A treatise on brewing. Wherein is exhibited the whole process of the art and mystery of brewing the various sorts of malt liquor / By Alexander Morrice.

A

TREATISE

ON

BREWING;

WHEREIN IS EXHIBITED

THE WHOLE PROCESS

OF THE

Art and Mystery of Brewing

the various sorts of

MALT LIQUOR;

WITH

PRACTICAL EXAMPLES UPON EACH SPECIES.

TOGETHER WITH THE

Manner of using the Thermometer and Saccharometer;

ELUCIDATED BY EXAMPLES,

AND

RENDERED EASY TO ANY CAPACITY,

IN BREWING

LONDON PORTER,	WINDSOR ALE,
BROWN STOUT,	WELCH do.
READING BEER,	WIRTEMBERG do.
AMBER,	SCURVY-GRASS do.
HOCK,	TABLE BEER, and
LONDON ALE,	SHIPPING do.

ALSO

General Instructions for the making of Malt;

WITH

TABLES OF THE NET DUTIES OF EXCISE

ON

Strong and Table Beer,

Payable by common Brewers, in Town and Country.

By ALEXANDER MORRICE, Common Brewer.

FIFTH EDITION.

LONDON:

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INTRODUCTION.

IT may be necessary to give some Reason for laying these few Sheets before the Public.

I am convinced that the many raw, thin, pale Beers, which are in such frequent Vend, whereby the Brewery is injured, and the Public not benefited, principally proceed from the Liquors being improperly taken, and from not extracting that Quantity of Saccharine from the Malt which it really possesses; it having, by an improper Process in the first Instance, so locked up the Pores of the Malt, that no After-heat can

obtain the proper Extract. I am speaking of partially locking it up, which is so frequently passed over unnoticed. Were the Goods entirely set, the most inattentive Observer could not avoid seeing it. Notwithstanding which, the ignorant Brewer continues his usual Process, runs his accustomed Lengths for this (originally) good Malt, and thinks that he has extracted the whole Virtue from it. But this is not the Case; for, though he may obtain the same Quantity of Liquid, it is very deficient in that Richness which he has a Right to expect, and which is so gratifying to the Palate.

When we speak of the Bodies of Beers, Strength is not to be understood; but it is the Materiality of which is distinguished upon the Palate, as light, heavy, thin, full, &c.

It

It is well known to every Brewer that the strongest raw Wort produces no inebriating Effects upon the Drinker: from this we are convinced that Fermentation does not set at Liberty, but positively creates, the spirituous Parts of the Liquor.

Fermentation is, then, the grand Field where the experienced Brewer is to reap the golden Harvest of his Labours: here is the most delicate Part of the Process, as every Error in this Stage must be a Diminution of the Brewer's Profits.

We have some Brewers in the Town Brewery who suffer their Ales to lie eight or ten Days in the Tun, which frequently causes them to be Yeast-bitten: the Loss which they sustain in Quantity may also be calculated, from their lying so long exposed in the Working Tun. I think it must be clear

clear to almost every practical Brewer, that this Mode of proceeding is improper upon many Accounts.

It must be visible to every Person, that Fermentation, carried beyond a certain Period, defeats its own Purpose; for which Reason it requires the strictest Attention of the Artist. A Delay of an Hour or two in cleansing it, when fit, will endanger your whole Gyle. To an improper Management in this important Part of the Process, may be ascribed the Quantities of thick, cloudy Beers, with which the Public are supplied; which champ in the Mouth more like Hasty Pudding than a well brewed Beverage.

By a prudent Management, and a Knowledge of that grand essential---*Fermentation*, there might be produced, without any Increase of Expense, a light, pleasant Drink,

agreeable

agreeable to the Eye, and pleasant to the Taste.

The Crisis when to cleanse is of so delicate a Nature, that it is impossible to lay down any fixed Rule; but Observation will point it out clearly. The Brewer who, by his Attention to the Particulars here recommended, attains this desired Perfection, secures to himself an unsolicited Extension of Trade, and renders those enormous Expenses that are daily incurred by Brewers to force a Trade unnecessary: it will save them the Unpleasantness of taking back Returns, or that most ruinous, though daily practised, Method of allowing the Victualler the Beer at a *far* reduced Price, to induce him to draw it. Again: Beer, by being well brewed, and giving universal Satisfaction, enables the Victualler to choose his

his Customers, and only supply those who pay him ready Money, or at a short, regular Credit.

The Victualler thus supplied by such a Brewer, will be enabled, every twenty-eighth Day as it comes round, to pay his Book up; and without being obliged to resort to those shuffling Methods of mixing Table and sometimes Small Beer with the Porter, to lessen their monthly Payment, and pay themselves for those Risks which they are obliged to run, to get rid of an Article that is only marketable among those who cannot buy without Credit; whereas the Vender of a good Article, not being compelled to resort to these Risks to get rid of his Commodity, will only trust where his Money is sure: he is thereby induced to pay every Attention to his Cellar, to keep up his own Credit,

Credit, and, consequently, that of his Brewer.

I cannot here help observing, that Brewers are very frequently blamed when they are really blameless; for, if Beer is ever so well brewed, it is frequently spoiled by the Carelessness, Obstinacy, or Ignorance, of the Storehouse Cooper. If even the best Beer be laid into the Cellar of a slovenly or lazy Victualler, from the Gullyhole in whose Cellar issues Stenches, it cannot fail of hurting the Beer materially. Many Victuallers suffer their Tap Tubs to be mouldy; and, when a Butt wants fining down, allow a Servant Girl to perform that Office; by whom the Bungs are left out, and many other Acts of Carelessness committed, which tend to discredit the Brewer, although he does not deserve it.

If Brewers would make a Point of encouraging Cleanliness among Victuallers, and pay a greater Attention to their Cellars, they themselves would ultimately derive an equal Advantage from such Caution.

PREFACE.

WHEN we consider the wonderful Consumption of Malt Liquor, the vast Revenue derived therefrom, and the Fortunes that have been made by Individuals; few Apologies, I trust, are necessary for offering to the World a Treatise, tending to cast a Light on the Manufacture of a Beverage in such general Use.

Perfectly aware of the Opposition every Work of this Kind, however modestly introduced to the Public, has to meet with, I purpose, notwithstanding, to describe the different Sorts of Beer, with the Manner of manu-

manufacturing them, from my own Knowledge; having been some Years a Common Brewer; and also from the Information of others, of whose practical Abilities I have a great Opinion.

It is a very common Remark, that almost every old Woman can brew. I admit, that Ale which is brewed at Noblemen's and Gentlemen's Houses is generally cried up; but, look at and calculate the Expense they incur by the Party so brewing, through their not knowing the proper Heats that are necessary to extract the greatest Quantity of Saccharine from the Malt, and consequently they are giving *Goods* instead of *Grains* to the Pigs.

Again; the Length of Time (often being Years) before it is fit for Use, convinces me that the Heats are generally improperly taken,

taken, and the Fermentation imperfect: the first is the Preliminary, and the second the most essential, Part of the Process. Though I shall give every Information in my Power of the Criterion by which to judge when a perfect Fermentation has taken Place, yet nothing but Practice and your own Observation can make you Master of it.

HISTORY

HISTORY

OF

The London Brewery,

FROM THE BEGINNING OF KING WILLIAM'S REIGN TO THE PRESENT TIME.

IN the Beginning of King William's Reign, the Duty on Strong Beer, or Ale, was One Shilling and Threepence per Barrel: the Brewer then sold his Brown Ale at Sixteen Shillings per Barrel, and the Small Beer (which was made from the same Grains) at Six Shillings per Barrel. These were mostly fetched from the Brew-house by the Customers themselves, and paid for with ready Money; so that the Brewer kept but few Servants, fewer Horses;

had

had no Stock of Beers or Ales by him; no purchasing of Leases of Public Houses; no bad Debts; and but a trifling Number of Casks; and his Money, consequently, returned before he either paid his Duty, or for his Malt. The Victualler then sold this Ale for Twopence per Quart.

Soon after, our Wars with France occasioned further Duties on this Commodity. I think that, in 1689, Ninepence more per Barrel was laid upon Strong Beer, and Threepence per Barrel on Small Beer. In 1690 the Duty was advanced Two Shillings and Threepence per Barrel on Strong Beer, and Ninepence per Barrel upon Small: and in 1692 an additional Duty of Ninepence per Barrel was laid on Strong Beer only. At this Period the Brewer raised his Price from Sixteen Shillings to Eighteen Shillings and Nineteen Shillings per Barrel; and the Victualler

Victualler raised his Price to Twopence Halfpenny per Quart.

Now we come to Queen Ann's Time, when, France disturbing us again, the Malt Tax, the Duty on Hops, and that on Coals, took Place; and, as the Duty on Malt surpassed that on Hops, the Brewers endeavoured to establish a Liquor wherein more of the latter should be used: thus the drinking of Beer became encouraged, in preference to Ale. This Beer, when new, they sold for Twenty-two Shillings per Barrel; and, at the same Time, advanced their Ale to Nineteen Shillings and Twenty Shillings per Barrel: but the People, not easily weaned from their heavy, sweet Drink, in general drank Ale mixed with Beer from the Victualler at Twopence Halfpenny to Twopence Three Farthings per Quart.

The Gentry, now, residing in London more than they had done in former Times, introduced the Pale Ale, and Pale Small Beer, which they were habituated to in the Country; and either engaged some of their Friends, or the London Brewers, to make for them these Kinds of Drink; and Affluence and Cleanliness promoted the Delivery of them in the Brewer's own Casks, and at his Charge. Pale Malt being dearest, the Brewer, loaded with more Tax and Expense, fixed the Price of such Small Beer at Eight Shillings and Ten Shillings per Barrel, and the Ale at Thirty Shillings per Barrel: the latter was sold by the Victualler at Fourpence per Quart, and under the Name of Twopenny.

