clear liquor, all the light and pleasant part is lost, and what remains is rough and nauseous; and if we boil the tea itself in the water, we obtain a medicine not a pleasant drink. If we only keep the leaves and the water too long together without boiling, and bruise and mash them about, we obtain in the same manner a heavy, coarse, and disagreeable infusion, that has nothing of the pleasantness nor refreshing quality of tea properly made.

These are facts so plain that no one can contest them: they may be all applied in the same manner to an infusion of malt for the making of beer; and that with greater force. Malt is a vegetable substance as well as tea; and it will part with its qualities to hot water as freely as tea; nay more freely, because of the
preparation

preparation it has already undergone in making it into this form. It is therefore that boiling water is not required, nor is proper for it. In the same manner the hop is a vegetable substance, that will give its agreeable flavour, and fine bitter, readily to hot water, and needs not long boiling in it; nor indeed will bear it without damage. Some boiling it requires, because the liquor into which it is put is not thin and pure as water, but is already impregnated with the malt: but, for the reasons already given, the less boiling it has the better.

As the malt will readily give its virtues and best qualities to water, we should no more let it stand too long in it; nor bruise and beat it about in it, than we should tea: and as the less boiling the hop has, the better the drink will be, we should use whatever methods will best answer the purpose of making it give its virtue by a little boiling.

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We

We know, if any plant, leaf, or flower, be first steeped or infused in the water, and then boiled, a few minutes boiling will extract its virtues as perfectly as an hour would have done if it had been at once put into the water, and made to boil: therefore we should by all means soak or infuse the hop some time in the wort before it is put with it into the copper.

Upon these plain principles, which are certain in themselves, and which practice and experience confirm in this very article, it will be easy to make a great improvement in the article of brewing: for we see by them that the malt should not be left a long time in the mash-tub; but that the liquor on the contrary should be drawn off after about three hours, when it has taken up all the fine qualities of the ingredient; and that we should not beat it about in the mash, because that will make the liquor coarse. In the same manner we

we should put the hops in a bag into the tub, which catches the liquor as it runs from the mash-fat; and by this means they will be so well soaked, that a very little time will serve for boiling them in the copper.

These two regulations will improve our brewing in general in a very great degree; and, instead of adding to the trouble or expence, will be a real saving of both.

Whatsoever can abate the time of boiling the wort, will be doubly useful in the brewings of private families; because their coppers being small, the effect of the boiling is much greater in the waste of the liquor, and evaporation of its spirituous part. In large coppers the evaporation is much less in proportion in equal time, and therefore the beer suffers less than in the small; and this is one great reason, though it be not regarded, why the brewers can brew better beer with the same quantity of malt, than other persons can for

themselves. Another great reason of their advantage is, that they brew the several kinds separate: and in this it will be well worth the while of private families to imitate them; for small beer which is made of the last runnings after strong, is never nearly equal to what is made but with a moderate quantity of the fresh ingredients alone.

C H A P. VIII.

The Utensils for Brewing.

HA V I N G given this general idea of the nature of the ingredients, and the principles of making beer, it will be proper that we now consider the vessels and implements with which it is to be performed. These make what is called the furniture of the brew-house; and, when they are understood in every part, the particular directions
for

for brewing will be plain, and familiar to the reader.

The convenience of water is first to be considered: and as it will be proper, if possible, to have both kinds, there should be conveniencies accordingly, a pump for spring water, and pipes for the river. We suppose the person situated where there are regular conveyances of water by common pipes, as the New River, Thames water, or the like, in London; otherwise there must be the expence of carriage of the river water: but in general the spring-water may be had upon the spot; and the nearer the well is to the brew-house the better.

A good leaden pump should be placed in the brew-house; and there should be a pipe to it, from the pipes of soft water, which should run just by the copper at a small height above it, and should have a cock to open directly into the copper. This will save a vast deal of trouble; and thus,

as it will be easy to fill the copper with either kind alone, or with a mixture of both, there will be always the means of brewing any kind of malt at pleasure; or indeed mixtures of any two may be thus managed as readily.

If the design be to brew high-dried malt, the river-water from the cock is to be let in alone; if pale malt is the kind to be used, the pump-water answers the purpose alone; or if amber malt, a mixture of the two. In the same manner any mixture at pleasure of the pale and brown malts may be suited with a proper water, by mixtures of the pump and river-water: and this we shall assure the brewer, that although the custom is to use one or other of these malts alone, the pleasantest and best drinks of all are to be made by a mixture of the several kinds. Of this we shall speak hereafter.

The

The copper must be proportioned in size to the quantity that will usually be brewed; and it will be convenient to have it larger, rather than smaller, than the expected necessity. It should be placed on an eminence, the floor being raised for that purpose where it stands. The best covering for the floor is that hard Dutch brick used for ovens; and there should be a drain from one part, which opens into the common sewer. By the means of this regulated height, all the following good purposes will be answered. The fire will burn brisker and better than if it lay lower; there will be no stop by waste or spilling, because the descent of the ground will carry all down immediately, and the drain will convey it away at once to the sewer: then the brick-pavement will admit no wet to soak, so that all will be dry about the copper: finally, as the height favours a clear conveyance to the mash-tubs

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and

and coolers, there may be an arm carried from the copper to these, to let all the liquor out by a turn of a cock, and save the labour of ladling it, according to the old method. The copper must be so placed, that the smoak shall have an easy and free current up the chimney; and thus the brew-house will be always sweet and dry, the whole business will be carried on with pleasure, and the master may look in from time to time without disgust. This is a very essential consideration; for, however diligent and intelligent servants are, there is no advantage like the eye of their master.

If the copper cannot be placed high enough for an arm to run to the mashing-tubs and coolers, there should be a little brass pump fastened to the inside of the copper, by which the water or wort can be pumped into the vessels, through small troughs; for this is not a tenth part of the trouble of the old way of ladling out; and

and it answers also better, because of the greater regularity of the heat.

The mash-tub should be large. Suppose the copper to hold a hog-head, the mash-tub should be big enough to mash a quarter of malt with convenience. It should be round, and not over deep; and over its bottom there should be laid a false bottom, which may serve as a strainer; when, by opening a cask placed below it, the wort is drawn off into the receiver.

The receiver should also be a round tub, shallower than the mash-tub, and lined throughout bottom and sides with thin milled lead. This is a vast advantage to the brewing, for the lead is easily kept perfectly clean, and is incapable of getting any bad scent or taste, as will sometimes happen to wood in spite of the best care. The cold nature of the lead serves also to cool the liquor the more quickly, which is a great article in this vessel. The

mash-tub is to be placed so high as to leave room for this to move under it, because that will give the convenience of letting out the wort from the mash-tub into it, and of conveying it back again easily into the copper. The best method of doing this is by a small pump kept for that purpose. This hand-pump must be so high as to throw the liquor into the copper; and by this means here is the whole matter of conveying the water into the mash-tub, the wort into the receiver, and thence back again into the copper again, without the common troublesome and wasteful method of ladling it by bowls from one vessel to another.

There should be two coolers, or backs as they are usually called; and, to proportion them to a copper of a hoghead, they should be each ten feet long, and five feet wide in the clear, their depth very little. They should be lined with milled lead as
the

the receiver, and placed against the wall as near as may be to the copper, one at two feet from the ground, and the other two feet above that.

The working-vessel or tun should be placed at some small distance from the coolers, and should be of a square shape, and lined throughout with the same milled lead as the others; and the whole should be so disposed, if possible, that the cellar may be near, and be so much lower than this working-tun, that the beer can be conveyed by a cock and a pipe out of that vessel into the casks.

These should be made so smooth on the inside, that no fur or foulness can stick to them: but of this we shall treat hereafter. Our present business is in the brew-house; and it is necessary to understand this perfectly before we meddle with the affair of the cellar. There must be in the brew-house an oar to stir the malt in the mash, bowls and other small utensils for examining the liquor,

quor, and a pipe lined with lead for conveying the liquor or wort from one of the vessels to another. This pipe should be made of solid good timber, and should be five inches diameter in the clear. By this full size it will never waste any of the liquor by stoppage; or by over-hasty pumping bubble out at the top, as pipes of smaller bore are very apt to do, when managed ever so little amiss.

This is the compleat furniture of a brew-house. It may be contrived at less expence; but what is here set down will not be any great price; and, when the vessels are once made in this manner, the business is done, not only for the owner's life, but for several generations. The common vessels are frequently out of order: these which are lined with lead are subject to scarce any accidents. The best sort of lead for doing them, is that of four pound to the foot; and every common work-
man

man will know how to manage the business.

Common tubs may serve in the place of these to those who dislike this expence; and even a part of these may perhaps be spared, according to the newest method of brewing, which is that of working the beer only in the cask. This will be the subject of a chapter in the succeeding part of this treatise.

C H A P. IX.

Of the several Operations in Brewing.

THE course of the malt-liquor in the common way of brewing is this: from the pump or cock the water is delivered to the copper; from thence it is let in to the mash-tub, when it is impregnated with the virtue and strength of the malt; thence it is let into the receiver, where it runs pure from the malt; and from this it is pumped
into

into the copper again, in order to be the better impregnated with the hop. Thence it is again pumped out into the coolers, and from these it is conveyed into the working-tub; and, finally, from thence into the cask, where it is to be kept.

This is the round of the liquor from pure water to malt-drink; and in these several vessels the changes are gradually made.

The making of these changes, or the operations of brewing, should be understood in general before we come to speak of the absolute practice. This is the way to be perfectly understood: and, for want of this, the common directions are useless; since, in giving an account of brewing, it is necessary to use the names of vessels, and of the operations performed in them, which can never be understood unless those articles are first explained.

C H A P.

C H A P. X.

Of Mashing.

THE mashing is the mixing and steeping the malt in the water, in order to obtain its virtue; and upon this depends the success of all the succeeding operations. As the malt is so well prepared to give its virtue to the water, a moderate degree of heat is sufficient for that purpose: but this should, if possible, be preserved for some time regularly, and that would prevent all the mistakes of long mashing, and of beating the malt, which we have shewn to be very wrong, and which always spoil the beer. We find by experience, that water, of a certain moderate degree of warmth alone, is fit to extract the virtue of malt; for, if it should be put in cold, very little of its strength would be obtained; and, if it should be put on
boiling

boiling hot, the consequence would be the same; the malt would part with little of its strength. This may seem very strange; but it is equally true, and every common brewer knows it. Now, as one degree of heat alone does really take out the virtue of the malt, the perfection of mashing would be to continue that degree of it. In the common way the malt is put into the water, when it is of this fit degree of heat, as well as the brewer can judge of it, and in general tolerably right; but from that moment it continues cooling. So that if the heat were ever so perfectly right at the time, it does not continue so to do any service. This has occasioned the beating of the malt in some places, and the over-long keeping it in the mash in others: both of which are very wrong; the one thickening the liquor with absolute flour, the other deadening it with the earthy part of the grain.

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The perfection of mashing would therefore be, to keep the water and malt at that right degree of heat at which they were put together, for so long time as would serve for extracting all the valuable part of the malt, and no longer. This may be done by placing the mashing-tub in a larger vessel full of hot water, which may be replenished with fresh-heated water as it cools: the mash may thus be kept in one due degree of heat for the whole time. In this way two hours will extract the full virtue of the malt; and this will prove one of the greatest improvements in brewing.

This we shall direct hereafter with all particulars; but it will be first proper to explain the other operations, and give the common method of brewing.

C H A P.

C H A P. XI.

Of Hopping the Liquor.

THIS is the second capital operation of brewing. When the mash is finished, the liquor impregnated with the strength of the malt is let out into the receiver, strained from the grains. The liquor is in this state called wort: it is prepared for working, but there requires first of all to give it the flavour and the virtue of the hop. This is done in the common way, by a great deal of boiling. We have observed already, that a very little, with proper management, will answer the purpose, and the drink will be proportionably better. Therefore, in order to this, the hops should be rub'd to pieces thoroughly between the hands, and then put in a bag into the receiver, for the wort to run gradually upon them. After this

this gentle wetting and soaking, they will give their virtue with a few minutes boiling; and the drink will be not only better flavoured with this ingredient, but will be the better also in itself by sparing the rest of the boiling.

C H A P. XII.

Of Working the Beer.

WHEN the wort has been duly boiled with the hops, it is to be pumped into the coolers; and from thence, when cooled, it is to be let into the working-tun. It has now all the strength of the malt, and the full virtue of the hop, and requires only fermentation in order to give it that spirit we expect in beer. The common way is to work it in a large open vessel; but by that means a great deal of the spirit of the liquor is lost; nor is there a due regard shewn to the
necessary

necessary time, or to the degree of the fermentation. The regulating this degree of working will be one great article of the improvement of brewing; and the drink will be rendered much more spirituous, by covering up the working-tun very carefully. We shall have occasion to shew in the succeeding chapters that a closer vessel is much fitter for this purpose.

C H A P. XIII.

Of Brewing in general.

HAVING thus laid down the system or theory of brewing, and explained the ingredients, the utensils, and the several operations, we may safely proceed to the practice of the art; as every term will be understood, and all the necessary directions will appear plain and familiar.

We

We propose to treat of the making all the kinds of malt-liquors, of whatsoever denominations, and to direct all kinds of brewing. The most new and improved methods will be laid down in their place. But we shall begin with the old, directing the common way of family-brewing in a method somewhat more regular than it is usually performed; and from thence proceeding to the newest improvements.

There are two great differences in all brewing, arising from the making strong and small together, or brewing each separate. Of these two methods, the way of brewing each by itself is vastly the best; and we shall direct the particulars of it. But as many are fond of the old way, and think it easiest and cheapest, we shall first give the best way of doing that. Upon this plan we are now to enter upon the practice of brewing, by directing the
best

best method of making strong and small in the old way together.

In all methods of brewing there is a certain degree of fermentation necessary for impregnating the water with the full strength of the malt; and many very disagreeable ingredients have been used even by families to promote it: but these are not necessary. A due degree of heat being preserved, a sufficient care may in this respect be safely put in the place of all those other materials that is needful, and nothing more. Too long mashing we have shewn, is to be avoided; and a very little boiling of the hops is sufficient; and this is what gives the general improvement in family-brewing. He will succeed best who can bring his malt soonest to give out its virtue, and can impregnate the liquor in the easiest and shortest way with the hop; for this delicate fruit looses its very nature in tedious preparations.

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The malt must be broke in order to its communicating its virtue fresh to the water; and that is done by a mill. It is not to be ground fine; for though many practise this, it is a great error. If it be only cracked, so that no grain comes out whole, it is sufficient; for the intent is, that the water should take out the virtue of the malt, not be mixed with it in the manner of paste or gruel.

When the malt is ground, it should lie sometime to mellow in the air. This should be in a cool room, where no sun comes. The time it will require to lie is different, according to the kind. The brown malts should be allowed three days; the pale kinds only two or one, for the quantity of fire used in drying the brown malts makes the air take effect upon them the more slowly. After this lying in the air, less mashing answers the purpose: the strength of the malt is more perfectly extracted; and the beer will be considerably

fiderably stronger, than it would with the same quantity of malt any other way. The great care must be, that it gets no damp in lying. The place must be cool, and perfectly dry.

When the malt is ground, it will be time to look to the brewing-vessels, for all possible care must be taken that they are sound and clean. Cleanliness is as essential in the brew-house as in the dairy: fermentation, on which all depends, is a very nice article; and the least mixture of foulness will disturb the operation: the least ill-scent in a vessel will also communicate itself to the liquor.

Every tub, and every utensil, should be boiled in the copper, or very well scalded, then thoroughly strained, and then scalded again, and after this exposed to the air to sweeten. This being done, while the malt lies to mellow, we may proceed to brewing.

The

The greater quantity of beer is brewed at a time, the better the work always succeeds: therefore it is adviseable in families to brew as much at once as the brewing-vessels will hold. But though this be always an advantage, the smallest family may brew for their own use with profit; and they will have their beer of every kind much better, purer, and wholesomer than they can buy. The trouble is not great; and the saving is at least one third part of the price, at the same time that the beer in every kind is better. To accommodate our directions to small families, we shall consider the brewing of only five bushels of malt; which is to be done into strong and small beer in the following manner, and, with due care, will answer fully to expectation.

D C H A P.

C H A P. XIV.

The Practice of Brewing in small Families.

A Copper that holds twelve pails of water, will answer very well for five bushels of malt. Suit the water to the kind of malt, according to the directions in the preceding chapters; and, having filled the copper with it, make a brisk fire: when the water begins to be hot, sprinkle upon the surface of it half a peck of the malt, without stirring it in. Let it swim upon the top till the water simmers, and just is beginning to boil: then draw, or ladle it out of the copper into the mash-tub, and let it stand to cool a little. A thick steam rises from it at first, and is scalding hot. This by degrees abates in quantity and heat; and when a man can hold his head over it, and look down upon
the

the water, so as to see his face in it, then it will be in a proper condition for the malt. Save out half a bushel, which will be wanted afterwards; and then pour the rest gently into the mash-tub, where the water is. While one person pours in the malt leisurely and slowly, let another stir it all about in the water with the oar, and continue stirring it some time after all is in, that the whole may be very thoroughly and very well mashed together. Some ignorant persons beat the malt in the mash-tub to break it, and force out the flour into the water; but this we have shewn is wrong. It should be very well stirred in, that all parts of it may be wet; but nothing more. The beating it about in the mashing brings it to the same case as if it had been ground too fine; which was what we have so carefully directed the brewer to avoid. The water is intended to take the tincture of the malt, not to be made

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into a mafs with the flour of it. When the whole is well stirred into the water, fprinkle on the half bufhel of malt that was faved out, and then cover the mafh-tub with feveral facks laid one upon another, to keep in the heat; for the degree of warmth the water had when the mafh was made, muft be kept up as carefully as poffible.