This little Opposition excited the Brown Beer Trade to produce, if possible, a better Kind of Commodity in their Way than heretofore

heretofore had been made. They began to Hop their Mild Beers more, and the Publican started three, four, or six Butts at a Time; but so little Idea had the Brewer, or his Customer, of being at the Charge of large Stocks of Beer, that it gave Room to a Set of monied People to make a Trade, by buying these Beers from Brewers, keeping them some Time, and selling them, when Stale, to Victuallers for Twenty-five Shillings or Twenty-six Shillings per Barrel.

Our Palates but slowly alter or reform. Some drank Mild and Stale Beer; others, what was then called *Three Threads*, at Threepence per Quart; but many used all Stale, at Fourpence per Quart.

On this Footing stood the Trade until about the Year 1722; when the Brewers conceived that there was a Mean to be

found preferable to any of these Extremes; which was, that Beer should be well brewed, and, from being kept its proper Time, becoming Mellow (i. e. neither New nor Stale), it would recommend itself to the Public. This they ventured to sell at Twenty-three Shillings per Barrel, that the Victualler might retail it at Threepence per Quart.

Though it was slow, at first, in making its Way, yet, as it was certainly Right in the End, the Experiment succeeded beyond Expectation. The labouring People, Porters, &c., found its Utility; from whence came its Appellation of *Porter*, or *Entire Butt*. As yet, however, it was far from being in the Perfection which we have since had it.

Porter was, at different Times, raised to Thirty Shillings per Barrel, where it remained

mained till the Year 1799, and was retailed at Threepence Halfpenny per Quart; when, in Consequence of Malt rising in Price to from Four Pounds to Four Pounds Ten Shillings, and Five Pounds, per Quarter, and Hops from Four Pounds Ten Shillings to Seventeen Pounds, Eighteen Pounds, and Twenty Pounds per Hundred Weight, Porter was raised to Thirty-five Shillings per Barrel, and retailed at Fourpence per Quart. Ale, likewise, experienced a Rise of from Forty-two Shillings to Fifty-two Shillings and Sixpence per Barrel.

The Prices still keeping up, at a Meeting of the principal Porter Brewers it was raised to Forty Shillings per Barrel to the Victualler, and was retailed at Fourpence Halfpenny per Quart; but on the 19th of January, 1802, it was lowered to Thirty-five Shillings per Barrel.

Since

Since this Time, also, it suffered another Rise, and in October 1805 the Price to the Publican was Forty-five Shillings per Barrel, which he retailed at Fivepence per Quart.

Ale also experienced a Rise at the last mentioned Period, but not at any regular or fixed Standard; generally, in London, from Seventy-two to Eighty Shillings per Barrel; and was retailed at Eightpence and Ninepence per Quart.

Table Beer was also raised from Twenty to Twenty-four Shillings per Barrel.

Hops were first brought into England from the Netherlands, in the Year 1524. They are first mentioned in the English Statute Book in the Year 1552, viz. in the fifth and sixth of Edward the Sixth, Chapter the fifth: and, by an Act of Parliament of the

the first of King James the First, 1603, Chapter the eighteenth, it appears that Hops were then produced in Abundance in England.

The neat or clear Duty paid by the Common Brewer in the London Brewery in 1801, with the Malt Allowance deducted, was Five Shillings and Sevenpence Halfpenny per Barrel upon Strong Beer; and the clear Duty of Excise upon Table Beer was Two Shillings and Sevenpence Farthing; and upon Vi, or Small Beer, Tenpence.

The Duty paid now (September 1815) by the Brewer, with the Malt Allowance deducted, is, on Strong Beer, Nine Shillings and Twopence per Barrel; and on Table One Shilling and Tenpence. Vi is now subject to the same Duty as Table Beer.

ADVERTISEMENT TO THE FIFTH EDITION.

The rapid sale of the four former Editions of this Treatise affords the most undoubted proofs of its utility. The increasing demand having called forth a new Edition, it has been thought proper to revise and correct the Work throughout, particularly with respect to the Duties on Malt Liquors, and the Expense of Licenses to the Retailers, &c. &c. considerable alterations having taken place since the appearance of the former Editions.

In this Work the just proportion of the various Quantities of Malt, Hops, and other ingredients necessary for Brewing the different species of Malt Liquor, is given, as well as every other information that can possibly be requisite for the young Common Brewer, or the Private Family, in Town or Country: and as it is that kind of knowledge which none but the experienced Common Brewer can communicate, the Author flatters himself that this Treatise will be found, for practice, superior to any other hitherto published.

The following opinion of this Work is extracted from the Monthly Review, *July* 1802.

"The author, it must be acknowledged, writes like an honest as well as an intelligent Brewer; and we have no doubt that this book will prove useful to those readers for whom it is calculated. He has also prefixed a History of the London Brewery, which must be interesting to every description of readers."

The *Anti-Jacobin Review*, August 1802, says, "To all those who wish for information on the subject of Brewing, Mr. Morrice has supplied an useful and a copious fund: he has also prefixed a History of the London Brewery, which must be interesting to every description of readers."

A TREATISE

A

TREATISE ON BREWING,

&c.

AS I intend this Publication for young Brewers, and for the Benefit of Country Gentlemen, it may not be amiss, first, to give them the Outline of a Brewhouse, with its Utensils; together with some Hints on the Subject of the Utensils used, which are—

The Liquor Back, Copper Back, Copper, Shutes, Jack Back, Backs or Coolers, Mash Tun, Under Back, Working Tuns, Stillions, Casks, and Vats.

The

The Liquor Back should be placed sufficiently high to command the Copper, and much exposed to the softening Virtue of the Air. This I consider as particularly necessary, where you are compelled to use hard Water.

The Copper should be placed high enough to command every other Utensil in the Brewhouse, all of which you should be particularly careful to keep clean and sweet; for if the Fox, or Must, gets into your Utensils, you will be much troubled to remove the Taint.

If, after having brewed, the Backs, &c. are likely to be still for some Days, cause them to be well liquored down, and limed, which will prevent any Acidity remaining in the Wood. In Summer they should, in Addition, be filled with Water, which, by keeping

ing the Wood swelled, will prevent the Vessels from leaking.

I must here caution you to keep a watchful Eye upon your working Tuns; for it is generally admitted that there are not greater Thieves in a Brewhouse than they are: many, being partly under Ground, render your Search for the Leak fruitless.

MALT.

MALT.

Of making Malt.

AS this Article stands first in the Brewery, I shall give you the Directions of a Maltster of Eminence for the making of it, which are as follow :

The Barley must be put into a leaden or tiled Cistern, that holds five, ten, twenty, or more, Quarters ; it is then to be covered with Water, four or six Inches above the Barley, to allow for its Swelling : here it is to lie five or six Tides (as the Maltster calls it), reckoning twelve Hours to the Tide, according to the State of the Barley in Body or Dryness ; for that which comes off Clay,

or has been washed or damaged by Rains, requires less Time than the drier Grain, that was inned well, and grew on Gravels, or Chalks; the smooth plump Corn imbibing the Water kindly, whilst the lean and steely Barley will not do it so naturally. To know when it is enough, you must take some of the Corns, endwise, between the Fingers, and gently crush them: if they are in all Parts mellow, and the Husks open, or start a little from the Body of the Corn, then it is enough. The Nicety of this is a material Point; for if it is infused too much, the Sweetness of the Malt will be greatly taken off, and yield the less Spirit; and, of course, will cause a Deadness and Sourness in Beer or Ale in a short Time, for the Goodness of the Malt contributes much to the Preservation of all Ales and Beers.

Then the Water must be drained very well from it, when it will become equal and better upon the Floor, which may be done in twelve or sixteen Hours in temperate Weather, but, in cold, nearly thirty Hours. After being taken from the Cistern it must lie thirty Hours, for the Officer to take his Gauge, who allows four Bushels in the Score for the Swell here, or in the Cistern: then it must be worked Night and Day, in two or three Heaps, according to the Weather's being cold or hot; and must be turned every four, six, or eight Hours, the outward Part inwards, and the bottom upwards, always keeping a clear Floor, that the Corn which lies next to it may not be chilled. As soon as it begins to come, or spire, turn it every three, four, or five Hours, as was done before, according to the Temper of the Air, which greatly governs this Management; and as it comes or

works

works more, the Heap must be spread wider, and thinned, in order that it may cool. Thus it may lie and be worked upon the Floor in several Parallels, two or three Feet thick, ten or more Feet broad, and fourteen or more Feet in length, to chip or spire, but not too much, nor too fast; and, when it is *come enough*, it is to be turned twelve or sixteen Times in twenty-four Hours, if the Season is warm, as in March, April, or May. When it is fixed, and the Root begins to be dead, it must be thickened again, and often carefully turned and worked, that the Growth of the Root may not revive: this is better done with the Shoes off than on.

Here the Workman's Art and Diligence are particularly tried, in keeping the Floor clear, and turning the Malt often, that it may neither mould nor acre-spire; that is, that the Blade does not grow out at the opposite

End

End of the Root; for if it does, the Flour and Strength of the Malt are gone, and nothing left behind but the Acre-spire, Husk, and Tail.

When it is at this Degree, and fit for the Kiln, it is a Practice often to put it into a Heap, and let it lie twelve Hours, before it is turned, to heat and mellow, which will much improve the Malt, if done in Moderation; and after that Time it must be turned every six Hours within the twenty-four: if it is overheated, it will become like Grease, and be spoiled, or cause the Drink to be unwholesome.

When this Operation is over, it must be put on the Kiln to dry, and there remain four, eight, or twelve Hours, according to the Nature of the Malt; for the Pale Sort requires

requires more Leisure, and less Fire, than the Amber or Brown Sorts.

Three Inches thick was formerly thought a sufficient Depth for the Malt to lie upon the Hair-cloth; but, now, six is allowed, often to a Fault. Fourteen or sixteen Feet square will dry about two Quarters, if the Malt lies four Inches thick; and it should be turned every two, three, or four Hours, keeping the Hair-cloth clear.

The Time occupied in preparing it from the Cistern to the Kiln is uncertain, according to the Season of the Year: in moderate Weather, three Weeks are frequently sufficient.