When the tub is covered, let the copper be filled with water again, and bring it to boil with a brisk fire. This fhould be ready about two hours after the mafh-tub is covered up: the facks are then to be taken off; and this boiling hot water out of the copper is to be let into the mafh in the tub. At the fame time open the tap of the mafh-tub a very little way, fo as to let out a ftream about as thick as a crow-quill, to run into the receiver, or under back; and let the liquor run off in this manner, till there is as much come out as will fill the copper. This is
the

the prime wort, and has all the fine flavour of the malt; and it will be as clear as fine old beer. When this fine first wort is in the copper, tie up a pound and half of hops in a coarse canvas bag, and put them into the copper to it. These will swim upon the surface at first; but, during the boiling, they will sink to the bottom; and this is the common rule taken that the boiling is sufficient. But this is not certain; and there are other rules by which to know it. It is an article of the greatest importance: for much less boiling will do than is commonly used: and if any more be allowed than is absolutely necessary, the beer will certainly be the worse for it.

The drier the hop is the sooner it will sink, and the greener it is the longer it will keep upon the surface. Experience shews this; and we find also, that when the hop sinks quick, from its having been very dry when used, the virtue is not all

got out of it so soon as it goes to the bottom. Therefore though this be a good general hint, it will by no means answer for an exact rule: the eye will be a judge when the wort is boiled enough by its breaking; but the best judgment of all is lastly to be found by the taste.

Therefore, when the wort has boiled some little time, take up a little of it in a bowl, and let it stand in the cold some time; it will curdle, and separate as it were, and this is called the breaking of the wort: a part of it will grow together into little lumps and be muddy; and, by continuing the boiling, these lumps will unite and sink to the bottom, in one mass. The liquor will be then clear again, and the boiling is by this judged to be sufficient; but the taste is also to be called in on this occasion; and by this alone we can properly judge when the hop has given its full virtue to the wort, for that

that is the best of all rules to know when to give over the boiling.

The breaking is altered in point of time by so many accidents, that it is very difficult to judge by it with any degree of certainty. The larger the quantity of wort that is boiled, the sooner it breaks. This is one observation that constantly holds. Then the older the malt, the sooner also it breaks; for if the malt be taken fresh from the kiln, it will scarce give any breaking in the wort at all. Thirdly, the degree of fire brings it on sooner or later; for always the quicker the wort boils, other circumstances being equal, the sooner it breaks: for the quickness of the motion encreases the tendency to it.

From all this it appears, that so many accidents may influence the breaking of the wort, that it cannot be admitted alone, for a certain rule to determine so nice a matter as the due boiling of the wort: and this is

so essential, that all the rest of the articles are of less importance. It has been the custom in general, as we have observed, to allow too much boiling: and this, beside deadening the taste, really impoverishes the beer in strength: for the sediment is made of the mealy part of the malt, and the heavier tincture of the hop: it therefore contains a part of the strength that was originally in the wort; and the longer the whole is boiled the more this sediment will encrease; and therefore the more strength will be lost.

In fine, as to the breaking, it happens from these various causes, so uncertainly, that it will be seen sometimes in a quarter of an hour, and sometimes not in two hours; and therefore it can never be allowed a proper rule by which to manage the boiling. Neither is it any more necessary for the sake of clearness in the beer; for it is easy to make beer without boiling at all, or with so little

little boiling, that the curdling shall not be seen, and yet that beer shall be as perfectly clear as any that can be brewed.

For these reasons, by whatsoever rule the brewer is guided, he will find it an essential article not to let the wort boil too long; for the finest part of the malt, and the light pleasant flavour of the hop, are evaporated by it, and the liquor is rendered weaker and more dead to the taste. Therefore let him carefully attend to the several observations before laid down of the accidents that make the wort break sooner or later; and, at the same time that he looks into the wort, let him also taste it. He will thus find when the hop has given its best flavour; and let him not wait for the falling of more of the sediment, but get it out at once into the tubs. It must then be drawn or ladled out of the copper, and run through a sieve, that it may go clear into the coolers.

Then this quantity is to stand to cool; and, in the mean time, the mash in the tub may be stirred about with more warm water; and, if he pleases, strengthened with a little fresh malt, as is the custom of the London common brewers, and then drawn off and boiled up with the same quantity of hops; and in the same manner in all particulars.

This is the plain method of brewing, as far as the boiling off: but in the practice of it there is to be a different course observed, according as the design may be to brew only strong beer, or both strong and small.

In the method here directed, if some fresh malt be added to the second mashing, the wort from this will be according to the quantity, nearly as strong as the first; and there will be the two coppers of clean, pleasant, and wholesome strong beer. Any one may by the same rules, only by altering the quantity of malt, make it stronger or weaker
as

as he pleases. The remainder in the tub will make but a poor kind of small beer, by mashing it again with cold water, and boiling this up with the old hops: but when good small beer is intended to be made at the same time with the ale, the different management must be in the second mash. Whatever strength is to be given to the small beer, must plainly be taken from the strong; but even in this case, when good small beer is designed, the first mash must run off clear for the strong, and with all its virtue; only the second copper of water must be poured on quick, and suffered to run off in a large stream. This wort of the second mash will be very much inferior to the first; but, being mixed with it in the coolers, they will make together a good drink; and there will remain strength and virtue enough in the malt to afford tolerable small beer. However, a very small addition of fresh malt will give

it so much spirit, that no one who brews both together should ever omit to give the small beer intended for his own table that assistance. According to this rule, to make the better sort of small beer after the strong, when the second wort is drawn off, put in a copper of water upon the grains, and pour over it, lightly and carefully, half a bushel of fresh malt. Cover it up; and then drawing off leisurely, boil it up with half the quantity of hops that was allowed to the former; and from the same grains, in the same manner, there may be yet drawn another running of small beer: but this last will be very poor.

When the wort of the first mashing grows cool, it is time to begin fermenting it. Yeast is the proper ingredient for the purpose; and, according to the way in which this article is managed, the beer will be better or worse, whatever care has been taken in the preceding operations.

tions. If the brewing be in winter, the yeast must be put in while the wort is milk-warm; but if it be in summer, it may stand to be cold first. The way to do it is this: some yeast must be put into a large bowl, and a little of the wort just warm mixed with it. The yeast will swim at the top at first; but after some time, with a little assistance, it will blend itself with the wort, and begin the expected fermentation. It is then to be mixed with the wort drawn from the coolers into the working-tun. The fermentation will encrease from time to time, and the whole surface of the liquor will by degrees be covered with a fine pale-coloured curly head, not rising into a light froth, nor into great loose blisters; for these are wrong appearances in the head, and are generally owing to putting in the yeast while the wort is too hot. Some degree of heat is necessary to promote the fermentation; but a
very

very little is sufficient. In summer the very temperature of the air is enough; and the wort therefore never answers so well in fermentation at that season as when all the heat of the fire is absolutely gone. In the colder months, as much of it is to remain in the liquor as will give the same temper as the perfectly cooled wort in summer, and nothing more.

A quart of thick and good yeast is a proper quantity for the hoghead of such wort, as we have directed to be made by the two mashings.

If the wort does not come on properly in the working, sift over the surface, from a very close sieve, a little of the finest wheat-flour. It must fall so regularly and neatly as to cover the whole surface of the wort, making a kind of artificial head; which, keeping in the air, will soon produce that natural one that was before expected.

¶ If

If this does not answer, the fault is most probably in the temperature of the air, which suffers the liquor to be colder than is proper for fermentation. The best way to remedy this, is by enclosed hot water.

Fill a stone jugg with boiling water, and let it down gradually into the wort. It will sink to the bottom of the vessel, warming the liquor all the way it goes down; and, when at the bottom, will communicate a gentle glow to the whole; and, as the liquor warms, the fermentation will gradually and properly come on.

The common practice is to heat a little of the wort, and put it to the rest: but this is a coarse, irregular, and violent method; therefore it does not succeed so well: the other seldom fails.

There are other methods of encreasing the fermentation, by the addition of particular ingredients; of which we shall speak hereafter.

Ginger

Ginger is the usual addition among the good housewives; and the common brewers find a peculiar use in the purging root jalap. They use more of this drug than all the apothecaries in the kingdom. This is a truth the druggists will attest; and which the government, which has so lately and so eminently distinguished itself by the care of bread, should take into consideration. If the easy methods before directed fail to raise the working to a proper pitch, a handful of bran tied up in a piece of canvass, and put into the fat, will often answer the design: or if this fail, the farther addition of two or three whites of eggs, beat up with brandy.

On the contrary, when beer works too violently, which is often the case, from too much yeast, too warm weather, or the like circumstances, it will be checked at once, and brought to a right condition, by putting in a little fresh wort cold,
and

and stirring it gently about with a bowl. A little of the wort should therefore be always reserved for this purpose. If this does not succeed, rub a piece of clean oak board over with a small bit of fresh butter, and lay this gently in at one side of the fat, taking it out as soon as it has been there long enough to shew its first effect.

When the fermentation is brought to a proper standard or degree, the care must be to keep it at that for a due time. This should not be less than two days and nights; and, if somewhat longer, the better.

It is a custom in some places to beat the yeast into the working wort from time to time, and thus to keep it in the working-tun for a week or longer. The beer is rendered very strong by this method; but it is neither so pleasant as it will be when worked only a moderate time, nor so wholesome. In the other way, which is the true practice, when
the

the yeast begins to fall, put up the drink into the vessel; and, when it has done working in the vessel, it will be fit for service. The small beer is to be managed in the same way: and thus there will be a hogf-head of ale, and the same quantity of small beer, of more or less strength, according to the different management; and these will be pleasant and wholesome.

This may be called the common family way of brewing; and it will answer very well for the usual method, where the person is not nice or delicate in his malt-liquor, nor intends it for keeping; but is content to brew as often as his cask is out, and to drink the general run of home-brewed liquor.

But the practice of brewing is capable of being carried to a much greater perfection: and the first advance toward that is, to brew every kind of malt-liquor separate. The several methods we shall now proceed

ceed to direct, according to the latest and best discoveries. And we may venture to say, that no art whatsoever has in late years been the subject of so many improvements as this of brewing.

Malt-liquors, when we speak of them in general, are of three kinds, 1. STRONG BEER, which is intended for keeping, and is called October, because the best is brewed in that month: 2. ALE, which is a strong malt-liquor, but not designed for keeping: and, 3. SMALL BEER, which, when made but of a moderate strength in the way we shall direct, will keep a very considerable time, and be improving all the while.

C H A P.

C H A P. XV.

*The Method of Brewing the finest
Strong Beer.*

IF the conveniences of the brew-house will serve for brewing three or four hogsheads of October or strong beer at a time, that will be the best practice. We will suppose three hogsheads. The receipt will equally serve for any larger or smaller quantity, only allowing the due proportion of the ingredients. For brewing the three hogsheads, chuse five quarters of fine sweet malt. Let it be such as has been malted about a quarter of a year, and has lain in a large heap all that time to mellow. See that it be perfectly sound, fine, tender, and entirely clean from dust or any other mixture. Let this be ground with care, just so much, that every grain is fairly broken, and no more: then lay it up in a heap in a cool

cool shady place, and let it lie eighteen hours. Thus will you have a perfect fine malt, in the exact right condition for brewing.

C H A P. XVI.

Of Mashing.

CHUSE a sweet, clean and well-tasted water, softer or harder according to the nature and kind of the malt, but perfectly pure. When the water is got into the copper, put in a quarter of a pound of hops with it, and an ounce of common salt; and, when it begins to heat, sift over it, through a coarse sieve, as much malt as will just coat it over to keep in the spirit. When this is on, brisk up the fire, and bring the water to simmer; but don't let it boil up: then draw it off at once into the mash-tub, which must be placed in a larger tub, as before observed, with the coat of malt upon it; and
let

let it stand till the thick vapour ceases, and you can conveniently look down into it, and see your face. When it is in this condition, pour in the malt, a little at a time, and let some other person stir it about all the while it is running in, that there may be no clodding of it together in any part. When all is in, let the stirring be continued a little, that you may be sure every part of the malt is free and well-mixed with the liquor: then fill up the cavity between the outside of the mash-tub and the outer vessel with water of the same heat, that in the mash-tub was when the malt was put in: keep water boiling to supply the place of this as it cools: observe the temper of it at first, and once in ten minutes draw off as much of that which is cool as will be needful to make room for so much fresh boiling water as will bring the whole to the same heat it had at first; and every time the
fresh

fresh hot water is put into the space between the two vessels, give a very slow and gentle stirring to the malt in the mash-tub.

In these double vessels there is to be always one cock that communicates with the space between the two where the water is to let that out as it cools, and another through the real bottom and false bottom of the mash-tub, which goes also thro' the outer vessel, for discharging the clear wort, when the mashing is done, into the receiver. No mashing-vessel of any other kind can keep a due heat, or answer the purpose of opening the substance of the malt; for if the water be too hot when the malt is put in, it hardens instead of dissolving it; and if it be too cool at first, it soon grows into full condition of service. The malt is to be kept in the mash-tub in this manner one hour and three quarters; and in that time another copper of water, equal to the first, must

must be made ready, covering it with a head of malt, and bringing it just to simmer.

A little before this second copper of water is ready, the first wort is to be begun to be run off; and the hops are to be prepared for soaking in it as it runs. This is the improved method of brewing. The whole quantity of hops for the three hogsheads of this beer, which is intended for keeping a considerable time before it is used, must be eighteen pounds, that is, six to each hogshead. Therefore, as the quantity of one hogshead is now in the mash, take six pound of hops, sprinkle them over with a very little salt, and rub them well to pieces between the hands. Tie them up in a loose bag of coarse canvas, and put them into the receiver, that is, under the mash-tub: then let the wort run clear out at the tap in the mash-tub in a small stream, not thicker than a large straw; and let it

it run upon these bruised hops. This will soak them, so that they will readily, and at once as it were, give their full virtue, when the wort comes to be boiled. The salt that is put to the water, and to the hops, is not enough to give the least taste to the wort; but it will give it a kind of spirit that water alone never has; and will make it extract, much better than it otherwise would, the virtues both of the malt and of the hops.

As the wort drains from the malt in the mash-tub, there must be a gradual supply from the copper of boiling water. The intent is, that a hoghead of wort be run off; but though something more than a hoghead of water was used, to allow for the quantity that the malt soaks up without return; yet this whole quantity must not be had from what was first in the mash-tub. There are to be three such mashings from this quantity of the malt; and one

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is to follow another without letting the malt ever grow dry. Therefore, when the liquor is so far drained out of the mash-tub, that the malt begins to look dry, let some of the hot water be let out of the copper into the mash-tub; and stir the malt well about in it. This must be let in very gradually, cooling it first to a due degree; and by this means there is to be a supply of water kept to the malt, while the first wort runs off: so that when there is a copper full run into the receiver, the second copper of water will be all got into the mash-tub.

The hops will have been all this time soaking; and the copper being now empty, the wort in the receiver must be pumped or ladled into it, and the hops put in with it; then the fire must be made up, and the wort must be brought to boil briskly. Let it boil a quarter of an hour, and no longer: then let it be drawn off into the cooling backs; and the
copper

copper be filled the third and last time with water.

In this proceed exactly as before. The second copper is now mashing; it must be stirred gently about, and there must be boiling water from time to time added as before to the quantity, between the mash-tub and the outer vessel, to keep up an equal degree of heat. This mashing must last an hour and three quarters; and in that time the third copper of water must be got to a due degree of heat.

When the time is near expired, six pounds more of the hops must be just sprinkled over with a tea-spoonful of salt, and thoroughly rubbed to pieces in the hands again: then they must be tied up in a bag as the former, and put into the receiver. The second mash having now been kept at a due degree of heat, the appointed time the wort is to be let out in a small stream into the receiver, running upon the hops. Ma-

nage this exactly as before; and, when so much of the wort has run off that the malt begins to be dry, let in some of the water again out of the copper. This may be of a degree of heat, somewhat greater than the first or second; because the grains having already parted with a great deal of their strength, require it, and because being to be mashed a last time, something more in point of heat is necessary.

When there is the full quantity of a hoghead run out of this second wort, stop the cock of the mash-tub, let in the remainder of the water from the copper, and immediately put in the wort out of the receiver into the copper, with the bag of hops along with it.

A quantity of malt having been saved out for the purposes of covering the water and capping the mash; both these articles must be duly attended to, in the three several operations we have thought it therefore

fore best; for the sake of avoiding three repetitions, to name these articles here together. The quantity of water in each copper, is to be so much as will allow a full hoghead of wort, beside what the malt soaks up. Upon each copper full of water: there is to be spread a thin coat of malt to keep in the spirit; and over each mash there is also to be spread the quantity of half a bushel, by way of cap to the whole.

The third copper of water being now in the tub, and therefore the last mash made, put on the cap of fresh malt, which is all that was left, and let it stand; keeping the water between the outer tub and the mash-tub always of a due heat, to keep up the full degree of warmth in the mash.

A small copper will be necessary for the heating the water for this service; because the other will be constantly employed in the heating

the water, or boiling off the wort, the whole time of the brewing.

The second running of wort being now in the copper, brisk up the fire, and bring it to boil: let it boil twenty-five minutes, and no longer; and then run this off into the coolers.

The business now becomes easy; there is only one mashing remains, which is to be in the mash-tub an hour and half, and no longer. Then rub the last quantity of hops, which is to be also six pounds, between the hands, without any salt; for the wort is now thinner, and will take effect upon them alone; tie them up in a bag, and put them into the receiver. When the mash has stood its time, turn the cock to run a somewhat larger stream; and, when the liquor is all come off, pump it, or ladle it into the copper, and put in not only the hops new soaked, but also the two former parcels. Boil all together the same time that the last

last copper was boiled, and then let the wort run off into the coolers.