If the Exciseman takes his Gauge on the Floor, he allows ten in the Score; but he sometimes gauges in the Cistern, Couch,

Floor, and Kiln; and where he can make most, there he fixes his Charge.

When the Malt is dried, it must not cool upon the Kiln, but be directly thrown off; not into a Heap, but spread wide in an airy Place till it is thoroughly cool; then put into a Heap, or otherwise disposed of.

There are several Methods used in drying of Malts, as the Iron-plate Frame, and the Tile Frame, which are both full of little Holes; the Brass-wired and Iron-wired Frames, and the Hair-cloth. The Iron and Tiled ones were chiefly invented for drying of Brown Malts, and saving of Fuel; for these, when they are thoroughly hot, will make the Corns crack and jump, by the Fierceness of the Heat; so that they will be roasted or scorched in a little Time. After the Malt is off the Kiln, some will sprinkle

Water

Water over it, to plump the Body of the Corn, and make it take the Eye, that it may meet with the better Market. But if such Malt is not used quickly, it will slacken, and lose its Spirits in a great Degree; and, perhaps, in half a Year, or less, may be taken by the Weevils, and spoiled. Such hasty Dryings or Scorchings are also apt to bitter the Malt, by burning its Skin; and therefore these Kilns are not so much used now as formerly.

The Wire Frames, indeed, are something better; yet they are apt to scorch the outward Part of the Corn, which cannot be got off so soon as the Hair-cloth admits of; for these must be swept, when the other is only turned at once. However, the last three Ways are now in much Request for drying Pale and Amber Malts, because their Fire may be kept with more Leisure, and the

Malt more gradually and truly dried; but, by many, the Hair-cloth is reckoned the best of all.

Malts are dried with several Sorts of Fuel, as the Coke, Welch Coal, Straw, Wood, Fern, &c.; but the Coke is reckoned, by most, to exceed all others, for making Malt of the finest Flavour, and of a pale Colour; because it sends forth no Smoke to affect it with an offensive *Twang*, which Wood, Fern, and Straw, are apt to do, in a greater or less Degree.

There is a Difference in what is called Coke, the right Sort being large Pit-coal, charked, or burned, in some Measure, to a Cinder, till all the Sulphur is consumed and evaporated, which is called Coke; and this, when properly made, is the best of all other Fuels: but, if there are any Cinders among

it

it not thoroughly cured, the Smoke of these is capable of doing Damage; and this happens too often by the Negligence or Avarice of the Coke-maker.

There is another Sort, which is by some, though wrongly, called Coke; and rightly named Culm, or Welch Coal, from Swansea, in Glamorganshire: it is of a hard, stony Substance, in small Bits, resembling a shining Coal, and will burn without Smoke; and which, by its sulphureous Effluvia, casts a most excellent Whiteness on all the outward Parts of the Body of the Grain.

Straw is the Fuel next in sweetness: Wood and Fern are the worst of all.

I have known some to put a Peck or more of Pease with every five Quarters of Barley, to be made into Malt, and they greatly mellow

mellow the Drink: Beans will do so, likewise; but they will not come so soon, nor mix so conveniently with the Malt as the Pease will.

There is an Abuse sometimes committed by a necessitous Maltster, who, to come by Malt sooner than ordinary, makes Use of Barley before it is thoroughly sweated in the Mow: it will then never make right Malt, but will be steely, and not yield a due Quantity of Wort. I knew it was once done by a Person who thrashed the Barley immediately from the Cart, as it was brought out of the Field; but they who used it in Malt suffered greatly, for it was impossible that it could be good, not having thoroughly chipped or spired on the Floor; which caused the Malt, when the Water was turned into the Mash Tun, to swell up and absorb the Liquor, and not to return its due Quantity again, as true Malt will: nor

was the Drink of this Malt ever good in the Barrel, but remained a raw, insipid Beer, beyond the Art of Man to cure; because (like Cider made from Apples directly off the Tree, that never sweated out their phlegmatic crude Juice in the Heap) a natural Liquor cannot be produced from such unnatural Management. Barley, certainly, is not fit to be made into Malt till it is fully mellowed and sweated in the Mow, and the Season of the Year is ready for it; without both which Requisites there can be no Assurance of good Malt.

Several Instances of this untimely or injudicious Method of making Malt I have known to happen, which have been the Occasion of great Quantities of bad Ales and Beers: such Malt, in consequence of its retaining some of its Barley or crude Nature, or the Season of the Year not being cold enough to admit of its

its regularly and temperately working on the Floor, is not capable of producing a true Malt, but will occasion the Drink to stink in the Cask, instead of growing fit for Use; it not having its genuine Malt Nature to cure and preserve it, which all good Malts contribute to as well as the Hop.

Oats, malted in the same Manner as Barley, will make a weak, soft, mellow, and pleasant Drink; but Wheat, so treated, will produce a strong, heady, nourishing, well-tasted, and fine Liquor.

To know good from bad Malt.

This is a Matter of the greatest Importance to all Brewers, both public and private. It is absolutely necessary to endeavour to be Master of this Knowledge, so as to judge truly between good and bad Malt,

without

without which you lie very much exposed to Imposition.

The best Instruction I can give, is, to examine if it has a round Body, breaks soft, is full of Flour all its Length, smells well, and has a thin Skin; next to chew some of it in your Mouth, and, if you find it sweet and mellow, then it is good. If it is hard and steely, and retains something of a Barley Nature, it has not been rightly made, and will weigh heavier than that which has been properly malted.

The foregoing Hints are for the purchasing of it. I shall, in its proper Place, shew how to ascertain the real Value of every different Parcel, by practical Examples upon the Saccharometer.

Of

Of the Nature and Use of Pale, Amber, and Brown Malts.

The Pale Malt is the slowest and slackest dried of any; and where it has had a lesser Fire, a sufficient Time allowed it on the Kiln, and a due Care taken of it, the Flour of the Grain will remain in its full Quantity, and thereby produce a greater Length of Wort than the Brown high-dried Malt; for which Reason it is sold for Two, Three, and Four Shillings per Quarter more.

This Pale Malt is, also, of all others, the most nutritious Sort to the Body; it being, in this State, the most simple, and nearest to its original Barley-corn; and it will retain an alkaline and balsamic Quality much longer than the Brown Sort.

The

The tender drying of this Malt brings its Body into so soft a Texture of Parts, that it is customary with Brewers (if they can) to brew it with Spring or Well Waters, whose hard and binding Bodies are thought to agree best with this loose-bodied Malt, either in Ales or Table Beer, which permit and require hotter Liquors than the Brown Malt can bear.

Amber-coloured Malt is that which is dried in a medium Degree, between the Pale and Brown; and is much in Use, being free from either Extreme. Its Colour is pleasant, its Taste agreeable, and its Nature wholesome; which make it preferred by many as the best of Malts. This, if used alone (which is seldom done), may be brewed with soft or hard Water; and you must always remember, that the more Heat there is in the Malt, the less is required in the Liquor.

Brown

Brown Malt is the soonest and highest dried of any, even till it is so hard, that it is difficult to bite some of its Corns in two; and is frequently so crusted or burnt, that the farinaceous Part loses a great Deal of its essential Salts and vital Property, which frequently deceives the ignorant Brewer, who hopes to draw as much Wort from this as from Pale and Amber Malts.

As it is much impregnated with the fiery fumiferous Particles of the Kiln, its Drink sooner becomes sharp and acid than that made from the Pale or Amber Malts, if they are all fairly brewed: for this Reason, the London Brewers mostly use the Thames or New River Water to brew this Malt with, for the Sake of its soft Nature, which agrees better with the harsh Qualities of it than any of the Well, or any other hard Sorts.

HOPS.

HOPS.

AS Hops constitute one of the principal Ingredients used in Malt Liquor, it may be both proper and necessary that I should present you some Strictures upon them.

To give an Account of the Cultivation, Picking, Bagging, &c., of Hops, formed no Part of my Intentions with respect to this Treatise; I shall, therefore, only give you some Hints on the Observations which I have made in the practical Use of them.

Hops, I believe, are generally admitted, like most other Vegetables, to be a Compound of Water, Salt, Oil, and Earth.---

When

When we pause for a Moment on the thus analyzed Article before us, we are to consider what are the Essentials of these component Parts that we are to strive to preserve, and what to reject. When I have considered the general Make of Coppers, I have found myself much at a Loss to determine, in my own Mind, whether a quick Fire and a short Process were best, or a long Process with a more moderate Fire, to prevent the Loss of certain essential Oils.

A Friend of mine (Mr. Blunt), whose practical Knowledge of Extracts is universally admitted, prefers a short or quick Process to a long one. I make Choice of a Dome Copper, as the finer and more essential Oils, possessing a greater Volatility, are more subject to Evolation, whereas the more austere are left: this the Dome Copper prevents; for when the finer Oils meet with a Resistance,

Resistance, they are driven downwards, and must re-unite with the Wort.

The Quantity of Oil in Hops is considerable; the finer Part of an agreeable Fragrance and great Volatility. They are endued with fine, odoriferous, aromatic Spirits, as appear by the Sense of smelling on being rubbed, which are easily communicated to any Liquid; and they are so tender, that they are not to be retained without being rammed and bagged, to prevent the Attraction of the Air.

The Care in bagging and keeping is of the greatest Importance: they should be kept in a dry, close Loft, and the Bags laid upon each other, though many pitch them endwise. If, in brewing, Part of a Bag or Pocket be left unused, let the upper Part of the Bag be covered close over the Remainder;

der; and put some heavy Weight upon it, to keep the Air from them, which will, otherwise, carry off their more valuable Qualities. New Hops should not be used alone, but mixed, in equal Proportion, with old ones.

It is the valuable Properties of the Hop which give to Malt Liquor that pleasant Taste and Smack upon the Lips after it is drunk: they also contribute very much to the Preservation of the Beer.