C H A P. XVII.

The Cooling.

TH E S E three worts being mixed, make one regular and excellent quantity, in which there is all the strength and virtue of the malt very perfectly; and the entire flavour, and due bitter of the hops; without any of the earthy and heavy part of the grain, or of that austere and unpleasant taste which hops yield when they have undergone a vast deal of boiling.

The proof of this is easily found; for this beer will keep ever so long: and hence it is plain, that the hop has given all that was expected or required of it, a fine flavour, and a power of keeping: and as to the other, the fact is so evident, that the

wort has all the virtue of the malt, that the grains are mere chaff.

If this brewing has been managed exactly according to the orders here laid down, there could not be small beer made of the grains that any one could drink, the full virtue having been taken out by these repeated mashings, with a continued heat.

If any one dislikes the addition of this small quantity of salt, it may be left out; but the beer will neither be so strong, so brisk, nor so clear without it. As to the use of the double vessel for mashing, with the hot water between, that is essential. It is on this depends the entire virtue of the malt being taken into the wort.

One great advantage of the putting the hops into the receiver is, that the beer which is made thus never foxes, as the brewers call it: but the great article is, that being thus soaked by degrees, and steeped in
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the water, they will give out their virtue with so little boiling, as will not damage the drink; for when the wort is boiled too long, as is the most common of all errors in brewing, it becomes too thick to ferment perfectly, and its sediment can never get clear down; so that all the pains which can be bestowed, and all the judgment that can be employed afterwards, will never make it good and perfectly fine drink.

One thing there is in this receipt which differs from the common practice, and the usual opinions: this is the degree of boiling given to the three coppers of worts. It is customary to boil the second longer than the first, and the third longer than the second; and, with the common way of making, this is certainly right: but when the malt is kept up in its proper heat all the time, by the water between the two tubs, less and less boiling always answers for the succeeding worts. The time here di-

rected for each, is nearly what does, and perhaps comes as close to a good general rule, as any measure of time can; nay, we may add, if the malt be just such as is directed, and the whole managed regularly from the beginning, this very time almost to a minute will do the business; but the eye and taste are the true and certain judges, and they must determine whether the worts shall be kept in the copper a few minutes longer, or run off a little sooner than has been here directed.

C H A P. XVIII.

The Working.

THE worts in common brewing are usually cooled separate, and let down into the tun one after the other: but this is an injudicious practice; for the business is to mix them perfectly, without which they will not enter upon the great article
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of fermentation regularly; and they can never be mixed so well as while the several parcels are all warm. 'Tis therefore we have directed the running off the worts from the copper into the coolers, one to the other. And when there are two backs or coolers, as we have directed, that are large enough, the best way of all is this: let all the three worts run into the upper of the two backs or coolers; and, when the third is in, let the whole stand two hours; then draw it off slowly and leisurely into the under cooler or back, and by this means leave behind any coarse sediment that may have come in with it.

In this second cooler let the whole stand till it is perfectly cold, if the weather be mild: but if the season be very cold, let there be a very small degree of heat remain in the wort: then draw it off leisurely and slowly into the working-tun, so as not to disturb the liquor in falling in, and

to leave a second sediment in the cooler.

As in several points this receipt differs from the common practice, and from what are called the best receipts for this kind of beer, it may be necessary, as we go on, to say in what the difference consists; that those who chuse the old way may follow it, and such as prefer this, which is indeed vastly preferable, may understand the reasons of the difference. The several points in which the variation consists, may seem little; but it is on these little things the excellence of brewing depends.

It is a common direction that the worts is to lie thin for cooling; and the usual practice, which in these cases is to let the worts, one parcel after another, into the coolers, and thence into the tun, favours it; but experience in this perfect method of brewing shews otherwise. In this way the whole three hogheads of wort are to be in the upper cooler together;

gether; and this way the whole will cool more slowly indeed, but much better, than in the three parcels; for while it cools in this large body, it mellows all the time, and it loses less of the spirit; for when the wort is laid thin, as brewers express it, that is, a small quantity in a broad cooler, the air has great power in evaporation; and the wort not only becomes thicker, by what it loses in the cooling; but what is much more essential even than that, this loss is of the most spirituous and excellent part.

These are the disadvantages attending the common practice, and the common rules for spreading the wort thin: but besides the benefit arising from the preventing these by our method of cooling in a large body, there are several particular advantages attending this practice. The mellowing of the wort from a perfect mixture of its parts is one; another is the certainty that all the
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three runnings are perfectly mixed one with the other ; and consequently, every part of the liquor is alike before the working begins : and thirdly, the dropping some coarse matter twice over, namely, once in each cooler, which being the heaviest part of the ingredients, and, perhaps, some accidental foulness with it, would have prevented the regular and perfect fermentation. Every one knows how delicate and nice a point the working of beer is, and how small a quantity of any improper substance is able to check it : therefore this is a very useful practice which gives any such matter, that may by accident have got in, time to separate from the wort. The perfect mixing of the several parcels of wort, is a point as essential to the regular fermentation, though it be not so well understood, for the working never begins regularly, unless it begins in the whole liquor at a time ; and it never can do that, unless the
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several portions of it are perfectly mixed. This mixture cannot be so well made in the common way of brewing; but in this method it is done compleatly, partly by the time the three parcels stand together in the upper cooler, partly by the running of the whole from the upper to the under; and, finally, by the running of the whole in that cool and easy manner into the working-tun.

Having now got the wort into the tun, and explained the reasons of our particular practice in every article, we are to proceed to the fermenting or working of it. We have a fine subject to work upon; for this will be a clear, strong, and excellent wort; and nothing is wanted but care to make this fermentation as compleat, in its kind, as any of the other operations.

When the wort is in the tun, immediately get to work upon the yeast. Care must be taken to get that which
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is perfectly good, and it must be mixed with a little of the wort first, in a large bowl. Some of the wort must be saved for this purpose, as it is running into the tun, and a little more than is directly wanted for this service; because if the fermentation runs too high, which is what nobody can foresee whether it will or not, then a little of the cold unfermented wort is of all things the mildest and quickest method to check it.

The yeast must be thick, and in perfect good condition; and about three quarts will be sufficient for the working this quantity of beer. It must be mixed very gradually with a small quantity of wort let into the bowl for that purpose, and then the wort and yeast together gently into the tun. Cover it up close, and watch it from time to time carefully, to see that the fermentation goes on as it should. It ought to begin very gently, and encrease gradually;

dually; and if it proceed in this right manner, there will be first a smiling flowry head upon the whole liquor, and by degrees this will thicken into a yellowish white crust; and, upon holding the head a little over it, when uncovered, there will be a sharp penetrating scent arise. The head will from this time thicken more and more, and the scent will become more penetrating, for the space of three days and nights: at the end of this time it will naturally abate, and by degrees cease; and the drink is then to be got into the casks.

C H A P. XIX.

Of assisting a weak Fermentation.

THIS is the course of fermentation, when all goes as it should do; and to this we are to endeavour to bring the working, as nearly as we can, when, from unfavourable

vourable seasons, or any other accidents, it does not go on naturally right.

According to the variety of these accidents, the fermentation will sometimes be too slack, and sometimes in the contrary extreme, too violent: these, as they arise from contrary causes, require perfectly different remedies: but of these the mildest are always best.

If the working does not come on sufficiently, stir in the yeast with a clean whisk lightly and gently, two or three times. This will bring it, in most cases, to a just degree of fermentation. The whisk must be made of a few long twigs, and it must be perfectly clean; then scald it in boiling water, and shake and wipe it dry with a clean cloth: this will preserve some slight warmth, which, when it is used, will put the parts of the liquor it touches into a state of gentle fermentation; and this, assisted by the motion, and by the bringing

ing in of the head, will extend itself to the whole. The whisk must be used with a gentle and careful hand. The great point is to take it in time, for the mildest methods are always best; and these will do then, though they would not afterwards. The use of the whisk alone, at a proper time, when the fermentation first slackens, will save the disagreeable necessity of having recourse to other expedients, all violent assistances being hurtful to the drink in the end; and many of those which the common brewers use on this occasion, being prejudicial to the health.

If by neglect, or any other accident, the wort in the working-tun be in such a state of low fermentation, that this mixing and stirring in the yeast will not bring it to be right, the expedients already mentioned, under the head of common brewing, are to be used. The sifting a little fine flour over the surface, should be the first tried; and the next
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should be the putting in a stone-bottle full of boiling hot water, covered close down, that none of the water can possibly get out of the bottle to mix among the wort. If these are not sufficient, the putting in a small bag of bran is to be tried next. The practice of beating up whites of eggs with brandy, and putting them into the vessel, is not so proper for these fine beers. But if good management be used, one or other of the methods here directed will bring the fermentation to a due height; or, if they fail singly, they may be used two or more together; always observing the rules of moderation, and being careful to avoid putting the wort into the other extreme, of too violent a fermentation; which is certainly as dangerous a fault at least as the other. Thus, if whipping in the head alone, which is the way that always should be tried first, does not succeed, put in the stone-bottle of hot water, and whip

whip it in again from time to time as it rises, with this assistance. In most cases this will do: but, if it does not answer sufficiently, put in such another bottle of hot water well fastened down, sift over the wort a little creamy head of flour, and put in a small bag of bran: then observe from time to time to whip in the yeast that rises, and the working will soon be at its proper height.

Closer covering in all these cases brings on the fermentation the more hastily; and therefore, when there is occasion to use several of these assistances together, because of the difficulty of bringing it to work well, the covering should always be increased in proportion; and should not only lie close over the top of the mash-tub, but hang over the sides down to the bottom.

C H A P.

C H A P. XX.

Of lowering a too violent Fermentation.

BY these means the wort may be brought to a regular way of working, when it is naturally slow : but there is equal care to be taken that it does not come on in too violent a degree ; and on the appearance of this as much management is to be used to prevent it. Too much heat in the weather will sometimes occasion this excess of fermentation ; and sometimes, when a better season is chose, the same thing will follow from the yeast having been put in while there was too much heat in the wort. These are the most usual and the most obvious causes ; therefore timely care should be taken to avoid these accidents by a choice of cool weather, and by seeing that the wort is perfectly cooled in
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any thing warmer weather before it is put into the working-tub.

But if, from neglect of these cautions, or from any other cause, the wort ferments too furiously, if the head grows up too quick, rises too high, and swells up into large blisters: when this is seen in time, there is no great danger of harm arising from it; for as some of the wort has been saved out, and kept perfectly cold for this purpose, no more is needed than to put this to the rest. The whole or a part of it must be used according as the violence of the fermentation is greater or less; and this will seldom fail to check the fury of the working, and bring the whole to a due temper. The effect of this must be assisted by taking off the coverings from the working-tub, either in part or entirely: but when all is set right, and the degree of fermentation is what it should be, the tub must be covered up as close again as ever;
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for the more the spirituous vapour which rises in fermentation is at liberty, the greater quantity always then rises of it; and this being lost is all so much loss to the beer. But there is another reason why all possible care should be taken to prevent too great a waste of this, which is, that a second fermentation of the beer, though of a lighter kind, must be expected when it is in the cask. Without this it will never be fine; and this will not come on well if the spirit of the liquor has been wasted by this open working. It is for this reason, that beers which have been worked in an open working-tun, as some will do, always fail of that perfect clearness, and spirited taste which those have which have been worked under care. And for this reason no beers are so perfectly fine and brisk, as those which have been worked only in the cask, when that has been well-managed, and has succeeded happily. This is
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a method of which we shall speak in a succeeding chapter, and care and perfect right management may make it very successful: however, no method can exceed this which we are here giving, when it is managed right in all articles.

If the putting in of the cold raw wort, and uncovering the working-tub for a time does not answer the expectation in checking the violence of the fermentation, let no ingredients of any kind be added; but open the door and windows, and let in a fresh and thorough air. If this does not check it, draw out the wort out of the tub into four or five smaller vessels, and let it lie as shallow in them as is necessary. This will abate at pleasure the excess of the head; and it is not only a certain remedy in case of extremities, but is easily proportioned to the degree of the excess. Thus, when the working is very furious, a greater number of vessels may be used for

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drawing

drawing it into, that it may lie very thin; and, when it is not so violent, a smaller number may serve. The common practice is to put in a parcel of pewter plates and dishes: these operate by the grease which remains upon them notwithstanding washing; and a cleaner method is the buttered board directed for this purpose in common brewing: but neither is proper. When the fermentation is well regulated, it is to continue about the time we have named, that is, two days and a half, or at the most three: but in this case nature is to determine; for it is not the number of hours, but the condition of the wort; that is to ascertain the time of putting it into the cask. In this case no arts are to be used to prolong the fermentation, but at a natural time when it begins to cease the liquor is to be got into the barrels. If the yeasty head be beat down as it rises, the wort may be kept fermenting eight or
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nine days; and the drink would be the stronger for this: but it would be ill-tasted, and never perfectly fine, without worse arts than those here used to make it so. The intent in this brewing, which is meant for the finest beer, is, that the fermentation should rise naturally to its proper height, and in the same manner should take its natural decline. The spirit is to be kept in by covering the wort while working, and this will naturally continue the working perhaps ten or twelve hours longer than it would have been if open; then the head will begin to fall, the sharp vapour from the wort will rise in a less degree, and every thing will be plainly coming to a state of rest. This is the time for getting the wort into the cask, for it is intended to take a second fermentation there. The motion of the liquor in getting it into the vessel will contribute to this; but it will not come on well,

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unless there be some power of the first fermentation left there to bring it on. Art may answer the purpose of bringing on a fermentation in the cask, when the original working is entirely over; but that is not the purpose: nor will the liquor ever be perfect if managed in this manner. The fermentation in the cask should be a continuation of that in the tun, not a new one brought on after the other was over; and it is this, and this only, which can make the drink perfectly fine and clear.

C H A P. XXI.

Of Casking the Beer.

TH E R E F O R E, when the falling of the head shews the fermentation to be declining, let the wort be let out of the tun. This must be done by a cock, and that should be let into the tun at five inches above the bottom, for so much will be thick, making

making a kind of sediment; and this must be carefully left behind: only the pure and clear wort being taken off. This sediment is not altogether useless, tho' it must not be let into the cask of the fine beer; it is considerably strong, and will be a good addition to small beer, which may be brewed after this, and while it is working. This is a point that has been disputed; but there is no guide like experience, and that declares in favour of this way of using the large sediment that is thus made from the drawing of the fine wort from the tun.

The casks should be got in perfect good order by the time the wort will be fit for putting into them; and this is easily done, because we know perfectly when they will be wanted. Every thing should be of the best kind for this excellent sort of drink, and consequently the casks for keeping it should be of good stuff, and well made. No wood is proper but

heart of oak : and they should be so well made, that the inside being true and smooth, no foulness can lodge. If they have been painted some time, they will keep the drink the better, for the paint stops up the pores most perfectly, and by that means confines the spirit of the drink much better than plain wood : but this ought to be done in time, and they must be very well freed of scent, by standing in the air, before they are used ; for the abominable smell of fresh paint would certainly affect the beer while it was in so delicate a state as working. Never put this fine beer into a new cask : the true way to prepare the vessels for it, is to scald them very well, over and over, and then keep one or two brewings of good small beer in them. These will thoroughly season the cask ; and after this nothing will be required, but such through good cleaning as may be given by boiling water, and a little hard broom. When casks are painted,

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ed, this should be at the time of their first seasoning, that, if any flavour of the paint should be troublesome, it may be in the small beer, and not in such as is of this value.

While the beer is put into the casks, make a reserve of some of it in a small vessel by itself, to fill up the others as they work over. It is a common practice to fill them up with the very beer that has worked out of the vessel: but this is a coarse method, and not fit to be used for these fine kinds of drink.

Let the beer be drawn softly and carefully out of the working-tun, not to disturb the sediment it has made, and fill up the casks quite full. The drawing from the tun to the cask will put the whole in motion; this will affect the languid fermentation; and the working will begin again. They must be suffered to work out at the bung-hole; and, as the quantity is diminished, that way make it up out of what was re-

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served in the small cask for that purpose. This must be done with great care, not to disturb the fermentation that is now going on in the liquor; and the best method of putting it in is by means of a tin-funnel, with a long spout: this should be put in so far, that the end of the spout is two inches and a half buried in the beer, and then the liquor from the reserved cask must be gradually let into it, by pouring gently into the funnel. This will fill up the vessel without giving the least disturbance to the liquor: and thus it should be kept filling up from time to time during the working.

In this manner wait with patience the natural period of this slight fermentation: according to the nature of the malt, the water, the degree of boiling, or the season of the year, but most of all according to the management of it in the working tun, this will be longer or shorter: so that no time can be fixed.

fixed when it shall be over : but when it is, and all is quiet, stop up the casks close, and let them stand till the beginning of the next year ; that is, supposing the beer was brewed in October, which is in general the best time of all, it should stand perfectly quiet, and without any mixture, till the following spring. In this time it will perfectly fine itself.

The cold of the winter stopping all intestine motion in the beer will assist in this ; but in the beginning of spring, the weather will take effect, and there will begin a new fermentation, which will last all summer. To prepare for this, the vent-hole must be opened, and it will be easy to see whether the fermentation is or is not begun. If it be, the vent-hole must be left open ; and in that manner it is to continue all the summer ; if the fermentation is not yet begun, the hole must be stopp'd again ; and once in a week it

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must be opened to watch the beginning of this new fermentation.

This is a good time for putting in those ingredients into the beer, which are sometimes wanted: but we need not name them farther here; for in beer thus brewed, and managed throughout with this due care, there will be no occasion for any assistance more than the beer will get itself from time. If the examination of the beer should be omitted, till the fermentation had got any power, and the vessel all this while pegg'd fast down, there would be danger of its bursting; for tho' a very little communication with the air be sufficient, as we see by opening the vent-hole; yet if the vessel were every way close, the power of the fermenting liquor would certainly destroy it.

The vessel should stand with this opening till autumn. Usually a week before Michaelmas, or there-about, is the time when this last fermentation

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naturally ceases: it was brought on by the encreasing heat of the air in spring, and it goes off as it cools in autumn.

The beer may now be considered as compleatly fermented: the hop will be mellowed in it, and one uniform taste will prevail in the whole, which will be a mixture of the malt and hop mellowing one another; and neither will be predominant: therefore all this beer can possibly want now, is perfect clearness. This is so great a recommendation to all malt-liquor, that such as has been brewed with this expence and care, certainly should not be deficient in it. If it were now stopp'd up, and to stand the winter in quiet, it would of itself fine down, by settling a small sediment, and be very clear: but it is easy to help nature in this operation, and to cause the sediment to fall more fully and more regularly. The only ingredient that need be used is isinglass; and this is so perfectly innocent, that there is no need

to decline its assistance. The best way of using it is thus.

Buy two ounces of beaten isinglass; and take care that it is so well beaten, that there is no part of it thicker than a piece of thin paper: cut this very small, draw out a gallon of the beer, and put this isinglass to it; stir it well about from time to time, and let it stand till it is perfectly dissolved, then strain the solution thro' a coarse and perfectly clean cloth; take out the bung of the vessel, and carefully put it in: stir this about to mix it with the whole, and then lightly lay over the bung: there will be some small motion in the liquor from this, and the bung must not be put fast down till it is over. Then fasten the bung, and only leave a little opening at the vent-hole: then let it stand three weeks, and it will then be perfect. It may either be drank from the cask or bottled, and will be very fine, strong, mellow, well tasted, and wholesome. Where the intent is to drink it
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from the cask, still there should be a reserve of bottling, and the best way is to drink off two thirds by draught, and then bottle the rest, which in a good cellar will soon be in excellent condition.

If the whole be intended to be bottled off, the time is at one year's end; in the same manner as for drinking from the cask. If the beer be brew'd in October, it will be ready for bottling the October following; and, to give it full perfection, it should stand a year in the bottles; so that the beginning of drinking it should be two years old from the brewing.

This is the compleat method of brewing the October, or fine beer; and whoever will observe the several rules cannot fail of success. As to the degree of strength, what is here directed for the quantity of malt, will make such as shall be sufficiently potent; but it may be varied in this matter, at the pleasure of the person, by encreasing or diminishing the
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the quantity of malt. The allowance in this receipt is about thirteen bushels to the hoghead. There are some who brew with only ten or eleven bushels for this kind of drink; and others who go as far as twenty bushels: but this seems to be a kind of medium between the stronger and the weaker kinds; what we call the strong October being generally brewed with sixteen bushels to the hoghead, for those with twenty are too heady. There is no drink pleasanter than this kind, with the degree of strength here directed: and none can be more wholesome.

C H A P. XXII.

Of Brewing common Family-Ale.

THE Liquor call'd A L E, in distinction from beer, is usually of less strength; and is less tinctured with the hop: being intended for drinking soon after it is brewed,

Brewed; not for keeping years as the other. This should be brewed alone, that is, without any small-beer to be made from the same malt. The method of brewing is in general the same in all kinds; but as there are particulars needful to be regarded, in order to suit the operation to each particular kind of drink, we shall here give the method of brewing this kind, with all the needful management. With regard to the strength, that is to be according to every one's particular pleasure; but some standard must be fixed for the directions to be given here; and therefore we shall make the allowance eight bushels to the hoghead; which will make a very excellent drink of this kind.

The best method is to mix it; and the proportion I have found most agreeable is six bushels and a half of the amber malt, and one and a half of the high-dried or brown; not the porter-malt, for that does not mix well

well in the mash with any other ; but any of the common high-dry'd malts..

Let this be ground together, and let it be made somewhat finer than the former kind ; but still not any thing like fine : every grain should be broke and split, ~~that is,~~ broke twice..

The brewer will know by this what to direct ; it cannot be done with any such exactness ; but this is a kind of standard that may do by way of rule..

Let this malt, when ground, stand in the sack one day and night, or a few hours less than that ; and then it will be fit for brewing..

Chuse for the water such as is soft, no matter how it is in other respects.. As much

of this must be boiled as will allow for the soaking up of the malt, and afford a clear hogshead of the wort ; with allowance also for waste..

Set this on in the copper, put in a table-spoonful of salt, and make the fire brisk, a flight scum will rise to the surface ; take that off, and then sprinkle on about three quarts of bran : let it

remain.

remain till the water simmer and is going to boil, then skim this also off, and the water will be perfectly clear and ready; damp the fire, and draw off half of the water into the mash-tub; then let it stand till the great steam is over, and you can look into it. Then pour in all the malt except half a bushel: let it slowly and gradually into the water, and let some person stir it all the while, that there may not be the least lump of it together; then strew over the half bushel that was saved out; and thus leave it two hours, covering it up carefully to keep in the steam, and filling up between the mash-tub and outer vessel with hot water from time to time as it cools.

When the two hours are expired, rub to pieces in the hands three pounds of hops; and tie them up in a coarse canvas bag; put this into the receiver, and then begin to let in the wort from the mash-tub in a
fine:

fine small stream, running directly upon the hops; and with a whisk beat the bag in which the hops are lightly, to promote their first moistening in the liquor. As this stream is running, observe the other water. We ordered the fire to be damped when the first half was drawn off; and by this time the fire being kept low, this water will be about as hot as the water in the mash-tub was when the malt was put in. Brisk up the fire by one stirring, to make it a little hotter, and then run it off by degrees upon the grains; as the first wort is run off into the receiver. Thus, when the quantity of one mashing is got into the receiver, the second quantity of water will be in the tub. Let this stand two hours as the first did, keeping up a regular heat, and covering it; only take care to stir it very well together, but without beating when it is first put together; and in the same manner to take off the covering, and stir them once more at the

the end of the first half hour. All this while the first wort will stand upon the hops; and, when the two hours are expired, this second wort is to be let off from the mash-tub to the first in the receiver in a large stream. The grains will be very well exhausted by this management; and the worts will be strong, with all the virtue of the malt.

Let the worts stand in the receiver one hour, in which time they will let fall a small but coarse sediment. Then the whole, except this sediment, must be got into the copper, together with the bag of hops; for tho' there have been two mashings, there need be but one boiling. As this drink will not have time for settling in the cask like the October or strong beer, all possible care is to be taken to clear it in the wort. For this reason the wort is not to be pumped out of this receiver into the copper, as was directed in the brewing of October; but care should be taken
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in time to raise the receiver upon a foot, so that the wort can be drawn out of it by a cock placed an inch from the bottom.

The clear wort must be put into the copper with the hops, and boiled about eighteen minutes; the exact time must be known from the eye and taste, because it varies considerably in different brewings, from the weather, the nature of the malt, and other causes.

It must be then let into the upper cooler; and, after standing an hour, it must be drawn from that into the lower; leaving the settlement carefully behind. In this second cooler it must stand till it is perfectly cold, if the brewing be in summer; otherwise it need only stand till it is milk-warm.

Then it must be let off into the working-tun, still leaving the settlement behind; and the clear wort will be then in perfect good order for working.

These

These several settlements of the wort will be a vast advantage to the ale, making it nearly as clear as old strong beer: and the quantity that is lost will be very trifling. However, it will be proper to make allowance for it at the first proportioning of the water; because the brewing is intended to yield a full hogshead, and there can be no making up of the deficiencies, without greatly hurting the drink. Therefore, in the first allowance, there must be three gallons of water; for each bushel of malt, allowed for what will be soaked up in the grains; and if a half gallon to the bushel, that is, four gallons for this quantity, be allowed farther for this article, it will make up the loss of all the three sediments.

The wort being thus got into the tun, the manner of working it is to be in all respects the same with what we have directed for the other kinds. A quart of yeast will be sufficient, if it is good in its kind; and this is to
be

be first put into a little of the drink in a bowl, and then mixed with the whole. The tun is then to be covered up, and kept to the right degree of working, by the methods before directed. After this the drink is to be got into the cask, by drawing it clear out of the working-tun, and leaving the full sediment behind: a small quantity is to be saved to supply what is lost in the working in the barrel: after this, when the working is thoroughly over, it is to be stopp'd down, and will in a little time be fit to tap. It will be a mild, balsamic, and very wholesome liquor.

C H A P. XXIII.

Of Brewing Small-beer.

MOST families have got into so regular a way of brewing their small beer after their ale, that it will be not be easy to persuade them

them out of it : but they may be assured, that if they have any value for that kind of drink, it is their interest to brew it alone : for the trouble is very little more than the other way, and the drink is incomparably better. The method is very little different from the brewing of any other kind. As to the quantity of malt, or strength of the beer, that is at the pleasure of the person ; but, however it is intended in point of strength, the brewing should be performed at once ; and all that is made should be of one kind, not a stronger first, and a weaker afterwards. We shall give directions at the rate of two bushels and a half to the hoghead, which will make a very excellent kind. Mix two bushels of amber malt, and half a bushel of brown : let the whole be ground a little more than is done for stronger liquors, but then not fine. Let it be laid out on a floor, or in a cool airy room, eighteen hours, and then set on half a hoghead and
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two pails of water : this is the proper quantity for the first copper, as it will yield a clear half hoghead of wort. Put into the copper a handful of hops, as much salt as will lie on a shilling, and a race of whole ginger ; sift over a little malt to keep in the spirit, and just make it boil : let it out into the mash-tub, and let it stand to be somewhat cooler than for the stronger kinds of beer ; then pour in the malt, except about a peck ; and stir it a good while very carefully together, not beating it about hastily to break it, but mixing it very well with the liquor : then sift on the malt that was saved out, through a coarse sieve, and cover it up ; let it stand two hours, then rub to pieces a pound and a half of hops, and tie them up in a coarse bag : put them into the receiver, and let the wort run out upon them, in a small stream. While this mash is standing, the same quantity of water must be brought to a due degree of heat.

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pleasantness, any small drink of malt
whatsoever.

C H A P. XXIV.

Of Brewing of Porter.

NOTHING has occasioned more dispute or more diversity of opinions, than the affair of porter. It is a drink in a manner peculiar to London; and which has been attempted in vain in many other parts of the kingdom: it would be a great advantage if this drink could be brewed, in our great trading towns, especially. And the purpose of this chapter is to lead the way to that benefit: first by shewing the mistakes of those who fancy the brewing is by any natural means limited to London; and, secondly, by giving a plain method by which porter has been brewed in a private family. Finally, as this, tho' real porter, is, nor ever will be, entirely equal to the finest that is made
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at public brew-houses, we shall give the reason of that ; which is principally owing to the great quantity brewed together, and in a great measure also to the conveniences of those brew-houses. The result, we hope, will be, that private families may if they please brew porter for their own drinking ; and that those who have an inclination to attempt it in the public and larger way, at a distance from the metropolis, may set about it upon a rational foundation.

C H A P. XXV.

Of the Ingredients of Porter.

AS to any thing particular in the ingredients of porter, it is idle to fancy it. All beer is made of malt, hops and water ; and the particular additions used to the porter are only two, isinglass, and the juice of elder-berries. This I have a right to speak with some assurance, having had the opportuni-

ty of talking with a gentleman, once concerned in this trade, but who now having left it off with a fair fortune, is above deceiving me, as much as he is above being deceived himself. What is thought by the common people to be oxen's blood, is nothing but the elder-juice before-mentioned ; and the other ingredient is only beaten isinglass, well dissolved, and perfectly fine.

As to the water, any soft water will do ; and in general the softer it is, the better. Here is an advantage that private have over public brewers ; for the concerns of the latter being so large they cannot attend to those small niceties, that a private person can ; but all they can do is to chuse a proper water in general, and then to take it, and use it as it comes. The malt, we have observed already, is a high-dried kind, made of very ordinary barley, dried with culm. There would be no difficulty in any person's having this made at a common malster's ; nor indeed is there any necessity even for
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that trouble, since it is sold ready-made, under the name of *Porter-malt*, in many places. As to the hops, all that is necessary is chusing the best of their kind. A careful mashing is then a great article; and for the rest, it is no way different from the common practice in making all other malt-liquors.

C H A P. XXVI.

To brew Porter in a Private Family.

TAKE eight bushels of porter-malt, or any other very high-dried brown malt. Let it be ground carefully, so as only to crack the grains, not to let out the flour. Lay it in a cool place two days and one night. Then set on a hoghead of soft water, and so much more as will allow for waste, according to the directions before given. This must be covered with a head of malt, to keep in the
 G 3 spirit;

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spirit; and, when it has once boiled up, the fire must be immediately damped, and about one third part of it must be let into the mash-tub. Then it is to stand till cool. It must be cooler than what is required in the common method of brewing; and then the malt to be poured gradually in. While it is pouring in, it must be stirred very well about; and, when all is in, a person should work it still round and round, first one way and then another, for half an hour together; but this must be done gently, not to bruise or break the malt. The water in the copper should be kept at a little more than the heat of that which is used for the mash in common brewing: and when the malt has been thus mashed a full half hour, there must be as much more let in as will make it in the whole something more than half the quantity of the water. This must all be very well stirred once together, and then covered with the malt that was left out for that purpose: it is then to be

be covered close up in the vessel to keep in the heat, and thus to stand two hours and a half.

Then bruise four pound of hops between the hands; and tie them up in a bag; put them into the receiver or under-back, and let the wort run out upon them in a fine, small stream. When this is running, stir up the fire under the copper, and make the remaining water considerably hot; then run it on upon the grains, when the other is nearly run off; and, after stirring them well about, cover the mash-tub, and let them stand two hours more. Then run this second wort upon the first, with the hops still in it; and let them stand till quite cold.

Then lay a cask a little above the bottom of the receiver, draw off the whole directly, so as to leave the coarser that has settled behind; pour the wort into the copper, put in the hops with it; and boil them about twenty minutes. Then let off the

wort into the upper back or cooler; in which let it stand till so cool that you can bear to put your hand in it; then draw it off (leaving again the sediment behind) into the other, or under cooler.

In this let it stand till only milk-warm, and then prepare for working; put into a bowl three pints of good and moderately thick yeast; work this gently about with a little of the wort, and then put it into the tun. Let the wort out of the cooler run gradually into the tun, so as to blend with this, and to leave its own sediment behind.

Thus there will be the pure wort cleared by these several settlements, and well mixed with the yeast in the tun; then let it be close covered up, and gradually there will be seen to gather upon it a fine mantling head, which will thicken every hour, and at last rise in waves, and then in little curls. This is the perfection of its fermentation. The tun must be uncovered from time
to

to time to look down into this; and when it has arrived at this head, which will usually be in about six and thirty hours, it will be time to have the cask quite ready. This fine head will soon begin to fall; and then it must be drawn off into the cask, leaving again what settlement it has made in the tun.

A small quantity must be saved to fill up as it wastes in the working, and the full time allowed for this last fermentation in the barrel: then a little isinglass, dissolved as before directed, must be put into the cask, and a quart and half a pint of elder-berry. When these last ingredients are put in, the vessel is to be kept with a little opening at the vent-hole two days, and then stopped up entirely. The rule for tapping is when it is fine: and that generally happens in about fifteen days. If it be then drank from the cask, it will be very bright, clear, and pleasant, well-coloured, and of a good body. It will have all the flavour of porter; tho'

not the sound and peculiar taste of what has been kept a considerable time in a large body ; which is the case with most of the porter that is drank at the famous houses in London.

The flavour which a mixture of elder-juice gives even in this small quantity, is truly that which we expect in fine old porter ; and, what is very singular, it is of the same kind with that which porter gets by being long kept in a large quantity. This must not appear wonderful ; for in chemistry, and even in the common affairs of life, we find the taste of peculiar things may be given to a mixture by those which seems of a very different nature : in particular, the root of masterwort, with common fennel seed, gives its tincture the flavour of saffras. Other instances might be given, which indeed are frequent, tho' they are not known. This may be sufficient.

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The other great article of time, and keeping in a body, is what a private family cannot have opportunity of doing; and 'tis for that reason, and that only, the public brewed porter will always be superior. The brewers of this liquor have large casks, in which it is kept two years and more; and in those it undergoes a last fermentation; which, as it is slight and slow, produces no other change than mellowing of the drink; that, is a perfect mixture of the malt and hops: it lasts a long time, and consequently the effect is greater: in fine, this last fermentation, perfect rest, and a cool air from good cellarage, produce a fineness and clean sound taste in this liquor; which is what we admire, and what is not to be found in any other; because the same degree of keeping in any other kind than a brown malt beer would soften it, but take off the spirit.

Another advantage the great brewers have, which private familie can-

not, this is an opportunity of correcting the faults of one butt of their porter, by means of another. It is in this their great practice assists them ; and it does the same in their brewing : for their judgment directs to mix and bring this to a proper taste and strength ; otherwise, to an unexperienced person, they would seem to do it wildly. Thus, in brewing porter, they make three and sometimes four mashes ; strengthening them with a little fresh malt, or running them as they call it a greater length, that is, making more beer from the same malt, according to their pleasure. These several worts they mix, and make the whole of such a strength as experience shews them porter ought to have ; and this they work and barrel up accordingly.

In the same manner, if a butt of porter be too mild, they will throw into it a small quantity of some that is very strong and too stale ; first dissolving in it a little isinglass. This pro-

produces a new tho' slight fermentation; and the liquor, in eighteen or twenty days, fines down, and has the expected flavour. These, and many such advantages, none but the public brewers can have: and therefore none but they can brew this beer in that degree of perfection. We do not propose the brewing it in private families in London. But the extent of this enquiry into its nature is, that those who prefer this to other malt-liquors, and live in places where it cannot conveniently be bought, may brew it for themselves; and that such as may intend to erect public breweries for it, may proceed with regularity. The construction of those large brew-houses, where it is usually made, favours also greatly the excellence of the drink: and this is the third article of which it was proposed to treat in this enquiry.