The total Amount of the Duty on Hops, throughout the Kingdom, for the Year 1801, was Two Hundred and Forty-one Thousand, Two Hundred and Twenty-seven Pounds, Eight Shillings, and Five Pence Three Farthings.

PORTER.

PORTER.

AS Porter, in Point of Consumption, generally bears the Priority, I shall commence with it.

Under this Head I must take Notice of the commonly received Opinion, that Thames Water is absolutely necessary to the brewing of good Porter. This is a mistaken Idea; as some of our principal Brewers use the New River Water.

Richardson, in his Experiments on the Gravity of Water, shews that the specific Gravity of Thames Water is 1000.3, and its Spissitude 1000.182; and the Gravity of

the New River Water 1000.3, and its Spissitude 1000.344.

The Expense and Labour which this scientific Gentleman has bestowed on the Subject, by his nice Calculations, and liberal, fair Investigation of it; and for the Instrument (viz. his Saccharometer) he has made, by which the Brewery may derive an unbounded Advantage, and obtain that Rank among the Sciences which the Magnitude of its Object entitles it to, give him a just Title to the Thanks of every Friend to Improvement; and although my Instrument would not permit me to make the nice Calculations which Mr. Richardson's have attained, they are sufficiently so to convince me that his are just, and to the greatest requisite Nicety.

Much praise is due to Mr. Richardson for his scientific Researches, and Mode of applying

ing the Hydrometer to the Purposes of the Brewery; but other Instruments are now made on an improved Construction, which are more generally approved.

The Uses of the Saccharometer and Thermometer in the Brewery are so various, and of such Importance, that any Instruments of this Kind, however inaccurate, are better than none; but it must be allowed that those which are most simple in their Construction, and the Application of which will consequently be most easily learnt, are best adapted for the Brewery.

Since the Use of these Instruments is now so common, and their Utility so generally acknowledged, it is unnecessary to urge the superior Advantages obtained by the Brewer who makes Use of them over one who does not.

Having brewed a Beer of the same Quality as that of your Neighbour's, or of such a Strength as gives Satisfaction to your Customers, you may in future, by using the Saccharometer, ensure a good Commodity, always of an uniform Degree of Strength, instead of boiling it by Time, or other uncertain fallacious Methods. If you have a good Parcel of Malt, you may avail yourself of it by increasing your Quantity of Worts without diminishing your standard Density; and should you have a bad Parcel of Malt, you will know how to save your Credit by boiling it down until the required Gravity is obtained.

In the Course of the Work, many other Advantages, of no less Magnitude, will be mentioned as they occur.

Suppose your Brewing consists of ten Quarters of Malt, in the following Proportions:

4 Herts

4 Herts Pale
3 Herts Amber
3 West Country Brown

—

10 Quarters Malt.

Take Care that it is sweet and well malted; then see it well ground, that every Corn be broken sufficiently to admit the Liquor.

Take the first Heat of your Liquor at 160 Degrees by the Thermometer (those made by Messrs. Dring and Fage, No. 20, Tooley Street, Southwark, with a blind Scale and Index, are found to be very correct and useful); mash one Hour, reserving some dry Malt to sprinkle over the Goods while spending: if you have a Cover to your Mash Tun, so much the better. After remaining an Hour, set Tap, taking Notice what the Heat of your Extract is, and also whether fine.

As

As these Observations must in some Measure guide you in your after Process, I shall, in the first Place, suppose that the Wort comes down, to your Satisfaction, quite bright: this, you will observe, is the first raw Wort, not having passed the Copper.

When the Tap is quite spent, gauge the Content of your Underback, and fill one of your Assay Jars from it; then weigh your Wort by the Saccharometer (the Particulars of which are given in a Plate at the End of the Work). Note down, in a Book to be kept for that Purpose, the Quantity of Worts in your Underback, and the Weight by the Saccharometer. Now weigh out your Hops (eighty Pounds), about half old and half new, good Brown.

I suppose your Copper charged again with Liquor, which, after having turned off below,

low, turn over at 161 Degrees; mash for three Quarters of an Hour, and cover up your Tun. Get your first Wort into the Copper with your Hops; boil it sharply for three Quarters of an Hour: and, a short Time before you turn out into your Backs or Coolers, put into the Copper fourteen Pounds of Sugar, and fourteen Pounds of Leghorn Juice, keeping the Copper constantly rousing till dissolved, and all the Wort out; then charge your Copper for your third and last Liquor.

After the second Liquor has stood an Hour upon the Goods, set Tap; and, when entirely spent, gauge the Underback, noticing what Quantity you have: weigh your Wort, as before, and get it up into your Copper Back.

You will now be able to judge how much Wort you have from both Liquors, and can tell

tell exactly how much it will be necessary to turn over for the third, which do at 150 Degrees. Let your second Wort into the Copper, and boil it with the same Hops for one Hour; then turn it out. Mash your third one Hour, and, after being on the Goods one Hour, set Tap; and, when spent, proceed as before. Boil it till you obtain your Quantity, which you may do to the greatest Nicety; after which, turn it out into your Backs, where it must remain thinly spread till cool enough to pitch the Tun, which do at 64 Degrees; but always take Care that your Yeast be good, and that it bites.

Cleanse the second Day after brewing, as near 80 Degrees as you can. I advise you to use in your Tun a good correct Thermometer, with a flat Bore, as it is easier to be seen than a round one. Use, at cleansing, a Quarter of a Peck of Flour, and two large

Handfuls

Handfuls of Salt, which will assist the Working: rouse it thoroughly at the same Time.

Take Care to keep the Casks constantly filling when upon the Stillions; and, when it nearly ceases to work, top it up with bright Beer: start about ten Hours after.—In proper Time bung it up for Use.

If the first raw Wort does not come down fine, take your second Liquor rather higher than is here directed: after this, Small Beer is to be brewed from the same Goods (the Directions to do which I shall give you hereafter); and, if your Copper is large enough, boil your three raw Worts at twice.

You might use three Pounds of Cocculus Indicus Berry, ground fine, and four Pounds of Fabia Amara (these, if used, must be in the

the Copper): the former gives an inebriating Quality, which passes for Strength of Liquor.

The Fabia Amara (or Bitter Bean), which is but little known by Brewers in general, is by far the most wholesome Substitute for Hops, it having a very pleasant Bitter; and it is also, in some Measure, a Substitute for Malt.

Quassia, ground small, is a great Stomachic, and wholesome; but is so powerful in its Nature, as to leave a very unpleasant Taste in the Mouth long after the Liquor is drank.

I would wish you particularly to observe, that, when these Ingredients are made Use of,

of, it is with a View of saving Malt and Hops, at a Time when they fetch the high Price they have done.

I purpose to illustrate and exemplify the foregoing, by giving you the whole Process of two or three Brewings, with the Manner of my proceeding at the Time; for which Purpose I have always kept a Book of the different Brewings, and Observations thereon, from January 1793.

EXAMPLE I.

Wednesday, January 16th, brewed for Porter: commenced at five o'Clock in the Morning; Thermometer in the Air 34 Degrees.

Kinds of Malt :

3 West Country Pale
6 Herts Pale
8 Herts Brown
8 Herts Amber

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	1	2	0
Cocculus Indicus Berry	0	0	6
Leghorn Juice	0	0	30
Porter Extract	0	0	4

First great Copper charged thirty-six Inches, i. e. fifty-two Barrels and seven Gallons.

First Liquor 155 Degrees, all turned down : mash one Hour. Set Tap at seven o'Clock. Tap, 137 Degrees ; Gravity, twenty-one Pounds and a Half per Barrel.

Second

Second great Copper charged fifty Inches, i. e. thirty-six Barrels, one Firkin, and seven Gallons.

Second Liquor 160 Degrees, all turned down. Tap, 146 Degrees; Gravity, ten Pounds and a Half per Barrel.

First Wort into the Copper thirty-four Inches, i. e. fifty-one Barrels and two Gallons.

Third small Copper, with Liquor charged full, i. e. fifty-nine Barrels and one Gallon.

Third Liquor 150 Degrees, all turned over: mash one Quarter of an Hour. Tap, 132 Degrees; Gravity, three Pounds and a Quarter per Barrel.

Second

Second Wort into the Copper twenty-seven Inches, i. e. sixty-two Barrels, one Firkin, and six Gallons. Boiled one Hour and a Half; came out thirty-four Inches, i. e. fifty-four Barrels, one Firkin, and seven Gallons. Pitched at 64 Degrees: cleansed, on Friday, eighty-eight Barrels.

	B	F
Started into a Vat, on Saturday------	88	0
Drawings off from Stillions, &c.------	1	2
	89	2

EXAMPLE II.

Saturday, October 26th, brewed for Porter: commenced at five o'Clock in the Morning; Thermometer in the Air 39 Degrees.

Kinds

Kinds of Malt:

11 Herts Pale
7 Herts Amber
7 West Country Brown

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	1	2	0
Cocculus Indicus Berry	0	0	6
Leghorn Juice	0	0	30
Porter Extract	0	0	4

First great Copper charged thirty-six Inches, i. e. fifty-two Barrels and seven Gallons.

First Liquor 154 Degrees, all turned down: set Tap at seven o'Clock. Tap, 136 Degrees; Gravity, twenty-two Pounds $\frac{14}{100}$ per Barrel.

Second

Second great Copper charged forty-eight Inches, i. e. thirty-eight Barrels, two Firkins, and six Gallons.

Second Liquor 164 Degrees, all turned down. Tap, 148 Degrees; Gravity, ten Pounds $\frac{70}{100}$ per Barrel.

First Wort in the Copper thirty-two Inches; boiled one Hour, and came out thirty-six Inches. Gravity, nineteen Pounds $\frac{1}{10}$ per Barrel.

Third Liquor charged small Copper full, i. e. fifty-nine Barrels and one Gallon.

Third Liquor 154 Degrees, all over. Tap, 133 Degrees; Gravity, four Pounds $\frac{1}{5}$ per Barrel.

Second Wort in the Copper twenty-seven Inches: boiled two Hours, and came out thirty-

thirty-six Inches. Gravity, nine Pounds $\frac{1}{10}$ per Barrel.