C H A P.

C H A P. XXVII.

Of the Construction of a great Brew-house.

IN erecting a large work of this kind, every thing is to be considered, that can save the labour of the people employed; for as every thing is done in quantities, the difficulty of removing the ingredients from place to place would be very great, but for the help of such early care. There is also an advantage in the constructing of a brew-house merely as a brew-house; because it may be better calculated to answer the purpose, than when any part of a house is employed, or ever so well fitted up for that purpose. A brew-house should always stand separate from all other buildings; and the place of the vessels should be so contrived, that the liquor may be conveyed from one of them to the other; and so on in
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the whole course: not only without the labour of carriage, as was done in the old way of private brewing; but even without pumping. Herein consists in some degree the difference between a well-contrived public, and private brew-house; that many things may be done by hand in the one, which cannot by any means be so in the other. Thus the pumping from the copper to the cooler, as they do from the receiver to the copper, is no great matter in a small quantity, and when the brewing is but once or twice in a year; but it becomes an article of importance, when the quantity is very great, and the brewing continual.

Free air is another great article in a brew-house; and for this purpose the upper part of it should always be built with lattice work, not with a solid wall, except on one side.

This gives a particular direction also for the situation and aspect of a brew-house; since, tho' the air is to be
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let in, the sun should by all means be kept out.

Therefore the brew-house should be so placed, that the entire wall may stand to the south-west, to keep off the sun of the middle of the day, and of the afternoon ; and the place for the copper should be against this wall, at a height of about eleven foot above the ground.

There must be conveniences for the grinding of the malt; for here every thing should be done at home ; and the mill-stones must be placed high, so that the malt, when ground, may be conveyed easily into the places where it will be wanted

The brew-house is to be divided into two floors, as it were ; the one, the lower of them, being wrought up with an entire wall, and the upper on the three sides with lattice, or open work ; only the back being entire.

The labour of grinding is to be done by a horse ; and the same creature, by good contrivance, may raise the
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the water by the pumps, and convey the wort out of the receiver into the copper, by such another machine: thus vast labour may be saved.

C H A P. XXVIII.

Of the Disposition of the Vessels.

THE old brewers used to place their copper a little above the level of the ground; and consequently the rest of the vessels were so disposed, as to be subjected to great inconvenience, and to bring on the necessity of a deal of labour. The receiver from the mashing-tub was forced to be placed below the level of the ground; and in consequence was a receptacle for all sorts of dirt, and the labour of pumping was the greater. In the placing of the vessels a great deal of labour is easily saved, and all these depend upon the copper. Therefore its situation should never be at a less height than what I have named,

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ed, nor need it ever be higher. There will thus be a descent sufficient for all the purposes that can be answered that way; for, in spite of all possible contrivance, there will still remain in a brew-house something to be done by pumping. This comes from the nature of the work: for as a descent, for instance, is required to carry the liquor from the copper to the mash-tub; and the same liquor when made into wort is to be conveyed from the receiver, which is still lower than the mash-tub, into the copper again; it cannot be but that this must be by a considerable ascent; and therefore can be only done by pumping: but as the horse which grinds the malt may be made to perform this service, it is of little consequence.

When there are two coppers in a brew-house, they should be placed both against the back or entire walls of the brew-house, with their fire-places so near one another, that one person can manage both the fires. There must be

be a long arm from the bottom or near the bottom of the copper, with a cock of a large bore at the end, for discharging the water into the mash-tub; and the same contrivance will answer also for running out the wort, when it has been boiled with the hops, into the coolers.

The mash tub must be very large, and it must be placed as little as possible below the level of the bottom of the copper; because, what is discharged from the copper into that, is to go again from the receiver into the copper; and the less the ascent thither is, the easier will be the labour, and the better the conveyance.

The cooler must also be large, and they must be all placed upon one level; for if otherwise, the steam from the lower would heat those above; and in part defeat the very purpose for which they were used. This is another difference between the public and the private brew-house: each in its way being accommodated to.

to its purposes. The working-tun is to be proportioned to the rest; indeed, properly speaking, the size of all the vessels, as well as their place, is to be deduced from the copper, for that is the first utensil and object of proportion.

The method of work in such a brew-house is to be this: the soft water being laid in from the water-works, the cocks are to open over the coppers: and, for the pump-water that is wanted, either in deficiency of these conveniencies, or from the nature of the drink to be brewed, is to be raised by the mill-horse that grinds the corn. The apparatus of which every smith now knows. The grinding of the malt is the next article; and this is made to fall directly into the mash-tub; for there is a great square trough brought down from the place where the mill-stones deliver the malt, which reaches into the mash-tub; and consequently the corn, as it is ground, runs
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at once into the tub where it is to be mashed.

This is now a favourite contrivance among the brewers; but, to speak freely, it is wrong: in the old way, the malt, when ground, used to be received into a great bin, whence it was afterwards handed by baskets into the mash-tub. This labour is saved; but in brewing, as in other arts, when the scheme of improvements is on foot, it is usually carried too far. Thus, in the old way, when the wort was boiled with the hops, they used to pump it up into one large back, placed at a considerable height; and, from this, it ran into all the others to cool. The new improvements have contrived it so, that the wort, when boiled, is conveyed at once into the coolers from the copper by means of the long arm; and this without the labour of pumping, as well as without the first or high back. No body will dispute the value of this improvement; but they went too far, who, upon this plan, contrived the

the grinding to be delivered at once to the mash-tub, and saved the bin, which used to be placed to receive the ground malt, and the labour of handing it in baskets from thence into the mash-tub: for this improvement, as it is called, brings us to a necessity of brewing with malt directly from the mill, which is always hot and rank in some degree; and deprives us of the advantage it would get in lying four and twenty hours or more to soften and mellow after grinding: the benefit of which is known to every one.

In large brew-houses, I am sensible, every thing is obliged to be done quick; but this time of mellowing the malt after grinding, ought to be allowed without any inconvenience; and, as to the labour of handing it from the bin into the mash-tub by baskets, that, I think, may be very easily avoided. I would propose, that there be a bin as was usual in the old brew-houses, and that the malt be discharged into this immediately as it is ground, there being

being a trough or great spout running from the place where the stones are into the bin for that purpose. In this bin I would have the malt remain four and twenty hours after grinding; and, as the mill-stones are now very rightly placed high, the bin may also be so much above the mash-tub, that the malt, after lying its time to mellow, may run into the mash-tub through such another trough or spout, without any labour of the hand. This would save all possible waste as much as the other, and the malt would go into the mash-tub, not only mellowed, but with all perfection.

The arm of the copper lets the water into the mash-tub; and experience and long practice shews the common brewers what is the due degree of heat it should have, without looking to see their faces in it.

When the wort is run into the receiver, and is to be got back into the copper for boiling with the hops, this is done by a pump which is worked by

by the mill-horse : and it is the only ascent the liquor has in the whole course of the brewing, and consequently is the only part of the work that requires this labour. When the wort is boiled, it is discharged into the backs or coolers by means of the arm fixed to the copper, without the least trouble : and the conveyance of it from these into the great working-tun, is plain and easy ; for there is to each of these a leaden pipe of two inch bore, which goes to the working-tun, and, by a cock there, can let in the wort at pleasure : this shortens that labour extremely.

These leaden pipes are not placed quite so low as to let out the sediment ; but there is another opening in the cooler, which is stopped with a wooden plug, and which being opened, lets out all the bottom of the cooler, is swept clean, and the whole is let thro' this hole : though foul, it is not lost ; for it is to be let into a piece of flannel tied to a hoop, and, draining thro' this,

this, the whole clear liquor is caught in a tub, and afterwards put to the rest, being no way different when thus strained. Thus no part of the wort is lost; and yet this method saves the mixing of the gross sediments with the beer; which always gives it a heavy taste in the beginning, and a tendency to sourness afterwards. It is of great importance not to admit these sediments of gross and earthy matter, for they bring on changes in the drink, even after it is in the cask, upon every great change of weather: and yet it would be too great a loss to waste the whole.

All that can be got from the several mashings being thus conveyed to the working-tun, no more than the common care is needful farther, to see that it has the due time and proper degree of fermentation, and then to run it into the casks, where time and good cellarage will do all the rest, producing that excellent as well as pleasant

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liquor, which we see at the best houses.

C H A P. XXIX.

Of Dorchester Beer.

A Peculiar fine kind of strong beer brewed in and about Dorchester has long been famous; and has indeed deserved to be so. From being celebrated upon the spot, it has been sent into all parts of the kingdom; and is now one of the first beers in repute in England. There are some advantages on the place which tend to the excellence of this drink; and, from great practice, the brewers there, and thereabouts, have a perfect knowledge of the making it: but this kind of drink is not limited absolutely to the place. We shall teach the brewer how he may make it any where; and that in so exact a manner, that the palate of the Dorchester brewer himself should

should not find out the difference. If the reader should chuse to carry the particulars of this kind of brewing also to other drinks, he would in general find them useful : but this would be confounding the several kinds with one another. It is better to keep up the distinction, and to let porter be porter, October be October, and Dorchester be Dorchester, than to give one a flavour for another, and have no real difference among them.

Dorchester beer is a kind of strong malt-liquor distinguished from all others by its briskness, softness, and pure taste. The ingredients of which it is made are the same with those of all other kinds of malt liquor; and therefore the peculiarity must be owing to the management. One thing alone is particular in nature upon the spot, that is the water : but, as it will be easy to see what is the occasion of that, it will be easy also to imitate it.

It has been thought the Thames water was peculiar to porter; but we have shewn that to be an error: on the other hand, it is true, that a water impregnated with chalk is essential to the Dorchester beer. The country thereabouts abounds with chalk, and the springs which supply their breweries all rise in chalk. It is to this the softness of the Dorchester beer is owing; the spirit or natural flavour is owing to their way of managing it. There is this original spirit in all water; but the common methods of brewing dissipate and waste it; whereas that used in making this particular drink, preserves and detains it.

'Tis necessary, however, that we first understand the nature of the water itself; for though it is a chalky kind, we should be deceived, if we supposed all waters that came off a chalk would answer the same purpose. We have in England many kinds of chalk, differing in degree
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of hardness; some approaching to the firmness of stone, others being soft as marle. The farmers who use chalk as a manure, know this difference very well; for they find the soft chalk answer in the way of marle; whereas the hard does but very poorly serve their uses. It is the same in this case. Water that rises among a soft marly chalk is always softened by it; and shews this quality by lathering finely with soap, and boiling garden-stuff freely and excellently: on the other hand, water which rises among the hard stony chinks, will be often as harsh and hard itself as that which issues from an absolute rock. It will curdle instead of lathering with soap, and will harden garden-stuff. Some have supposed that the chalk gave it that harsh quality: but this is not the fact; the water passes through and among the masses of this chalk, and is not altered by it at all, but rises like the waters of other springs.

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This observation has appeared needful, because a chalky water is essential to fine Dorchester beer; and, unless its nature were understood, there might be a great error in the choice, even after the fact was known.

Therefore, if the brewer lives where there is a soft chalky water, he need not fear success. But, as this is not the case often, we shall mention how the deficiency may be supplied. Let a load of soft chalk, a little broke to pieces, be strewed over the bottom of one of the large backs or coolers, and upon this pump as much spring-water as will more than half fill it; then let in about half as much soft water as there was pump-water, and let the chalk be stirred a little with an oar. Then leave it four and twenty hours, and the water will be ready for brewing. It will be much clearer than it was when put in; for all the foulness of the soft water will be carried
down

down to the chalk; and it will be just as soft as that commonly used at Dorchester and there about is. This water being drawn off, will be ready for the brewing; and the same chalk, being taken out of the cooler and spread to drain, will serve afterwards for the same purpose, even better than at first. Chalk seems so far of the nature of quicksilver, that it will communicate a certain quality to water without any change in itself, and will therefore continue to impregnate new waters over and over again in the same manner.

C H A P. XXX.

The Method of Brewing.

THOUGH the Dochester water is favourable to the brewing that excellent kind of drink, a great deal also depends upon the method of the work, which is different from that of other brewing, and

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must

must be carefully followed, even in the least articles, by those who expect success.

As to the quality of the malt, that must be determined by the intended strength of the beer, and it is in every one's pleasure to vary his accordingly: but as directions are no way so well understood as by bringing them to some particular stint of quantity, we shall fix upon the brewing it at fourteen bushels to the hoghead, and give the rule for making this quantity at a brewing; the which every one may extend and enlarge at pleasure.

Chuse, for this purpose, eight bushels of excellent pale malt, and six of amber malt, sweet dried with fine clear fuel; grind this together, and let it stand in the sacks eighteen hours after the grinding: then set on a copper of the water before directed, containing so much, that, beside what the malt soaks up, there will be a good half-hoghead for the wort.

wort. Sift over this a good head of malt, and let it heat till it is of that degree of heat which is in water which has been boiled and stood till one can see one's face in it. The great care is to have the water so hot as to open the pores of the malt, and yet not hot enough to scald it. The temper just mentioned, when a man can see his face in it after boiling and standing is very exactly what we mean; though this method of overheating and then cooling, is a bad way of getting at it: because the finest and freshest part of the water is lost in that great evaporation. We know all boiling hardens water, and what we want in this is to be soft; why then should we use a method that is quite contrary to our intention? What must be done is this: he who undertakes to brew this beer, must be well acquainted with what degree of heat that is, which water has when he can see his face in it after boiling; and he must heat this

copper of water to that degree of heat, and no more. There is nothing impossible in this; for the common brewers all do it, though in a various manner. They boil their water, and then let in cold till it comes to the degree of heat just mentioned: but this way they loose a part of the spirit of the first water; and it would evidently be better if they did it in the manner here directed.

When the water in the copper is of this due degree of heat, let it into the mash-tub, and immediately begin pouring in the malt. Do this slowly and carefully, and all the while let it be stirred but very gently; a careful hand must so manage it in the stirring, that the malt does not get together in lumps; but this is all, and provided this is done, the less stirring there is beside the better. About half a bushel of the malt must be reserved; and, when the stirring of the mash is finished, this must be put over it. Thus the malt will be
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in a due heat to give out its virtue, and secured from evaporation. Thus let it stand two hours and a quarter; and, by the end of that time, let another copper of water, containing somewhat more than a half-hoghead, be got to the same degree of heat that the first was. Then run off the wort out of the mash-tub into the receiver, upon six pounds of very good hops, which have been rubbed in the hands, and are tied up in a coarse bag.

When this wort is drained off, gently stir in the cap of fresh malt that was put over the mash with the rest, and then let in some of the water from the copper in a moderate stream. Stir the grains gently with this, and let them stand a little while; then run this off into the receiver, as the former whole quantity was, by a small stream; then let in so much more water out of the copper: it will be a little hotter by this time, and so it should, but still not too

H 6 hot;

hot ; gently stir the grains with this, and after a little time let it run off : then let in the rest of the water of the copper, and stir all gently together again ; cover this up, let it stand a quarter of an hour, and then run it off to the rest.

Thus the malt will be entirely drained of its whole virtue ; and there will be in the receiver a quantity of wort sufficient to allow for all waste, and yet to make a hog-head of the beer. The hops will have been a very considerable time soaking in this, and therefore will quickly give out their virtue by boiling. The whole wort, with the hops, must now be got into the copper, and very leisurely heated till it comes to boiling ; then it must be boiled briskly a quarter of an hour ; and after this the hops are to be taken out. Then the wort is to be boiled alone five or six minutes ; and after this it must be drawn off into the coolers, and lie shallow at their
bottom.

bottom. Let some person, from time to time, stir the wort gently in the coolers, and let it remain in them till it is perfectly cold: for the method of this brewing will bring on a fermentation without the assistance of any heat in the wort, and this will be sufficient for all the purposes of purifying and keeping; and as there is no heat in the liquor, none of its spirit will be lost.

When the wort is thoroughly cold, stir it up entirely together, so as not to leave any sediment; but run it off entire as it is into the working-tun. The motion and the mixture of the sediment with the clear liquor will create a kind of fermentation in the beer before the yeast comes to it. Nature must be allowed her course in this; there will rise to the top of the wort a white head: when this is fully formed, it must be skimmed clean off and thrown away, and the liquor will then be in a right condition to receive the yeast.

About

About three pints of moderately thick yeast will be necessary to give this beer a thorough working. This must be fresh and fine: it must be mixed first with a little of the wort, and then put to the whole. Cover up the working-tun, and let it stand till the head is perfect upon the wort. Then beat it in, and cover up the tun again. This is all that will be needed in the working: when the head falls, let it be cleared off for the cask. To this purpose the head and the settlement must both be separated from the pure wort; the head must be skimmed off, and the settlement left behind, by drawing it out of the tun by a cock six inches above the bottom.

When it is got clear into the vessel, let some be also saved to fill it up, as a small quantity will be wasted by this last fermentation. This is to be let in from time to time, so as to keep the vessel quite full; and it must be by means of a funnel
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with a long spout, that it may be let gradually to the liquor, without disturbing the head. When the fermentation in the cask is over, it must be stopped close down, and stand to mellow all winter, for autumn is the best time for this kind of brewing. Although the settling has been large in the working-tun, from the letting in the wort with all its dregs out of the coolers; yet there will remain in it so much of the finer part of that which would have been left in the cooler, if it had been drawn off clear, as will serve excellently for it to feed upon, as the brewer expresses it; and this will supply the place of all those mixtures which are directed to be put into beers for that purpose. It is with this intent that the bottoms are stirred up and mixed with the wort, when it is discharged from the cooler into the working-tun, in this particular method of brewing; and it is owing to this that the Dorchester beer has a peculiar

peculiar taste of the grounds, like what is called the biting of the yeast; which is extremely agreeable, because it is very moderate.