Pitched Tun at 64 Degrees; cleansed at 70 Degrees of Heat. Gravity of the Beer, in that State, fourteen Pounds $\frac{1}{4}$ per Barrel.

Cleansed, on the 28th, eighty-seven Barrels and one Firkin. Started into twenty-nine Butts.

Having given you two Examples on the practical Part of the Process of brewing Porter, which have, from the Commencement to the End, answered our most sanguine Hopes, I shall now present you with the Particulars of a Brewing, which, by bad Management, remained in the Tun ten Days before it was fit to cleanse, and the Mode which I adopted to prevent the entire Gyle from being lost.

Wednesday, September the 18th, brewed Porter: commenced at five o'Clock in the Morning; Thermometer 60 Degrees in the Air.

Kinds of Malt:

13 Herts White
6 Herts Amber
6 Herts Brown

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	1	2	4
Sugar	0	0	30
Cocculus Indicus Berry	0	0	6
Leghorn Juice	0	0	30
Porter Extract	0	0	4

First great Copper charged fifty-two Barrels and seven Gallons: Liquor 156 Degrees; all turned over. Mashed one Hour: set

Tap

Tap at seven o'Clock. Tap, 137 Degrees; Gravity, twenty-five Pounds $\frac{36}{100}$ per Barrel.

Second Copper charged thirty-eight Barrels: Liquor all turned down at 162 Degrees. Mashed one Half of an Hour; set Tap at Half past eleven o'Clock. Gravity, eleven Pounds $\frac{36}{100}$ per Barrel.

First Wort in the Copper thirty-two Inches: boiled one Hour; came out thirty-six Inches.

Little Copper charged full, and eight Inches, i. e. sixty-two Barrels: Liquor turned down at 150 Degrees; mashed a Quarter of an Hour. Tap, 144 Degrees; Gravity, five Pounds $\frac{65}{100}$ per Barrel.

Second Wort boiled two Hours, and came out thirty-five Inches.

This Wort was spread in the Cooling Backs: Part of the first, at pitching the Tun, I let down at 72 Degrees of Heat; the Remainder of the first, and the Whole of the second Back, at 64 Degrees. I left the third to be let down by a Servant, who delayed doing it till the Morning. The Part which was let down being in a large Square, and thinly spread, would not work at all; and his letting the Remainder down quite cold, made the Whole a *Corpus Mortuum*, or vapid Mass.

After having waited many Hours without finding that the Yeast had bit, I proceeded to nail up Hop Bags round the Tun, and made a Fire in the Tun Room, but found no Alteration. I then caused the vapid Yeast to be skimmed close off, heated a little of the Wort, and pitched again with fresh Yeast; after which I put in Half a Pound of Bay Salt,

Salt, and a Quarter of a Peck of Bean Flour; roused it well from the Bottom, and filled two Firkins of scalding Liquor, bunged down, which I lowered into the Square. This set it in Action; and, upon the Morning of Friday the 28th, it cleansed eighty-four Barrels and three Firkins, which turned out good Beer, and gave great Satisfaction.

BROWN STOUT.

THIS Liquor, since the Rise in the Price of Malt and Hops has compelled Brewers to run the uncommon Lengths they have for Porter, has come into very general Use; I shall, therefore, give you the necessary Instructions for brewing it.

As I recommend but two Liquors, and one boiled Wort for your strong, your Goods will possess too much of the Virtue of the Malt to brew Vi or Small Beer from; I shall, therefore, advise you to cap on a Quarter of fresh Malt, and brew Table Beer after it: not that I approve of capping on, convinced that you have not the whole

Virtue

Virtue from the Malt ; but the Excise will not admit of your brewing Strong and Table Beer from the same Goods without it.

Commence brewing early, as it will be necessary to liquor out all your Utensils with hot Liquor. Notice the Heat of the Atmosphere, which had best be done by leaving a Thermometer exposed all Night.

I shall suppose that you brew from twenty Quarters of Malt.

Kinds of Malt :

12 Herts Brown
4 Herts Amber
4 Herts White

20 Quarters.

Malt,

	Cwt.	Qrs.	lbs.
Malt, 20 Quarters			
Hops	2	0	0
Cocculus Indicus Berry	0	0	4
Sugar	0	0	28
Fabia Amara	0	0	6

Let your Malt be well ground. Charge your Copper thirty Barrels, which will enable you to spare the Quantity that the Malt will suck up, without endangering your Copper.

Turn your first Liquor down at 168 Degrees, being careful that the Men, with their Rakes, stir it well from the Bottom before they use their Oars, to prevent the Goods setting.

Mash one Hour and a Half, and let it stand the same Time upon the Goods; then

set

set Tap, making the same Observations, as to the Heat and Density, which you did in the Porter.

You will, of course, have charged your Copper full of Liquor for your next raw Wort. After the Tap is spent, gauge your Underback, and you will be able to give a near Guess how much Liquor you will want for your second Wort.

Recollect that the Malt will not require more, as the fresh Liquor will only dislodge what it had imbibed of the former; therefore you will only calculate what you will lose by boiling, and the Hops.

Turn your second Liquor over at 174 Degrees: mash one Hour, and let it stand upon the Goods one Hour and a Quarter. Set Tap, making your Observations as before.

Charge

Charge your Copper fifty Barrels, for Table Beer. Get your first Wort into your Copper Back; weigh out your Hops, two Hundred Weight of the best Brown. When your second Tap is spent, get it into the Copper Back: turn your third Liquor over for Table Beer, having capped on a Quarter of Amber Malt. Turn your Liquor down at 170 Degrees: mash one Hour and a Quarter, and let it stand upon the Goods the same Time. Set Tap, making your Observations as directed.

When in the Copper, put in fourteen Pounds of Spanish Juice just before turning out. Boil your strong Wort two Hours, as hard as you can, putting in the Articles before mentioned about a Quarter of an Hour before you turn it out. Endeavour to get about two Barrels and a Half, or rather more, per Quarter.

From

From the Time of putting in the Articles keep stirring and rousing the Copper from the Bottom, to prevent the Sugar from damaging it, till you turn out. Pitch your Tun at 66 Degrees, using a Gallon of lively Yeast: cleanse the second Day after brewing, as near 80 Degrees as you can; use some Flour and Half a Pound of Salt, rousing the Tun well. Keep topping the Beer up well while working in the Casks; and, when done, fill up with fine Beer: when settled, bung it down to go out.

We left the Table Beer Wort just turning out from the Copper, having used in it the Hops after the strong Wort. Pitch your Tun at 66 Degrees; cleanse it the next Day at 72 Degrees. At cleansing, two Pounds of Ginger, and some Flour and Salt, must be put into the Tun: rouse it well a little before.

Your

Your Casks I shall hope you have been particularly careful of: keep filling them up till the Beer has nearly left off throwing up; then top up with bright Beer: leave all till the next Day, and bung up. Before you send the Beer out, put a little Finings into every Cask.

N. B. The same Hops serve for Table Beer.

READING BEER.

THIS is a Beer much praised by many Persons; I shall, therefore, describe the Nature and Process of brewing it.

Kinds of Malt:

20 Quarters, all Pale.

	Cwt.	Qrs.	lbs.
Malt, 20 Quarters			
Hops	1	3	0
Grains of Paradise	0	0	6
Coriander Seed, ground	0	0	10
Sugar	0	0	28
Indian Bark	0	0	3

Take your first Liquor at 175 Degrees. Be careful that you do not set your Goods; and

and let it on gently, using your Rakes. It may remain on the Goods two Hours. Set Tap, making your Observations. Charge your Copper for your second Liquor, which turn over at 178 Degrees. Let it stand one Hour and a Half. Set Tap, &c. Get your two raw Worts into your Copper Back, or as much as is convenient of it. I will suppose your third Liquor ready. By knowing the Quantity of Wort you already have, you will know how much to turn over; but be sure to have enough, as you can always boil it away till you obtain your Quantity. Let your third Liquor be turned down at 158 Degrees; remain on the Goods three Quarters of an Hour. Set Tap. Weigh your Hops, which must be the best Kent: boil your first Wort one Hour and a Quarter; then turn out. Get the Remainder of your second and the Whole of your third Worts into the Copper; boil them together

with

with the unused Ingredients two Hours, hard. Pitch your Tun at 64 Degrees, using about a Gallon of Yeast. When you see the Head much up, skim it, and beat the Remainder well in: when it rises again, just before it falls, skim it as before, rousing the Tun well.

Use, at Cleansing, Half a Pound of Bay Salt, and rather more than Half a Peck of malted Bean Flour; rousing your Tun well.

Keep your Casks well filled, and top latterly with fine Beer. Put some scalded Hops into every Cask, on which the Beer will feed.

AMBER BEER, or TWOPENNY.

THIS Beer is both pleasant and wholesome, and is in almost as great Request as Porter, during the Winter, when it is drank warm. It is, unquestionably, the most profitable of any Malt Liquor, as it is sent out to the Customers within a Week from the Time of brewing, and usually consumed within the following one. I shall give you some Examples for your future Practice.

EXAMPLE I.

Commenced brewing at five o'Clock in the Morning; Thermometer 32 Degrees.

Kinds

Kinds of Malt:

2½ West Country Pale
12½ Herts Pale
10 Herts Amber

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	1	0	0
Leghorn Juice	0	0	20
Molosses	0	0	30
Grains of Paradise, ground	0	0	4
Capsicum	0	0	4

Charged the Copper fifty Barrels and three Gallons. The first Liquor was all turned over at 169 Degrees. Mash one Hour: set Tap at seven o'Clock. Tap, 146 Degrees; Gravity, twenty-six Pounds $\frac{6}{10}$ per Barrel.

Second Copper charged thirty-two Barrels and seven Gallons. Turned all the Liquor down at 170 Degrees. Mash Half an Hour: set Tap at eleven o'Clock. Tap, 152 Degrees; Gravity, eleven Pounds ½ per Barrel.

First Wort in the Copper fifty-one Barrels and two Gallons: boiled three Quarters of an Hour, and came out forty-seven Barrels, two Firkins, and five Gallons.

Charged the Copper for the third Liquor fifty-nine Barrels and one Gallon: turned all down upon the Goods at 160 Degrees: mashed twenty Minutes. Tap, 146 Degrees; Gravity, six Pounds per Barrel.

Second Wort came into the Copper forty-seven Barrels, two Firkins, and five Gallons: boiled

boiled hard one Hour, and came out forty-two Barrels and one Gallon.

Pitched the Tun at 64 Degrees; came into the Square eighty-one Barrels, one Firkin, and seven Gallons. Cleansed on the Evening of the third Day, using at the Time four Pounds of ground Ginger, Half a Pound of Bay Salt, and a Quartern of Flour. Cleanse with the Sweets on.

EXAMPLE II.

November 15th, commenced brewing at five o'Clock in the Morning; Thermometer 50 Degrees in the Air.

Kinds of Malt:

15 Herts Pale
10 Herts Amber

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	0	3	20
Spanish Juice	0	0	20
Molosses	0	0	30
Grains of Paradise	0	0	4
Fabia Amara	0	0	4
Capsicum	0	0	4

Charged the first Copper forty-nine Barrels: Liquor all turned down at 167 Degrees; should have been 170 Degrees, but was obliged to turn down eleven Barrels of Liquor nearly boiling, owing to the Flue drawing unusually, and turned in as much cold Liquor. Mashed one Hour and a Quarter. Tap, 144 Degrees; Gravity, twenty-six Pounds per Barrel.

Second Copper charged thirty-eight Barrels and a Half: Liquor all turned down at

172 Degrees. Tap, 150 Degrees; Gravity, ten Pounds ½ per Barrel.

First Wort in the Copper thirty-five Inches; boiled three Quarters of an Hour, and came out thirty-eight Inches, or forty-nine Barrels, three Firkins, and six Gallons.

Third or little Copper charged full, or fifty-nine Barrels and one Gallon: Liquor 160 Degrees, all over. Tap, 140 Degrees; Gravity, six Pounds ¹ per Barrel.

Second Wort boiled two Hours: pitched the Tun at 64 Degrees. Cleansed on the 18th, eighty-two Barrels and three Firkins: used at cleansing four Pounds of ground Ginger, Half a Pound of Bay Salt, and Half a Quartern of Flour.

EXAMPLE

EXAMPLE III.

Commenced brewing on the 27th, at five o'Clock in the Morning; Thermometer 58 Degrees.

Kinds of Malt:

8 West Pale, indifferent
6 West Brown, do.

14 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 14 Quarters			
Hops	0	2	6
Spanish Liquorice	0	0	12
Molosses	0	0	20
Grains of Paradise	0	0	3
Fabia Amara	0	0	2
Capsicum	0	0	4

First

First Copper charged forty Barrels. Liquor all turned over at 172 Degrees. Mashed one Hour. Tap, 136 Degrees; Gravity, twenty-three Pounds per Barrel.

Second small Copper charged full. Liquor all turned over at 178 Degrees. Mash Half an Hour. Tap, 154 Degrees; Gravity, nine Pounds per Barrel.

First Wort boiled three Quarters of an Hour.

Copper charged for third Liquor: all turned over at 165 Degrees. Mash three Quarters of an Hour. Tap, 143 Degrees; Gravity, five Pounds $\frac{3}{4}$ per Barrel.

Second Wort boiled two Hours and a Quarter.

Pitched

Pitched Tun at 64 Degrees. Cleansed the 30th, using two Pounds of Ginger, and a Quarter of a Pound of Bay Salt and Flour. —Forty Barrels and three Firkins.

LONDON ALE.

ALE, of all Malt Liquors, is the most delicate in its Nature, and will bear less tampering with than any other; it will, therefore, require your nicest Care throughout every Part of the Process.

As Brightness or Transparency is a great Recommendation to Ale, and as it is sometimes kept for a Series of Years, I shall recommend hard Water, as the peculiar Qualities it possesses assist in preventing Acidity, as well as in the Preservation of the Beer.

I shall

I shall give you some Examples, and endeavour to assist you with some Observations on this Subject.

Commenced brewing at five o'Clock in the Morning; Thermometer 60 Degrees.

Kinds of Malt:

23 Quarters Herts White, good
2 ditto Herts Amber, ditto

25 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters.			
Hops	1	3	10
Grains of Paradise	0	0	4
Coriander	0	0	4
Orange Powder	0	0	4

First

First great Copper thirty-eight Inches, or forty-nine Barrels, three Firkins, and six Gallons. Liquor in the Copper 168 Degrees, but gained 5 Degrees, and was all turned over on the Goods at 173 Degrees. Mashed one Hour: stood upon the Goods as long. When the Tap was set, it was near 150 Degrees; when nearly spent, 140 Degrees. My Jar Case being full of cold Liquor, I took a Sample of the Wort from the Underback, and filled my Assay Jar, which I placed in the Jar Case till it had cooled to 80 Degrees, when the Gravity was thirty-two Pounds $\frac{29}{100}$ per Barrel.

Second Copper was charged forty-eight Inches, or thirty-eight Barrels, two Firkins, and six Gallons. Liquor in the Copper 167 Degrees: all turned over at 172 Degrees. Tap, when set, was 153 Degrees, and the then Gravity was twenty-two Pounds. I filled

filled a Jar with the Wort, and placed it in the Case till it had attained 70 Degrees of Heat; when the Gravity was twenty-two Pounds $\frac{7}{100}$ per Barrel.

First Wort, when in, thirty-six Inches; boiled one Hour: when out, forty Inches.

Third Liquor charged in the small Copper, full, or fifty-nine Barrels and one Gallon. All turned over at 149 Degrees. Mashed a Quarter of an Hour. Set Tap at two o'Clock: Tap, 139 Degrees.

Second Wort, when in, thirty Inches; when out, thirty-six Inches; having boiled two Hours.

Pitched the Tun at 62 Degrees. Cleansed on the fourth Day, at 74 Degrees; using four

four Pounds of Ginger, Half a Pound of Salt, and Half a Peck of Flour.

Observe :---In Amber you have, before, been directed to cleanse with the Sweets on ; but in Ale you must work it low, in order to get the Sweets off. When you find it rises (as it will) three or four Feet high, just before it begins to fall, skim the Head off, beating the Rest well in, and rousing the Tun. If the Blebs are large, and blistered, your Liquors have been taken too high. If this is the Case, and you find it much upon the Fret, take Half a Pound of Salt of Tartar, a Quartern of malted Bean Flour, and some fresh elastic Yeast, and put them into the Tun ; rousing it thoroughly. This will cause it to work kindly ; but I recommend, that you will not let it remain more than three or four Hours after, before you cleanse. Let it be constantly topped up till the Yeast

is all thrown out of the Casks; then top it up with fine Ale. Before you bung it up, put in a large Handful of scalded Hops, cold: after which, bung up, and stow it for Use.

If you have Occasion to send it out before so fine as you would wish it, you may put in about a Pint of Finings, made from the best Isinglass.

N. B. The Examples I here give you are from different Parcels of Malt.

EXAMPLE II.

Wednesday, commenced brewing at five o'Clock in the Morning. Thermometer 52 Degrees.

Kinds

Kinds of Malt:

23 Quarters Herts White, not very good

2 Ditto Herts Amber, good

—

25 Quarters.

—

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	1	3	12
Grains of Paradise	0	0	4
Coriander Seed	0	0	4
Orange Powder	0	0	4

First Copper charged forty-nine Barrels, three Firkins, and six Gallons. Liquor all down at 172 Degrees. Mashed one Hour: stood upon the Goods the same Time. Tap, 151 Degrees. Gravity, twenty-nine Pounds $\frac{7}{100}$ per Barrel.

Second

Second Copper charged fifty-two Barrels and seven Gallons. Liquor all down at 171 Degrees. Mash Half an Hour. Tap, 156 Degrees. Gravity, seventeen Pounds $\frac{1}{10}$ per Barrel.

First Wort boiled about one Hour; the Gravity of which was twenty-seven Pounds $\frac{65}{100}$ per Barrel.

Third Copper charged fifty-nine Barrels. Liquor all turned down at 150 Degrees. Mashed three Quarters of an Hour. Tap, 138 Degrees. Gravity, twelve Pounds $\frac{3}{10}$ per Barrel.

Second Wort boiled two Hours and a Quarter; the Gravity of which was sixteen Pounds $\frac{2}{10}$ per Barrel.

Turned

Turned out thin into the Backs, and pitched the Tun at 62 Degrees. It remained till the third Day, when it was cleansed at 73 Degrees ; using at the same Time four Pounds of ground Ginger, Half a Pound of Bay Salt, and Half a Peck of Flour.

WINDSOR ALE.

THIS Ale has experienced so great a Demand in London and its Vicinity for a few Years past, as materially to affect the London Pale Beer Brewery. It is a Liquor better calculated for Winter than for the Heat of Summer. The London Brewers, however, were induced to brew upon the same Principle, and in many Instances they excel the Original. I shall present you with the most approved and generally received Mode of brewing it.

Kind of Malt:

25 Quarters of the best Herts Pale.

Malt,

	Cwt.	Qrs.	lbs.
Malt, 25 Quarters			
Hops	2	0	0
Honey	0	0	40
Coriander Seed	0	0	4
Grains of Paradise	0	0	2
Orange Pea	0	0	3
Ground Liquorice Root	0	0	12

Let your Hops be of the best Kind, and put them into cold Liquor, the Night before, to soak.

Charge your first Copper full; and, as your Heats must be high, keep your Rakes moving during the turning down of your first Liquor, which must be done at 178 Degrees. Mash one Hour and a Quarter. Let it stand upon the Goods one Hour and a Half. Set Tap: observe the Heat and Gravity. Your second Copper (which must have been charged as soon as you turned your first Liquor over) being now ready,

turn on at 186 Degrees. Mash one Hour: let it stand upon the Goods one Hour; then set Tap, making the usual Observations. Get your first Wort, and as much of the second as you can, into your Copper Back, when the Tap is quite spent. Turn on your third Liquor at 160 Degrees. Mash three Quarters of an Hour; allowing the Liquor to stand on the Goods one Hour.