As the weather grows warm in the following spring, there will be in this, as in all other beers, a new, though slight, fermentation. The vent-hole must be opened to give way to this; and it must continue open till it is thoroughly over; then it is to be stopped, and to stand till the cool weather comes again. Then, by pegging the cask, draw out a little, and if it is not fine, stay longer, and draw a little more to try it: when it is tolerably clear, put in a little isinglass, to compleat the fining of it, and it will be fit for bottling in a very short time after, or for drinking from the cask, if that be rather chosen. The quantity of isinglass need be only an ounce and half; it should be dissolved in a gallon of the beer, drawn for that purpose; and, when put to the rest, it must be left
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open while the new fermentation lasts, and then stopped close.

C H A P. XXXI.

Of Oat Ale.

WE meet with very poor liquor often under the name of oat ale; and, indeed, very little is really brewed from the grain from whence it has its name. Bottled small beer is what we commonly get when we call for this liquor; and even that is seldom brewed on purpose: but real oat ale is a very different liquor. It differs from all others in two most essential articles, for it is made from a different grain, and is brewed cold. When thus made it is brisker than any thing that is sold under its name, and has a great many other good qualities. No malt-liquor is so agreeable at meals, and nothing is more wholesome. We shall give the reader an exact

exact knowledge of what it is, that he may know how far from the description every thing is that he meets with at public houses under that name: and shall then give the true method of brewing it; which is so easy that I should think none who had a brew-house would omit to make this particular liquor.

Oat ale, when genuine and well brewed, is a fine, spirited and balsamic liquor; it is very pale in colour, brisk, and yet extremely soft to the taste; it sparkles in the glass, and rises to a fine creamy head; it is perfectly clear, and free from all ill flavour. By this description we shall easily see, that what is commonly sold is not genuine. The true way to make it is this.

The malt must be made of the finest white oats, without any mixture; and the water must be clean, and yet not hard; that of a fine running brook is best: but, if such cannot be had, the softest water that
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can be got, must be used, and it must have time to settle. With such malt and such water, the finest oat ale may be brewed; but the quantity should be no more than can be used in about two months, for when it is the finest that can be it will keep no longer.

Take eight bushels of this oat malt, perfectly clean and sweet; let it be ground very lightly, just to crack the corns, and no more; then lay it in a heap, in a cool, but dry, airy room, for two days and nights; then put it into a large mash-tub, and pour upon it fifty gallons of cold water, such as has been just directed. Stir it about, just enough to prevent the malt from sticking together in lumps, and then cover it up. Open the mash-tub after one hour, and stir it all together again; then cover it up as before; repeat this afterwards once in two hours, till the whole has been mashing, without any heat, thirteen hours. Then tie a piece of flannel

flannel loofely over the cock of the mash-tub, and prepare the hops. Chuse the finest and freshest hops; two pounds and a quarter are the proper quantity for this brewing. Rub them to pieces in the hands, and tie them up in a piece of coarse canvass; lay them in the receiver, under the mash-tub, and let the wort out of the tub run upon them in a small stream through the flannel. Give it time to drain thoroughly; and, after it is all in, let it stand four hours; then pour the wort through a flannel, fastened to a hoop, into the working-tun; and put to it a pint and half of fine thickish yeast. Mix this first with a little of the wort, and then with the whole; cover the working-tub very carefully, and a fermentation will presently come on: let the head rise fairly, and let it work briskly for two days. Then skim off the head, and draw it off out of the tun into the cask, by a cock placed five inches above the
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the bottom of the tun; and let it this time also run through flannel. Thus will the drink be got quite clear and fine into the cask; there it will have a new, but very slight fermentation; and this also must be allowed its regular time, the vessel being kept filled up with some of the wort saved for that purpose. When this slight working is thoroughly over, the vessel is to be stopped down fast, and the drink must be allowed a fortnight to mellow and settle perfectly. In that time the hop and wort will thoroughly blended together, so as to make but one united taste, and the drink will be as clear as the purest water, and very lightly coloured.

Let the bottles be perfectly clean, and thoroughly dry; draw off the drink slowly and gradually into them; and while one fills, let another cork. All this must be done with as little motion as is possible; and the corks should not now be thrust

thrust down perfectly fast. The bottles should be held as little as can be in the hand, and moved gently without shaking: as they are corked they should be set regularly upon the floor; and it will be best if this be in a place where water can be thrown over them, and run off freely.

As soon as the whole is bottled off, pump several pails of water, and throw it, as cold as can be, upon the bottles. This will check any tendency to heat or fermentation, which the motion in bottling might have brought on.

The next day drive in the corks fast, and then once more throw water over the bottles; and, as soon as it is run off, set them where they are to remain for use.

C H A P.

C H A P. XXXII.

The Brewing of Pale Home-Brewed.

BY the term home-brewed we understand no other than a mild ale, which has not come out of the hands of the common brewer. Such as is generally understood by this term, is what we have described already, under the general name of *Ale*; but, in some parts of the kingdom, they brew a very pleasant and wholesome ale, of moderate strength, from pale malt alone; and as there is something particular in the management, we shall give it at large.

Grind eight bushels of pale malt, which makes the hoghead of this drink; let it be broke a little finer than the brown malts are broke in grinding, and lay it to mellow four and twenty hours; then set on spring-water for the first mashing, which should be about two-thirds
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of a hoghead. Sift some malt over the surface, and heat it till it is very near boiling; let it out into the mash-tub, and, after it has stood five minutes, pour in the seven bushels of malt, stirring it very well together, to prevent its getting into lumps. It is intended that the water should be mixed with the malt much warmer than in other brewings. When it is very well mixed, take half the bushel that was left out, and strew it evenly over the mash. Let this stand two hours and a half, and in the mean time have more hot water ready; and at the end of this time let in about fifteen gallons, without letting out any of the wort already in the mash-tub. Stir the whole very well together again, and put upon it the other half bushel of malt; cover this up, and let it stand as before only one hour.

Then put one pound and a half of hops into a canvass bag, rub them well between the hands, put them
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into the receiver; and let the wort drain upon them with a small stream. Have more water ready hot in the copper; and when this wort is run off, let in as much to the grains as will serve to make up a hoghead, with what is already run off, allowing sufficient for waste.

Let this stand an hour and a half, and in the mean time boil off the first wort. Let it boil half an hour with the hops, and about a half quarter of an hour more after they are taken out; then run it off into the coolers. In this time the last mash will be near finished. Prepare for this a pound and half more hops, as for the first, putting them into a loose and coarse canvass bag, and rubbing them to pieces between the hands: put them into the receiver, and let this wort also run off from the mash-tub, in a small stream. When all is run off, let the hops remain in it a quarter of an hour, in the receiver, and then put them and

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the wort together into the copper; boil these half an hour, and then run this wort off also into the cooler to the other.

The whole is to stand there till it is thoroughly cold; and then draw it off clear into the working-tun. Leave all the settlement behind in the cooler. Mix about three pints of good yeast with a small quantity of the wort, and then put it to the rest. Cover up the working-tun; and when the head has been at its full heighth, and begins to fall, which will naturally be in two days and a half, draw it off clear into the cask, keeping out a little to supply the waste of working over in that vessel.

When the fermentation is thoroughly done, fasten it down, and it will fine of itself in about fifteen days; after which it may be tapped for present drinking, and will prove a very clean, bright, pleasant and wholesome beer.

C H A P.

C H A P. XXXIII.

Of the Time of Brewing.

HAVING gone through the article of brewing, there remains only to give some general rules as to the seasons of the year fittest for this operation, and the best manner of keeping malt-liquors in perfection, when we have made them so. The first article is what comes under the present head; and the latter, as it relates to cellarage and the preserving of beer in the cask, or in bottles, will afford the subjects of the two concluding chapters.

The best season for brewing strong beer for keeping, is late in the autumn; and 'tis from this circumstance, these malt-liquors have got the general name of October beer. There are two evident reasons why this time of the year is preferable to all others for the purpose; the first

is, because the waters are never in so good a condition for brewing; and the other, because the time of keeping these liquors being generally at least one year; there is a whole winter for them to fine themselves after the brewing, and a whole summer for that second and most natural fermentation, which comes on of itself in the liquor, by the heat of the spring; and is the only operation whereby the fine part of the malt and hops mellow perfectly together. The month of September is generally rainy; and the rivers, and other bodies of water, are filled after the waste of summer. We have said, in the beginning of this treatise, that no water is so soft as rain; and therefore the rivers, and other reservoirs, filled at this season, are softer than at any other time of the year. By the middle or latter end of October, they have been well supplied, and the first foulness is over: it is then therefore their water is
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in the greatest degree of perfection for the brewery.

Beside this advantage of the goodness of water, and the opportunity of the time for keeping, the very temper of the air is suited in October to this business: there is just warmth enough remaining in it to bring on a good fermentation, and the following cold season prevents the beer from fretting in the cask, at a time when it should be only mellowing and finishing.

For these reasons, October is the best month for brewing in general; and of all kinds of drink it is the most suited to the strong beers.

The depth of winter has many disadvantages in regard to brewing; for the water will not so well extract the virtues of the malt, nor will the drink ferment so freely and naturally, as when there is a moderate warmth in the air, to assist the efforts of nature for that purpose. When necessity obliges us to brew in this cold season,

son, we find it necessary to heat the water to a greater degree than at other times, and yet it performs the business but very imperfectly. The brown malts should be used when a brewing is undertaken in this bad time of the year, because they give out their virtue more freely than the pale; and because the coldness of the air sooner takes off that great heat these kinds get in the drying.

The malt must be twelve hours longer between the grinding and the mashing at this, than at any other season of the year; and the mashing must be continued half an hour longer, and the mash-tub must carefully be kept covered.

In summer all the contraries occur in brewing, to what we have here named, for the disadvantages of the winter-season; but then they occur in such extremes, that they are as hurtful on the one hand, as those were on the other. Water in general is hard and dead in summer, because
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there have been few supplies of rain, and the evaporation of the sun and air has been very great. We have shewn that rain-water softens rivers and ponds; and it has been strongly represented, that, in evaporation, the best part of the water is always lost: therefore, what we have said of the deadness and hardness of summer-water is plain to reason, as well as to the senses. This is one evident cause why those who are curious in their drink, should never brew in the heat of summer; and there is another as forcible, which is, that the heat of the weather brings on the fermentation too violently and hastily, and keeps it up a great deal beyond the proper degree.

Therefore those, who cannot avoid brewing at this season, should make no more than is for present service; for summer-beer will never answer for keeping. Another rule is, that they must get the softest and freshest water that they can; and, in general,

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river-water is preferable to pond: a less degree of heat in the water for mashing, will answer the purpose of extracting the virtue of the malt; and less yeast will bring on a fermentation. The wort should be worked in a broad shallow vessel, not in a deep tun; and it is best to divide it into two or more parcels; for the smaller body there is of it, the milder will be the fermentation.

The spring is a very good season for this business, and comes next to the autumn. Fermentation comes on freely at this season, but does not rise to that excess as in the heats of summer; and the waters in general are in a good condition, because they have little evaporation, and the refreshment of frequent showers.

The earlier in spring a brewing is performed, the better. March is the next best month in the whole year to October; and, after this, as the weather grows warmer, it is less proper, because

because it more approaches to the nature of summer.

As October is the best for the brown, this month succeeds the most happily of all others, with the pale low dried malt. This should be the great rule of difference between them, and the two brewings will mutually succeed the better.

C H A P. XXXIV.

Of the peculiar Virtue of well-cultivated Hops.

IF there be any thing wanting farther than these instructions for the making the several kinds of beer in perfect excellence, it is the being secure of the high and full quality of the hop. The difference between good malt drink, and the most excellent, depends solely on the perfection of this ingredient. We have given rules for chusing the best among such as are offered to sale; but there is a

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possibility of obtaining yet finer than any that are brought to market ; for the quantity is more regarded than any thing else in those which are raised for sale.

No use of land is more beneficial than the planting it with hops ; and we have an opportunity of giving the directions for raising them compleat, and from a very great and experienced hand: We shall add these at large : and whatever country-gentleman will follow them exactly, will not only supply himself with what are perfectly fine, but may dispose of what he does not want at a great advantage.

C H A P. XXXV.

Of the Right Soil for Hops.

TH E piece of ground selected for hops must be good, and deep in soil. No plant roots deeper than this, or requires more nourishment.

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A rich dusky mould, a fine black earth, or a very good loamy soil, are the only grounds wherein hops will grow well : nor will the best of these answer perfectly, unless there be also a proper bottom. Clay frequently lies under the soil ; and, perhaps the most common bottom next to that is gravel ; but neither of these are by any means proper for a hop-ground. The roots of this plant must be kept moist, but not wet ; and the clay will hold too much water, and the gravel will let all through. Therefore these are both exceptions : the best bottom of all is a firm and pure loam ; and this is very common, where the soil above is loamy : if all these things suit, there must also be depth of the good soil. If there be a full spade and a half depth, it will answer very well : less than this will not do ; and if there be more, the better. There is a peculiar whitish land in Kent which has a great deal of marle naturally ; and none

succeeds better in hops than this. As for the others, the nearer they come to the nature of garden-mould, the better. The situation should be such as is defended from the North and North-east by trees, buildings, or hills; it should be open to the South-east, and the more fully the wind can play about it, the better.

The spot being chosen, the next care must be to prepare the ground. The fresher the land is, the better the hops will grow; if the soil be equally good to the whole depth, very good plowing may answer the purpose of preparing it; but as it commonly happens, that the upper part is better than the lower, in this case it must be trenched by the spade, and the worser part of the mould must be brought to the surface, where the weather will mellow and improve it; while the finest part, which before lay uppermost, is turned in to a depth, where the roots send their principal fibres. Great care must be taken, if,
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on digging, the ground appears too wet. Drains must be cut, which must be kept carefully clean and open afterwards; and the soil in trenching must be thrown up in high ridges: it will, by this means, get rid of the abundant moisture, and will be the more improved by the air. There are several kinds of hops which are suited to various little differences in the land, of which we shall speak; but in whatever spot the hop-ground is fixed, the care should be, that the land is not rendered useless afterwards: and there is great danger of this, if timely provision be not made by a right plantation. Hops will succeed very well upon the same piece of ground twelve or thirteen years; but, after this, a new spot should be chosen for that crop; and if early care be not taken, the old one will be nearly useless. Hops exhaust the ground so much in this long culture, that none of the com-
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mon crops will thrive upon it, whatever care be taken.

C H A P. XXXVI.

Of the Plantation of Trees among Hops.

THE best method is to provide by a plantation of useful trees, in Kent, where they have been long used to the culture of this plant. They make a double provision on this head; and that so judiciously, that their hop-grounds, while they yield a vast profit by the natural crop, are as so many nurseries for their cherries and apples; in both which kinds they are also famous. The method is this, when they first lay out their hop-ground, they plant it with cherry and apple-trees: these do little hurt to the land; and they are excellently nourished by the culture given it for the hop. When the ground is exhausted by the hops, that

that is, at the end of ten, twelve, or fourteen years, according to the soil and management, the cherry-trees begin to bear; and the hops are removed to a new place. The cherries will bear very well a certain number of years; and in all that time the apple-trees will be only coming to their greatest perfection: at the end of about five and twenty years, they grub up the cherry-trees; and after they have had several years the benefit of the apples the ground is fit for hops again; or for any other course of husbandry. This is a provision for our children; but we should remember how glad we are that our fathers have provided so for us.

C H A P. XXXVII.

Of the several Kinds of Hops.

ACCORDING to the nature of the soil, in those small differences we have named, the farmer is to fix
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upon one or other of the kinds of hops; with these he is therefore to be severally well acquainted for this purpose. In the hop countries they reckon four kinds, the wild garlick hop, the square garlick, the long white hop, and the oval. The first of these is the wild hop of our hedges, the others have been raised from it by culture. They are vastly superior to it in the produce, and there are peculiar soils which they severally suit. The square garlick has a redness about the stalk, which reduces the virtue; but it is a well-flavoured hop: there is a long garlick which differs a little from this in the length of the fruit; but is usually reder than the square. The oval hop is an excellent kind, pale-coloured, and of a good taste. The long white is the best of all, it yields the finest hops of all; and in the greatest quantity. This is always to be preferred, when the land will do for it. The wild hop is so
much

much inferior to all the rest, that it should never be raised. The two others are to take their place, according as the ground may suit them. If the soil be poorer than one would wish for a hop-ground, the square garlick is the kind to plant. For it is more of the nature of the wild hop than any of the others; and a good crop of this, which may be obtained upon middling ground, is better than a poor one of the others. In a middling soil the oval is to be raised for the same reason; but where the ground is perfectly good, no kind is to be thought of except the long white. This is always the kind for a pure and deep mould: when the soil is deep and moderately good, but has a tendency to be sandy, the best way is to plant a mixture of the long white and oval, for they thrive very well together in such ground. If, on the other hand, the soil is too tough, the long garlick must be the kind. Therefore, when the ground is

is chosen, and the sort or mixture of hop determined, the next care is to bespeak a proper quantity of sets to be ready for taking up at the time when the ground is got in order; and then to begin dressing it. The common practice is to plant the hops on hills, at such distance, that a breast-plough can be conveniently used to work the ground between them. But of all the plants raised by the husbandman, there is none that is so proper for the horse-hoeing method; and, if they be planted for this purpose, there will be a farther advantage, which is, that being more distant than in the usual way, the air will have a free course among them; and they will, by that means, be preserved from most of those accidents which are said to render hops a precarious crop.

C H A P.

C H A P. XXXVIII.

The Preparation of the Ground.

IN the beginning of September, let the ground be ploughed up deep, or trenched, according to the nature and qualities of the soil; and after lying near a month in ridges, let the whole surface be laid smooth and level, by good harrowing. This will break the small clods; and the ground being quite plain and uniform, is ready to be laid out for planting. The best distance for the hills is eight feet; therefore let a gardener's line be drawn across the ground, at about a yard and half from one of the edges; and let a person go over the ground along it, with an eight-foot rod, and a number of small sticks. At every eight foot he is to stick up one of the sticks; and when he has gone the length of the line, he is to move it
eight

eight foot into the ground, and plant sticks at every eight foot again. When he has gone over the whole land in this manner, the sticks will shew where the hills are to stand; and, unless the ground be naturally very rich indeed, it will be proper to improve it in those places by some manure. For this purpose, mix together four loads of fine rich mould, from under the turff of a good pasture; one load of very fine old and well rotted dung, and half a load of coarse river-sand. Turn these several times, and let the heap lie ready. Then at every place marked by a stick, open a hole with a spade, two foot deep and two foot wide; throw out the natural mould, and fill it up with a compost made of fine mould, river-mud, and cow-dung, that has been well-rooted. The holes being thus filled, the foundation of the several hills is laid; and the next care is planting: the sets
the

being bespoke, they are now to be taken up, the ground being got in this readiness by the middle of October. The strongest and healthiest sets are those to be chosen; and the best choice falls upon the highest hills in the grounds from whence they are to be taken: those also are always best which come from the hills that have produced the greatest quantity. When these hills are opened to take out the sets, care must be taken to get them out without injuring any part of them; and only the most perfect must be taken for the new ground; they should be ten inches long, hearty in their growth, and they should have four joints. As many should be taken up as can be planted in the new ground the same day; or, if they are to be carried to a distance, the whole may be taken up at once. In this case, they must be laid in the ground, in a shady place, and only taken up as they are
wanted

wanted by those who plant them. Six of these sets are to be planted in every hill ; but, for this purpose, a hole of a spade deep, and above a foot broad, must be opened in the middle of each parcel of the manure, where the sticks stood. The six sets must be planted at equal distances round the hole, laying them up against the sides, and placing them so, that the tops may be just upon a level with the surface of the ground. Then carefully pour in the mould that was thrown up in opening the hole, and fix it well with the hand about the several sets, keeping them upright, and well surrounded with the pure mould. Then draw up a covering, of two inches, of the fine mould, over the tops of the sets. This finishes the hole, and gives the first rise of the hill in its place, which is thus about a finger's length higher than the surface of the ground. If the sets are all got into the ground by the third week in October,

tober, there will be a good produce the first summer. Some plant the ground in spring, and then the plants are not strong enough to bear that year: so they loose the produce of one season. In planting the sets, if any one be injured by bruising, or any other way, it should be thrown away: the value is but small, and the mischief would be great. The injured parts grow mouldy as soon as they are planted in the ground; and they not only decay themselves, but infect the others.

C H A P. XXXIX.

Of the Planting the Sets.

THE whole ground having been prepared, by ploughing or trenching, nothing more will be needful, now the plantation is over, till the succeeding spring. The sets will grow freely with the rains of autumn; and the depth at which they

they are planted, will sufficiently preserve them against frost. The ground is to be thus left to itself all winter; but in spring it requires a thorough dressing, partly to destroy the weeds, and partly to give new nourishment to the crop. The common way is paring the surface with a spade, or with a breast-plough; but it will be much better to do it by ploughing up the intervals with the horse-hoe. This should be done in the beginning of April; and all that is required, is to break the ground very thoroughly. The plants in the hills will grow with a great deal of vigour after this; and the poles for tying them should be fixed in the ground soon after. Five poles should in general be allowed to each hill; and these, for the first year, should not be nearly so tall as those used afterwards: for the height of poles encourages the hop to grow in length, and this should not be too much indulged the first season. About
four

four thousand poles will be required for every acre of hop-ground. These for the first year, should be about thirteen foot in length, and five inches and a half round: in the succeeding years, poles of five and twenty foot long, and seven inches and a half round, may be used. The most commodious method is to lay down the poles among hills, that they may be ready to stick up when they are wanted. They should be sharpened at the bottom, and always cut so as to have a fork at the top, either by a natural division of the growth, or one of the side-branches may be cut so as to answer this purpose: it is of especial service; for the hop lies over the pole in the fork, and hangs down without pulling the rest from the pole. The short poles may be of alder; those for the succeeding years should be of ground-ash, because they will be tough enough to escape breaking with the wind, which has great effect

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fect upon them at that height, with the thick covering of the hop.

C H A P. XL.

Of fixing the Poles in the Ground.

THE poles lying ready, must be thrust firmly into the ground, when the young shoots of the hop are about four inches long. They are to be thrust firmly into the ground, at equal distances round about each hill, and fixed so well, that they will sooner break than rise. They should stand nearly, but not exactly, upright; for the tops should turn a very little outwards: this throws the long shoots of the hop naturally off from the hill; whereas if the tops of the poles bent ever so little inward, the hills would be covered by so many arbours, and the plants would be subject to many diseases, for want of a due course of air. When a pole bends a little outwards,

wards, the hops will be produced in great plenty and perfection; because the sun has free access to the plant; but too much leaning will subject them to fall; neither, if they keep up, will they bear so well. When the poles are all up, the hops will of themselves, in most cases, lean to them; but in this they must soon after be assisted. When the shoots have got to be two feet and a half high, the poles should be looked over, to see if they be all firm, and stand right. Where any thing is amiss, the use of a heavy rammer forcing the earth about them, will drive them a little any way that should be thought proper, and they will afterwards keep their position. At the same time that this is done, the plants may be led to the poles and tied; the stalk of the hop must be wound twice round the pole, according to the motion of the sun. This is an essential article, for the growth will otherwise be greatly disturbed. If we re-

gard the wild hop in its climbing, we shall always see the round is made this way; and, as it is the natural effect of the heat forcing the growth principally that way, it would be very absurd to attempt to put nature out of her course. When the hop is properly led round the pole, it must be kept in the place, by tying once near the ground, and once a little higher. Any thing that is soft will serve for tying them; but the properest thing of all is coarse yarn, because that is tender and capable of giving way. The hops must not be pressed against the pole, only drawn towards it; if the stalks are brittle, as they are apt to be in rich ground, they must be tied about three of the clock in the afternoon, or from two to five; for, at that time of the day, the stems are tougher than at any other.

From this time the hops will grow very fast, and will wind themselves round the rest of the poles, so that
there

there needs no more trouble. Toward the middle of April they will be seven or eight feet high; and as some may now grow amiss, they must be put right with a forked stick. They will easily take their proper form again, and after that time grow to the poles as well as at first. Toward the latter end of May the hops will be got up as high as the tops of these poles; and once more a labourer should look to those which do not grow kindly, laying the main stem over the fork of the pole. He must take a step-ladder for this purpose; and this is the last care: for afterwards they will do perfectly well of themselves. The time now is come for a second horse-hoeing; and as no more trouble is needful for the plant, there is natural leisure to do it. If the ground had been broke sooner the growth of the hop in stalk would have been promoted by it, which is by no means proper at that season. We see the plants growing

very fast without any such assistance, and what we are to fear, is the carrying them up too high, because the produce in fruit will be the less for it. Towards the end of May, the plants being got over the tops of the poles, have no more that inducement to rise; and therefore what we give in nourishment by horse-hoeing, goes towards the forming of the fruit, the first buds toward which are now made, though not yet visible. In the common management of a hop-ground, the beginning of June is the time when they pare the surface, to destroy the weeds and raise the hills: they take it off about an inch and a half deep in all the space between hill and hill, and throw it up to the hills to raise them. This is a very imperfect method of dressing the ground; the horse-hoe answering the purpose vastly better: and the making the hills up is still easier, after the soil is thus broken; and the earth, which has been

mouldered

mouldered to pieces by that instrument, gives much more strength to the plants than the hard surface just pared away for that purpose.

C H A P. XLI.

Of Cleaning the Ground.

WHichever of these methods the planter chuses, he should first clean the hills; pulling up all weeds, and taking off the straggling shoots of the hops themselves, which only exhaust the root, and are useless. After this, the earth turn'd up by the horse-hoe should be broke finer on the surface with the back of a spade; and then as much of it as is needful should be thrown in upon the hills between, and all about the shoots of the hop plants. The hills should be raised about four inches this time, and they should spread proportionally at the bottom. Toward the end of June, they should be raised once
 K 4 again

again by paring off some of the best of the mould in the intervals, and throwing on them; and when the hops begin to fill in July, the ground should be once again horse-hoed, and the hills made up again. If the horse-hoe is not used, the surface must be pared by hand, and the hills raised at the same seasons.

The first of these horse-hoeings, or parings, which will be in the beginning of June, will give them new vigour; and, when this has very well fill'd the plant, and vegetation is strong in it, after a little more growth, it must be turned to the branching of the plants, by stopping their perpendicular growth. The latter end of June is the right time for this, and it will be best effected by taking off the leading bud at the extremity of each plant: a careful person should be sent into the ground for this purpose with a step-ladder; and this being set up against every hill, the plants are to be thus managed. Such

Such as begin to branch, need not have the top taken off, but it should be turned away from the pole; after which the stem will not encrease in length, but the tendency to branching will encrease: in all the others, which grow in length, and have no branches, the top of the plant must be pinched off with the finger and thumb; and after that there will be no more growth in length, but all the force of nature will be sent to the branches, which will begin to form themselves in a very few days from this stopping the shoot in length.

C H A P. XLII.

Of managing the Luxuriant Growth.

IN common seasons thus much is all that is required; but sometimes in wet years, and very rich grounds, the very branches will grow luxuriant in length, and the plant extending it-

K 5 self

self in bigness, will bear little fruit if this be not prevented. The same method answers the purpose perfectly. When these branches grow too long, their ends must be pinched off: the whole plant will then be covered with buds for fruit. We see this effect of taking off the luxuriant shoots in gardening, in a thousand instances. Beans never bear so well as when their heads are pinched or cut off, and it will be found useful in many other cases. The hop-ground is a garden of a particular kind, but all the garden rules hold good in it. After the pinching off the tops of the plants, the buds soon swell, and nature ripens them. The last horsehoeing is of prodigious service in this respect; and hops so raised will exceed any that can be obtained by the common methods: the inferior kinds, with this management, will be equal to the best when they are less carefully raised; and the poorest grounds will receive most advantage by

by it, which is a very happy incident. Where the planter uses the horse-hoeing method, he should watch his time in the driest weather for performing it, because the plow takes most effect, and works easiest at those seasons; but when he is content with the old method of paring off by hand, the most favourable time is just after rain; because the earth will not cut easily by the spade, or keep together at any other seasons. There are many advantages in the horse-hoeing method; but one of the greatest is keeping the plants in health. Half the mischief that happens in hop-grounds is owing to the want of a due supply of nourishment.

C H A P. XLIII.

Of Picking the Hops.

BY this management, the plants will flower in the latter end of July, and by the second week in August

the hops will form themselves like bells. In the common way both these operations of nature will be a little later. Three weeks from their beginning to bell is required for ripening them; and, if the weather prove cold and rainy, it will be somewhat longer. Therefore from the end of August to the middle September, is the natural season for gathering of hops. The hop till ripe is very moist and destitute of smell; when it begins to ripen, it grows dry, paler coloured, and fragrant. This is seen at a distance; but a more certain proof is obtained by examining the seeds. These are at first green, and soft; but as they ripen they grow harder and brown: this is the perfect maturity of the hop, after which it soon loses its fragrance, and falls to pieces if left upon the plant. The time of gathering the hop, is when they grow pale and dry, when they smell fragrant, and the seeds are just turned brown.

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They are then perfect, and they must be pull'd immediately, for after this they will spoil every moment. The more hands there are in hop-grounds at the season, the better. The way is to cut off the plants a yard above the ground, and then to clear them at the top, by cutting the stalks with a sharp hook upon a long pole, wherever they are entangled one with another. Thus every pole will be covered with its own plant, and free of all the rest; and it may then be pull'd up, and laid upon the ground for picking. The best management is to divide the hands into three or four parcels, and to make them begin in so many different parts of the ground. Four hills should be cut up first of all in each of these places, and a floor be prepared in the spot where they stood, by levelling the ground, and beating and rolling it. This serves as a place for the people to work upon; and the first hops they are to pick, should be those which grow upon the hills that
were

were cut down for that purpose : after this the ground is to be cleared by degrees, in the same manner ; carrying the plants, with their poles, to that floor which is nearest the place. The safest way is to cut them down as fast as they can be picked, and no faster, for hops very easily get damage while they are upon the plant, after it is cut. The best way of taking up the poles, is by a lever and block ; the lever being split at one end in the manner of a pair of tongs, and that part lined and toothed with iron. The pole must be rocked about by the hand first ; and then the block being laid over it, the split end of the lever is to lay hold, and it will be torn up easily by bearing the lever down over the log.

The plants are not to be unwound, but carried, poles and, all to the next floor of picking ; and the hops must be picked carefully and cleanly ; none of them broken, nor no stalks left to them. The buyers of hops are very nice, and cleanliness and care make up
a great

a great article in their value. When the hop is full ripe, it loses the heart in drying; but when gathered a little before that time, it has most virtue.

C H A P. XLIV.

Of Drying the Hops.

AS the fine colour and fragrance of hops are their great recommendation, there must be the utmost care taken to dry them quick, for this is the only way to preserve both these characters. The quicker they are picked, the less damage they get upon the stalk; and after this they are to be carried directly to the kiln where they are dried. The great management is to proportion the several parts of the work one to another; to cut down the plants as fast as they can be picked, and to pick them as fast as they can be dried. If they are picked too fast for the drying, they must be spread thin upon a floor, where there
is

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is a thorough air, and turned now and then till there is room for them upon the kiln. A common malt kiln, with a hair-cloth for the hops, is the usual method of drying, and succeeds very well; but there is a method practised in some places of a kiln, with a tin floor, and a kind of moveable roof, which answers much better; because the roof reflecting the heat, dries the upper part of the hops, while the immediate heat of the floor dries the other; and thus the work is done without turning the hops; which is necessary in the other method; and which always does them more or less damage by breaking, and wasting the seeds. In Flanders they dry hops upon a kind of bed of rails, with small spaces between, under which is a smooth floor, with a small fire-place in the center. Charcoal is the best fuel; but in some places they burn wood, and the hops get a peculiar flavour by it. The hops may lie six inches thick upon this kind of kiln; and

and they must be moved a little where they dry slowest, that all may dry alike. What seeds, and broken pieces of hops fall through these rails, must be swept together, and put to the rest of the hops: but it is a much more delicate method to avoid breaking them or spilling the seeds at all, which may be contrived by the kind of kiln before-mentioned; with a cover to let down or hold up as occasion may require: the bed of tin may be laid upon a kind of lattice-work of wood; and upon this the hops may be laid seven inches thick, and they will dry thoroughly, and one of the sides being made to fall down at pleasure, by means of hinges. When the hops are dried, they may be thrust off from that part without any danger of breaking, as there will be in any other way, because they are moved to take them out while brittle from the drying. This is the time when they are most of all capable of injuries; because the heat is yet in them:

them: they afterwards grow somewhat tough again in cooling.

C H A P. XLV.

Of Bagging the Hops.

WHEN the hops are taken from the kiln, they must be put in an airy room to grow gradually cold, and there to toughen: and thus they may be put up into bags and pressed ever so hard without breaking. It will require three weeks, or longer, to give them this preparation. If they cool too fast, there must be a blanket spread over them; and the same caution should be used at times afterward, to assist the toughening of them if the weather is very dry. When they are ready for packing up, a hole is opened in the floor of the room which goes through the cieling. The measure of this should be four foot by three, and a hoop is to be prepared that will not go through it, and that has a great deal

deal of strength. The bag into which the hops are to be packed is to be fastened to this hoop at its top, turning the edge all the way over the hoop, and sewing it strongly down with a packing needle: then the bag is to be put through the hole, the hoop keeping it from falling into the lower room. A few hops are to be thrown in and tied up in bundles at the corners; which will serve afterwards to handle and manage the bags; and when this is done, the rest are to be thrown in by small parcels at a time. A person gets into the bag to lay them well, and not only lays them even, but treads them down; all which violence they will now very well bear. When the bag is full the hoop is taken away, and it is sewn up at the top, leaving there also a couple of cushions at the corners; and thus the hops are ready for the market.

C. H. A. P.

C H A P. XLVI.

Of Dressing the Ground.

TH E ground requires no care all winter : the roots lie deep enough to be very safe from injuries by frost or accidents ; and they will be strengthening themselves for the moist season. It is in the spring dressing of the hop-ground, that the planter will begin to perceive the advantage of the horse-hoeing husbandry : for if this method be followed, there will be no need of manure ; but if he has managed the ground in the common way, and it has had no farther advantage than the paring away the surface, and making up the hills, there will be a necessity of a large quantity of manure. This is to be composed in the same manner as the compost for setting the roots, only with a double proportion of the dung ; which must be very old, and well rotted, or else
it

it will destroy the crop. This manure should be mixed up the autumn before, that it may lie to mellow together: and in spring the surface of the hop-ground is to be turned up with a common plow. The old straw of the last year's hops should be burnt upon the ground in several heaps, covered with a little of the mould; and this calcined earth and ashes, together with the manure before directed, is to make up the hills for the next season. The beginning of April is the best time for this work, for the hops shoot late, and the greatest benefit will be obtained by dressing the hills a very little before the rising of the buds.