Let your first Wort into the Copper, and put in the Hops: boil nearly an Hour, using the Ingredients enumerated, but do not put in the Honey till just before you turn out: when this is done, keep the Copper rousing from the Bottom till all the Wort is out.

Set Tap for your third raw Wort, getting it up to that Part of the second raw Wort which was not used in the first boiled.

[A fourth

[A fourth Liquor should now be ready in your small Copper, to wash your Goods for Small Beer or Vi; but, as I shall give one general Example at the End of this TREATISE, I will proceed with the Strong Beer.]

Your second Wort being now in the Copper, boil it with the Quantity of Hops before mentioned about two Hours and a Quarter; and then turn out. Endeavour to get about two Barrels and three Quarters per Quarter of Malt: but in this you must be governed by the Price of Malt and Hops.

Pitch the Tun at 62, and cleanse as near 80 Degrees as you can, on the third Day after; using Salt, and Bean Flour.

WELCH ALE.

THIS is the most luscious and richly flavoured Ale I ever drank. I saw the whole Process at Caernarvon, in North Wales. When the Liquor was lading on, having with me a Pocket Thermometer which I use in the Assay Jars, I put it into the Copper, and found the Heat to be nearly what I should have turned over at.

I shall give you, as nearly as I can, the Welch Brewers' Manner of Proceeding, from twelve Boles, or seventy-two Bushels, of Malt. Their Malt was all Pale, but higher coloured

coloured than the Ware, and equal to the best I ever saw.

Kind of Malt :

9 Quarters of best Pale Malt.

—

Malt, 72 Bushels, or 9 Quarters.

	Cwt.	Qrs.	lbs.
Hops, best Kent	0	2	14
Sugar	0	0	20
Grains of Paradise	0	0	2
Liquorice Root, ground	0	0	2

in the Tun.

Two Liquors and one Wort for Strong, and one Liquor and one Wort for Table Beer.

Take your first Liquor at 178 Degrees. Mash an Hour and a Half. Let it stand on the

the Malt two Hours; then set Tap. Turn your second Liquor down at 190 Degrees: mash an Hour and a Half: let it stand two Hours on the Goods. Set Tap: when spent, turn off below, and turn on for Table Beer. Let the Liquor be at 150 Degrees. Mash three Quarters of an Hour: let the Liquor stand on the Goods two Hours. Set Tap, and let it remain in the Underback till your Strong Wort is out. As soon as you have turned on for Table Beer, get your Strong Wort into the Copper, which boil an Hour and a Half with your Hops (before specified). Do not put the Sugar in till just before turning out.

Pitch your Tun at 62 Degrees; and use, at cleansing, Salt and Flour. Get your Fermentation as near 80 Degrees as you can.

Keep your Casks well filled; and, when nearly

nearly done working, use fine Ale to top up with.

Before you bung up, put a large Handful of scalded Hops into every Cask; then stow it cool, for Use.

WIRTEM-

WIRTEMBERG ALE.

KINDS of Malt :

16 Quarters Pale Herts
4 do. Amber do.

20 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 20 Quarters			
Hops	1	2	20
Honey	0	0	28
Sugar	0	0	20
Hartshorn Shavings	0	0	4
Ground Coriander Seeds	0	0	4
Caraway Seeds	0	0	1

Take

Take your first Liquor at 172 Degrees; mash one Hour and a Half; stand upon the Goods two Hours; set Tap; weigh your Wort; and let your second Liquor be getting in Readiness.

When your first Tap is all spent, turn over your second Liquor at 180 Degrees: mash one Hour, and let it stand upon the Goods two Hours. Set Tap, and weigh your Wort as before. When spent, get the whole into your Copper Back.

Turn your third Liquor over the Goods for Table Beer at 150 Degrees; mash three Quarters of an Hour; let it stand on the Goods one Hour and a Half; and then set Tap.

Let your Strong Wort into the Copper; boil it an Hour and a Half with the Hops and all the Ingredients, excepting the Honey

and

and Sugar, which put in only about ten Minutes before you turn out the Liquor; rousing the Copper all the Time till quite dissolved.

Pitch your Tun at 62 Degrees: cleanse on the third Day after, as near 80 Degrees as you can; using Half a Peck of Bean Flour malted, and Half a Pound of Bay Salt. Rouse the Tun well.

Put a large Handful of scalded Hops into every Cask: stow it cool.—Procure about two Barrels and a Half per Quarter.

Having finished with the Strong Beer, we will return to the Table Beer, which we left spending, and which by this Time should all be in the Under Back. Get it into the Copper, with the same Hops that

are

are in the Jack Back, and put in fourteen Pounds of Spanish Juice, but not till the Copper is boiling hard, that the Ebullition may prevent its sticking to the Copper. Let it boil about an Hour and a Half, or till you have about twenty-five Barrels.

Pitch the Tun at 66 Degrees. Cleanse the next Day, using some Salt and Flour. —Put in a little Finings before you send it out.

HOCK.

HOCK.

THIS is a Beer, that has, within a few Years, had a great Run; I shall, therefore, give you the necessary Instructions for brewing it.

Kinds of Malt:

14 Quarters of Herts Pale
6 Ditto Herts Amber

20 Quarters.

	Cwt.	Qrs.	lbs.
Malt, 20 Quarters			
Hops	1	3	10
Cocculus Indicus Berry	0	0	4
Sugar	0	0	20
Fabia Amara	0	0	2
Capsicum	0	0	3

Take

Take your first Liquor at 176 Degrees: mash one Hour and a Quarter; remain on the Goods the same Time; and set Tap: when spent, turn off below, and turn your second Liquor all down at 182 Degrees. Mash one Hour; continue on the Goods two Hours: set Tap, and, when spent, turn the third Liquor over the Goods, for Table Beer, at 160 Degrees [If a Common Brewer, you must cap on with fresh Malt, as before observed, if not unnecessary]. Mash one Hour, and remain on the Goods two Hours. Set Tap: get your Strong Wort into the Copper, with the Hops and the other Ingredients, excepting the Sugar, which put in agreeably with the former Direction: boil it two Hours and a Quarter; then turn out.

Pitch your Tun at 64 Degrees, and cleanse the second Day. Keep the Casks well

well filled up; putting a large Handful of Hops into every Cask before you bung up.

Having left the Table Beer coming into the Under Back, we should thus proceed:—When the Tap is spent, get it into the Copper with the same Hops which were just before used, and boil it one Hour and a Half, using fourteen Pounds of Spanish Juice while it is boiling sharply. Endeavour to procure about twenty-five Barrels.

Pitch the Tun at 66 Degrees. Use some Flour and Salt at cleansing, which should be done the next Day. Put in a little Finings before you send any out.

It ought to be remembered, that after Strong Beer you are always supposed to cap on for Table. This is for the Common Brewer only; the Excise not having any Thing to do with the private Gentleman.

SCURVY-

SCURVY-GRASS ALE.

THIS Ale is not in such general Use in London, as, from its wholesome Properties, might be expected. Brewers are generally said to be their own Physicians; for nothing is believed to be a greater Purifier of the Blood, or Antiscorbutic, than Sweet-wort. The Process of brewing this Ale preserves this properly, with the Addition of the Virtues of the Scurvy-grass. I shall now proceed to give Directions for brewing this Liquor.

Kinds of Malt:

3 Quarters Herts Pale
2 Ditto Amber

5 Quarters.

Malt, 5 Quarters
Hops, 25 Pounds
Molosses, 10 Pounds
Garden Scurvy-grass, 5 Bushels
Alexandrian Senna, 2 Pounds; Horse-radish Root, 1 Pound; and put sliced into the Working Tun in a Net.

After having your Malt well ground, turn your first Liquor over at 170 Degrees: mash one Hour; remain on the Goods as long. Turn over, the first Time, about ten Barrels. When you have set Tap, and it is spent, turn over your second Liquor at 172 Degrees: mash three Quarters of an Hour. Turn over for the second about seven Barrels. Set Tap: get your first and part of the second raw Wort into your Copper Back: when the Tap is spent, turn your third Liquor over at 160 Degrees; the Quantity turned over should be about twelve Barrels.

Barrels. Mash twenty Minutes; remain on the Goods Half an Hour: set Tap, and, when spent, get your Wort into the Copper (where I will suppose the Rest of your Wort has been), with the Fire damped closely up; having put in your Hops, good brown, and fresh got Scurvy-grass, in the Quantities mentioned before. Boil the Whole one Hour and a Quarter; moderately during the first Hour, but sharply at the latter End.—A little before turning out, put in ten Pounds of Molosses, keeping the Rake going in the Copper till the whole Wort is in the Jack Back.

Pitch your Tun at 66 Degrees. Cleanse on the third Day with the Sweets on. This Liquor is drank both warm and cold.

N. B. The Scurvy-grass may be had all the Year round at Covent Garden.

TABLE BEER.

TABLE Beer is a Beverage made Use of in almost every Family; than which Nothing can be more wholesome, or the Want of be more missed. I shall, therefore, without any farther Preliminary, proceed to give you the Mode of manufacturing it.

Commenced brewing at six o'Clock in the Morning. Thermometer 63 Degrees in the Air.

Kinds of Malt:

4 Quarters Herts White
2 Ditto do. Pale
2 Ditto do. Amber

8 Quarters.

Malt,

Malt, 8 Quarters
Hops, 72 Pounds
Spanish Juice, 12 lbs. : you might use of ground Liquorice Powder 12 lbs.

Charged the first Copper thirty Inches; turned all down at 168 Degrees; mashed three Quarters of an Hour; set Tap at nine o'Clock; Tap 146 Degrees. Second Copper charged thirty Inches, or fifteen Barrels and a Half. Liquor all turned over at 172 Degrees; mashed Half an Hour; set Tap at eleven o'Clock: Tap 150 Degrees when nearly spent.