The dressing of the hills must be done thus. The earth of the hill is to be drawn off, that the roots of the several plants may be seen. The old or original roots will at this time look of a fresh and glowing ruddy hue; these are to remain untouched: but the new roots, which are white, are in general to be cut away; only if
any

any of them run downwards, those are to be left on. The roots being thus dress'd, the shoots are to be managed much in the same manner. ...All the old or original shoots are to be left on; and if there be any new ones that rise well, they are also to be left: but the generality of the new shoots are ill placed, and are to be taken off. This being the first dressing of the hills, the shoots must be taken off a finger's breadth from the old one; but in the following years they may be cut away close.

C H A P. XLVII.

Of Selecting the best Plants.

IF any of the plants have the first summer yielded a bad hop, which is often the case, they should be marked at the time by thrusting a stick down by them; and in this spring-dressing those plants should be taken entirely away, and some of the new shoots from the other hills set in their place. When

When the roots and shoots are trimm'd, the hills are to be made up with the manure, and the earth taken from them to be spread in the intervals.

In the horse-hoeing method all this trouble of new manure may be spared, for the whole earth of the intervals will be enriched by the frequent turning, and will itself serve as compost for the hills. In this method I should advise, that, in the beginning of winter, the middle of the intervals throughout the whole ground should be plowed up with the horse-hoe; and thrown up high. In this way it should lie all the winter, and the top of the ridge would then be mellowed by spring into a much better manure than any that could be procured from dung: for dung always hurts the hop when not sufficiently rotted; and at best is not equal to such a natural manure, as the proper soil, mellowed and enriched by the dews, frosts, snows, and thaws, of a whole winter.

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In this case the hills should be taken down in April, and the roots and shoots dress'd exactly as in the foregoing directions; and then the tops of the ridges should be pared off with a spade, and finally wrought up to the hills.

In this manner the second year's produce will greatly exceed the first; and the third that of the second; and from that time the plants will continue in strength and vigour nine or ten years, if the ground be carefully dress'd for them: but if at any time neglect has occasioned the plants to decline, the remedy must be applying manure, such as described before: if the ground has been cultivated the common way; but if by the horse-hoeing husbandry, there will need little more than deep plowing; if any manure has been given in the course of this method, it should be in the winter, between the third and fourth season; and again, in that between the eighth and ninth: and at these times a very small quantity will be sufficient, when a hop-ground
that

that is cultivated in the usual way, appears decaying, the same roots will immediately grow strong, and flourish, if planted in a new piece of land; and the horse-hoeing husbandry can give them the same advantage while they stand in their original ground. In the common way of management, the roots extend themselves little farther than the substance of the hills, because the ground of the intervals is too hard for their fibres to penetrate; but in the horse-hoeing method, the whole ground is kept in a state of culture to a considerable depth; and the roots, instead of being confined to the hills for their nourishment, send fibres through the whole intervals. Every horse-hoeing breaks off a multitude of these; and from every broken part arise numbers of others. So that the plants are from time to time furnished, not only with fresh nourishment from the new-broken soil, but even with new mouths by which to receive it.

L C H A P.

C H A P. XLVIII.

Of Watering a Hop-Ground.

A Vast advantage of the horse-hoeing methods, is, that it always keeps the earth moist about the roots of the hops : for it is confirmed by all experience, that fresh-broken ground receives and detains the dews vastly more than such as lies hard. In dry seasons the planters are obliged to water the hop-grounds ; and the extent of his plantations, and great quantity of water required for every hill, renders this a work of great expence. There never is any necessity for it in a hop-ground managed by the horse-hoeing method. The season, when drought, is thus prejudicial to the hops, is one of the times of the natural hoeings ; and this never fails to supply nourishment as well as moisture : it feeds the shoot as well as sets it to growing. There are summers so
dry

dry sometimes, that two more waterings shall be necessary, one when the plants have obtained two thirds of their height, and the other just as they are preparing for flower and fruiting. These also are two natural periods of the grounds being horse-hoed; and thus in that excellent method, the whole goes on regularly, and even the most unfavourable seasons lose their ill effect.

C H A P. XLIX.

Of the Building for a Hop-Ground.

IF, on any account, one would wish the planter to add to the usual expence of the ground, it would be to raise a large and coarse shed, which would serve for picking the hops in safety at the season: and in winter would preserve the poles. This might be open on one side, and therefore consisting only of two ends, a back and a roof, might be built coarsely, yet

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strongly,

strongly, for a very moderate expence. The poles cost a great deal, and are easily damaged in winter: whether they are laid along, or piled up endways. They give a great deal of trouble when they break; and there is a constant charge in new supplying the decayed ones. This would be all avoided by keeping them under cover; and a great deal of the expence of the shed would, in the course of time, be saved in this single article. The planters very well know what damage the hops get by showers of rain, or by a scorching sun, while they lie for picking: and all this would be prevented by doing it under this slight cover: nor would there be that trouble and confusion which always attends the picking hops in high-winds. It is said, that in plantations where the hills are set at twelve or fourteen feet distance, the produce is as much from an acre, as when they stand closer; because in this case the plants bear fruit all the way down; but at the distance here
directed,

directed, the air has a free course, and the sun full power; and more than this cannot be necessary. If the account given by Mr. Lisle, from the Winchester hop-merchant, be exact, it may be a rule for placing the hills somewhat more distant than here is ordered; but when he talks of double, he certainly means in respect to those old plants when the hills were raised very close, and the ground, for that reason, subject to frequent disorders. It should seem, that as the hop requires a moist earth about its roots, this very distant plantation, exposing the surface too much, would hurt the crop in that respect. In all things moderation is the rule of wisdom; and in the present instance it should appear, that such a distance between the hills, as is now directed, will answer the purpose of giving free passage to the air and sun; which is all that can be proposed on that head, when we consider spaces of this extent; and yet will not expose the sur-

face of the ground too much to the sun. In the drying of hops, care should be taken not to let them lie too long in the heat, for they will evaporate for some time after they are removed, from the heat that is still left in them: and, if this be not allowed for in the kiln, they will be too dry. The fault of this is, that they never will acquire afterwards that soft damp and mellow condition which is perceived by the hand, in holding them; and is one of the great marks, by which the buyers judge. There is a certain spirit in the hop beside its bitterness, which it communicates to the beer; and this is lost in too much drying. When this is gone, the hop has much less value; and custom has taught them to judge of this by the softness and dampness of it. Probably it never deceives them: but however that be, the planter will always find them depend a great deal upon this condition in the hop. Another rule of judging, is by the seed; therefore the planter must be

be very careful not to loose this out of the hop in drying; nor to let them be gathered before they are of a due degree of maturity.

C H A P. L.

Of Cellarage.

WE shall raise the best hops, and brew the best liquor to little purpose, unless we know how to preserve it in perfection. This depends upon the method of keeping: and cellarage is the first article of all; for no care in the casks or bottles will be of any service, if the place where they are kept be faulty.

This article is very closely connected with the preceding; for certain cellars will spoil beers that are brewed at one time of the year, while they preserve and improve those which were brewed at another: thus, in general, cold and wet cellars will spoil beer brewed toward winter, be-

cause they will check that fine and flow fermentation which mellows the drink in the cask : and in the same manner, dry and warm cellars will spoil beer that was brewed in spring, by setting the fermentation too high.

Therefore he who would have good malt-liquors, must consider every thing in time ; and if he be to make a cellar, must chuse a proper aspect and condition of the ground : if, on the other hand, he is fixed in that particular, he must accommodate his season to his cellar.

We have said there are two seasons particularly suited to brewing : these are autumn and spring ; or, to name the time more distinctly, October and March. These are nearly equal as to the advantage, and therefore one or other is to be chosen in regard to the difference of the cellar. As a cold damp cellar spoils beer in winter, and a warm dry one has the same ill effect in summer ; and as it is beer newly brewed that suffers

suffers from this condition of the cellarage, if the brewer has a cellar upon a damp clayey soil, let him brew in March; and if on a dry gravel, let him brew in October: this would be taking the advantage of the particularity, which would otherwise have been hurtful: for the cold cellar will check the over fermentation of March beer, and the gravel cellar will promote the too languid fermentation of October.

When a cellar is to be made, the choice should always fall upon a loamy soil, which is moderate as to the two extremes of heat and cold; and, in all cellars, the windows and door should be to the west. The air has a great effect upon malt-liquors in the cellar, as well as the condition of the ground; and there are particular winds which foul the drink. These should be guarded against, as also all those changes in the air which they occasion. There is no occasion for light in a cellar; therefore there

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need

need be no windows; a candle will do all that is required in this place, and the doors may be guarded from the admission of an improper air; though windows cannot.

A cellar should always have a double door. There is a peculiar temper in the air of a close cellar. And this agrees with drink: therefore we should be careful how we alter it, by the admission of that from abroad, especially at improper seasons. For this purpose it is we direct the double door, that there may be no current or passage for the common air immediately into the cellar. When the person goes in at the first door, he is to shut that upon himself, before he opens the other; and thus the cellar is defended. Some have been so cautious, as to have three doors; but two are fully sufficient.

C H A P.

C H A P. LI.

Of Casks and Bungs.

TH E cellar being prepared, the next care must be of the vessels: and concerning these we have treated in general already; that they should be of heart of oak, painted on the outside (for that keeps their pores shut, and preserves them and the drink) and as smooth as possible within; that there may be no lodgement for foulness in any crevices.

The bungs should be of wood; for cork and clay are both hurtful. The best wood is poplar, because it is very cleanly, void of taste or scent; and has so much softness, as to yield a little upon pressure. They should be made on purpose for the vessel to which they are used; and turned by a good turner, to a perfect shape and smoothness. The best length is three inches and a half; and they should

go about an inch, or somewhat more, into the cask. The turner is to pierce them strait through the center, length-wise, with a small hole; and he must turn a peg to fit this hole.

Thus is the bung compleated; and, by means of the vent-hole, and its peg, there may at any time be a little air given, without opening the bung-hole: therefore, the bung should be driven in very fast, with a hammer, after the working; and it should have a piece of clean cartridge-paper first wrapped round it, that it may fit in the closer.

When a new cask is used, it should be seasoned twice with small-beer, as has been before directed, before the fine strong drink is put into it; and, in other cases, it must always be prepared by a thorough cleaning, scalding with hot-water, and sweetening in the air.

C H A P.

C H A P. LII.

Of Bottling.

THIS article we have also had occasion to name slightly before, speaking of the oat ale; but although what has been said of that particular, be applicable also to others, there are some general rules to be observed beside. In the first place, the bottles must be perfectly clean, and thoroughly drained. They should stand in the racks draining two days; and it should be in a place where there is a good, free air; because they will there be sweetened as well as drained.

The corks must be carefully picked, and none but the very even and soft kind, which they call the velvet-corks, must be used. There is nothing more disagreeable than a cork's breaking in a bottle; which is the common case, where indifferent ones
are

are used ; and the difference in price is trifling, in comparison of the satisfaction in using them. The very keeping of the beer also depends, in a great measure, upon due care in this article, for a coarse cork does not stop like a soft and fine one ; and, when they are very full of holes, air gets through. We expect the corks to stop close ; and we must chuse the finest for that purpose. The evening before the beer is to be bottled, boil a quantity of water, enough to fill a wash-tub, or some such vessel ; pour it into the tub, and, when it has stood ten minutes, put in the corks, lay a board and a weight over them, to keep them down ; and thus let them be till morning, then spread them to dry, before they are used. This soaking will make them a little pliable, and they will go in easier, and fit better to the bottles.

Three persons should be employed in bottling of beer ; one to draw it
from

from the cask; another to cork the bottles; and a third to take them from the corker, and set them up. The cellar should be shut up the whole time; and the work done by candle-light. The business is to get it quietly into the bottles; and any change in the air will bring on a new fermentation. 'Tis therefore the cellar is to be kept shut up: and as motion will take the same effect, in bringing on a working in the liquor, all possible care is to be taken to prevent it. The quicker and the quieter this business is performed, the better it succeeds; and three pair of hands assisting in both these purposes, the beer may thus be drawn steadily, by a person who does nothing else; the bottles may be given, evenly and smoothly, from him to the corker. The corks being well chosen, and prepared by this soaking, will go in easily and freely; and, if the quantity be large, so that they must be carried to some distance,

distance, a fourth person may be employed, to hand them to their place. Thus they need be scarce a minute in any one person's hand to heat; nor be shook in moving, when there are persons enough to receive them. Some prefer laying the bottles on one side; and others turn them bottom upwards: but what we want, is to have the drink clear; and, if there be any little settlement, it is best at the bottom. Therefore the bottles should always stand upright.

C H A P. LIII.

Of Remedies for Faults in Malt-Liquors.

THE common brewers use many ingredients, beside those we have named, in making of their beers: and when they grow foul, or become stale, or otherways faulty, they have a long list of remedies to recover

recover them. Those who will follow the directions here given, will need no other expedients than malt, hops, and water, to make the most excellent of malt-drinks; nor will they be apt to fail or become faulty: however, though we utterly discommend the use of jalap, ginger, treacle, and the like, in brewing; yet, as by some accident or over-sight, the best brewer may sometimes have his beer turn bad, we shall not omit the methods of prevention, when the danger is foreseen; or the remedies that may be innocently and safely used, when it has happened.

As it is better to prevent the mischief than to suffer it, and then try an uncertain remedy, we shall first give the way of preparing what is called the feeding-paste: this is a composition, the ingredients of which are all innocent, and all tend to the same purpose; therefore it is effectual.

We

We know the brewers mean by food, something that is to remain at the bottom of the cask, and upon which the drink lies and mellows. Often the finest part of its natural sediment answers this purpose; but when that is deficient, or more is required than will naturally result from its effect, the feeding-paste is very proper. It is thus made.

Dissolve two ounces of the finest isinglass in as much good strong-beer as will thoroughly melt it; then add to this a pound and half of good lump-sugar. Let them stand till the sugar also is melted. Powder very fine three pounds of clean soft chalk, and one pound of white oyster-shells, such as are sold at the druggists; add to this, of the flour of malt, sifted fine, one pound and a quarter, and powder of hops two ounces: grind these well together; then put in the syrup of isinglass, and beat up the whole, in a marble mortar, to a good paste; spread this upon a piece of paper,

paper, on the back of a large sieve, and lay it in the air to dry. When it is hard and dry, put it up for use. Two pounds of this is the proper quantity to be put into a hoghead of drink; and it must be used in a like proportion for any lesser or greater quantity. If any small over-sight has happened in the brewing; or if the season of the year has been unfavourable, or there be any other cause to fear the drink may grow sour, or come to other harm; this, being put in at the fastening down the bung, will prevent the mischief. The beer will be fine, clear, soft and well-tasted; and will keep without danger.

If from any omission of this assistance, when it was necessary, or from any other cause, a cask of beer grows unexpectedly foul and thick, and tastes, as it always will in that case, dead and muddy; the proper remedy is by a syrup of the hop, made with isinglass. The way to
prepare

prepare it is this: and for a hoghead, the following quantity. Rub to pieces a pound of fine, fresh hops; put them into a stone jar, and pour upon them as much boiling water as will cover them, without pressing them down: stop up the jar, and set it in a large pan of boiling water: pour away this as often as it cools, and put fresh boiling water in its place: in this manner keep the hops stewing, in the close jar, twelve hours: then let them stand twelve hours longer in the cold. After this strain the liquor, without pressing the hops: dissolve in this two ounces and a half of beaten isinglass; and then, to every pint of the liquor, put a pound and half of lump-sugar; boil this once up, to melt the sugar, and strain it through a flannel bag. When this is ready, clean and sweeten a fresh cask. Burn two or three brimstone-matches in it; then put in this syrup: draw off the beer, out of the hoghead it was in, carefully
into

into this ; and leave all the settle-
ment behind. Bung it up, but leave
the vent hole open a little, for three
or four days ; then stop it up entire-
ly, and let it stand three weeks ; af-
ter which it will be perfectly fine.

One farther accident there is at-
tending beer, which it is easy to
prevent, but very difficult to cure ;
and which is so general, that it re-
quires great care to obviate : this is,
the getting that ill taste and quality
which the brewers call the Fox.
This is a roapyness of the beer, with
an ill taste, and disagreeable smell.
It will never be found in beers brew-
ed with the care we have directed :
for cleanliness has been one of the
great points recommended here ; and
the want of that is usually the cause
of this mischief. Some of the wort
of a former brewing, is too often
left in the crevices of the vessels ;
which no scalding will then get out.
They must be cleaned at first, or it
can never be well done at all. A
very

very small quantity of this foulness will do the mischief; for it inevitably grows sour in the cracks; and, when the new wort comes into those vessels, this brings on a false fermentation, which prevents and interrupts the due operation of the other; and the beer, in the end, gets an ill taste and smell from this matter and its foulness, from the want of a due fermentation. Perfect cleanliness will always prevent this; but the remedy is difficult: the following is the only one I have found succeed.

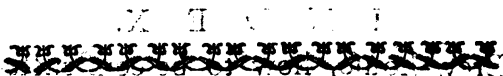
Grate half a pound of sea-biscuit fine, mix with it a quarter of a pound of very white wood-ashes, and a pound of slaked-lime; mix this with a little of the beer, and put it to the rest: then let it stand a fortnight. This quantity is sufficient for a hoghead; and I have seen it often succeed.

After this time of standing, if upon a little of the beer being drawn out, the taste is still perceived, make

a new mixture of the same ingredients, with the addition of a small quantity of the seed of hop, and it scarce ever fails.

For this purpose, some of the seed of hops that falls out in the drying, must be carefully saved in time : then burn some clean wood purposely to very white ashes, and mix three ounces of these with nine ounces of lime, that has lain in the air till quite reduced to powder. Bruise an ounce and half of the hop seed in a marble mortar ; and mix with these : then add the same quantity of biscuit, and use this as the former. Let it stand a month, and it will probably be quite cured.

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