Charged Copper the third Time twenty-eight Inches, or about twenty Barrels: turned all over at 158 Degrees; set Tap at one o'Clock; mashed Half an Hour: Tap 148 Degrees.

First Wort came into the Copper twenty-eight Barrels, one Firkin, and seven Gallons. Boiled one Hour, and came out twenty-six Barrels, one Firkin, and three Gallons.

Second Wort, when in, was three Inches: boiled one Hour, and turned out sixteen Barrels.

Pitched the Tun at 70 Degrees: cleansed the next Day, using at the Time one Pound of ground Ginger, four Pounds of Flour, and one Pound of Salt.

Let your Tun be thoroughly roused, and keep your Casks well filled.

Put the Spanish Juice into the first Wort about a Quarter of an Hour before turning out.

You may put Half a Pint of Finings into every Cask when sending out, if wanted for immediate Use; or, otherwise, it will become fine itself.

EXAMPLE II.

Thermometer 66 Degrees.

Kinds of Malt:

5 Quarters of Herts Pale
3 Ditto do. Amber

8 Quarters.

Malt, 8 Quarters
Hops, 70 Pounds
Spanish Juice, 12 Pounds: might have used of Ground Liquorice Powder 12 Pounds.

Charged

Charged the first Copper ten Inches; turned all the Liquor over at 167 Degrees; mashed one Hour; remained on the Goods as long; set Tap at 145 Degrees. The Wort, when at 86 Degrees, was of the Gravity of eight Pounds $\frac{3}{10}$ per Barrel.

Second Copper charged thirty-two Inches; all turned over at 170 Degrees; mashed Half an Hour; remained on the Goods one Hour; set Tap at 140 Degrees. The Gravity, when at 50 Degrees, was six Pounds per Barrel.

The third Copper charged, and the Liquor all turned over at 154 Degrees; mashed Half an Hour; remained on the Goods one Hour. Tap, 138 Degrees: Gravity, five Pounds $\frac{5}{100}$ per Barrel.

Boiled the first Wort three Quarters of an Hour,

Hour, with the Hops. Went in at three, and came out at seven, Inches. The Gravity when taken out of the Copper, in its highest State of Ebullition, with the Infusion of Hops, was twelve Pounds $\frac{45}{100}$ per Barrel.

Got the second Wort into the Copper: boiled two Hours. When out, six Inches. Gravity, ten Pounds $\frac{3}{10}$ per Barrel.

Pitched the Tun at 68 Degrees: cleansed the next Day; using one Pound of Salt, four Pounds of Flour, and one Pound of ground Ginger.

If you use one Pound of Grains of Paradise, ground, it will give a Warmth to the Liquor.—Attend to the Hints before given.

BEER FOR SHIPPING, FININGS, OR WORKHOUSES,

AFTER ANY KIND OF STRONG BEER.

I SHALL give you an Example, after Porter.

25 Quarters of Goods.

Turn over fifteen Barrels at 160 Degrees; let it stand about two Hours, and then set Tap. As this Liquor will only dislodge the Wort that remained in the Grains and Hops, your only Loss in Quantity will be in the Copper. Boil it three Quarters of an Hour with the same Hops, and your Produce will be about thirteen Barrels and a Half.

Pitch

Pitch your Tun at 70 Degrees, and cleanse the next Day.

This is sold to the Shipping at Ten Shillings per Barrel.

SHIPPING

SHIPPING BEER,

WHEN YOU ARE OBLIGED TO USE FRESH MALT.

THIS Article is also sold, in the Season, to Haymakers, &c.

Kinds of Malt :

1½ Quarter Pale Malt
1½ Ditto Brown do.

—

3 Quarters.

—

Malt, 3 Quarters
Hops, 14 Pounds, good brown.

Having your Malt well ground, turn over your first Liquor at 172 Degrees, about fifteen

fifteen Barrels: mash one Hour; stand one Hour and a Half on the Goods. Set Tap, and, when spent, turn over about fifteen Barrels more at 180 Degrees. Mash one Hour and a Half; stand two Hours on the Goods: then set Tap. Get both Worts into your Copper, and boil them nearly two Hours; but endeavour to get about eight Barrels per Quarter, or twenty-four Barrels in the Gyle.

Pitch your Tun at 70 Degrees, using about Half a Gallon of Yeast. Cleanse the next Day.

If intended for Shipping, the more new you send it out, the greater Satisfaction it will give: if disposed of elsewhere, it must be worked off clean.

TO MAKE UP A VAT

OF

150 BARRELS OF COMMON VI,

OR

RETURNS OF TABLE,

Mixed to double its Value.

USE Half a Barrel of Colouring, ¼ Cwt. of Cream of Tartar, ¼ Cwt. of ground Alum, 1 Pound of Salt of Steel, and two Barrels of strong Finings. Mix these well together, and put them in the Vat, rousing it thoroughly at the same Time. Let the Vat remain open three Days; then close it, and sand it over. In a Fortnight it will be fit for Use. Your own good Sense will inform you how, to Advantage.

TO

TO BRING SEVERAL SORTS OF BEERS,

Mixed together in one Vat,

TO ONE TASTE AND PALATE.

FOR every one hundred Barrels in your Vat take six Pounds of Porter Extract; six Pounds of Orange Pea, ground; one Pound of Alum, ground; one Pound of Heading; and six Pounds of Indian Bark. Mix them well with one Butt of Finings, and rouse it thoroughly at the Time. Let it continue open three Days; then cover it, and sand it over. It will be fit for Use in a Fortnight.

ON

ON

FERMENTATION.

WE have now before us a Subject of the first Magnitude, and the most delicate to be treated on, it being in perfect Embryo ; and in the Working Tun the decisive Stroke is exhibited which is to govern the entire Process of the Gyle.

It is by the Knowledge when to urge, and when to retard, the Fermentation, that you are enabled to gratify the Palates and the Eyes of your Customers ; and instead of pursuing it to the acetous, to stop it when it has attained the vinous, State.

It is not merely Potency that is necessary for the Satisfaction of Malt Liquor, for Flavour and Transparency are generally still more required.

The first Stage of Fermentation commences at 40 Degrees, and the last at about 80 Degrees. It is by a perfect vinous Fermentation that the inebriating Quality (or Strength) of Beers is obtained. Be particular in recollecting, that—the Moment the vinous Fermentation is completed, the acetous commences; therefore your Knowledge and Prudence will direct you to cleanse immediately.

Your Beer will rise three or four Times, and three or four Feet high. If it is Porter, merely skim off any dirty Head that may be upon the Yeast, and rouse the Tun well.—

Cleanse at 76 Degrees, with the Taste of the Hop.

Ale should be worked cool; and, if in Summer, I would recommend no more Yeast than just enough to save it. If the Blebs are about the Size of a small Nutmeg, with a light Head, the Liquors have been properly taken; but if as large as a Walnut, your Liquors have been taken too high: if vapid, and without any or very small Blebs, your Liquors have been taken too low.—By these Hints you will be able to correct any Error in your next Brewing; and I here give you some Hints to correct them in the present Case: but Prevention is always better than a Cure.

I shall suppose your Liquor to have been taken too high, and much blistered in the Tun; in which I will also suppose there are

sixty

sixty Barrels.—Take one Peck of malted Bean Flour, one Pound of Salt of Tartar, and one Gallon of fresh and lively Yeast: mix them well together, and, after skimming off as much of the Head as is convenient, put the above in, rousing it well from the Bottom. Cleanse in three or four Hours after.

If your Liquor has been taken too low, and the Beer is vapid, and will not work, you must urge it, by putting in some Bean Flour and Bay Salt; and, if necessary, fill a Cask of hot Liquor, and lower it into the Tun.

In Ale, you will observe the Blebs to be very dim just before it is fit to cleanse.

HEADING.

ON this Part of our Subject it may be necessary to observe, that there are various Modes of making it. Some make Use of ground Copperas and ground Alum, in about equal Proportions; some resort to Salt of Steel, of which as much as will lie on a Shilling is sufficient for a Barrel of Beer. But, as the Duties of a Brewhouse sufficiently employ every Person engaged in it, I recommend it to be purchased of those who make it their Business to have it ready prepared.

Observe, that Porter should not be sent out without it, as it causes the Head so much admired in that Liquor, and is agreeable to its Flavour.

FININGS.

FININGS.

UNDER this Head it is necessary to observe—that you must have several Vessels, with Isinglass in its different Stages. Take the Book Isinglass, of from about 1s. 2d. or 1s. 6d. per Pound, picked clean. Fill a Cask half full of good stale bright Beer, and the other half with the above Isinglass, when it will soon open, and become as thick as your Hand. Examine it well, and throw away all the hard and indissolvable Pieces which you may find among it. You must have two Sieves and a Hand-brush: place the coarsest Sieve upon an empty Cask, and half fill it with the partly dissolved Isinglass; then rub it round in the Sieve till you have made all pass through it that you can; and that which will not pass, put again into the

Cask

Cask from whence you took it, and let it remain till more dissolved : keep doing this till your Cask is nearly full ; then, after putting some sharper Beer upon it (and, if much wanted, you may quicken it by putting a Spoonful of Vitriolic Acid ; but this I do not recommend, if it can be avoided), when sufficiently dissolved, place the finest Sieve upon an empty Cask, and proceed as before, when it will be fit to put into the Beer.

For Ale, you should make Use of the best Staple Isinglass you can procure ; and always take Care to have a Sufficiency ready for Use. When you put it into the Cask, make Use of a Stick to stir it up well : it will fall in a few Hours.

SACCHA-

SACCHARINES, BITTERS, &c.

MALT.

THE Pale Sort has most of the natural Grain in it, and is therefore the more nourishing; but, for the same Reason, it requires a stronger Constitution to digest it.

Brown Malt makes a Drink much less viscid, and fitter to pass the several Strainers of the Body.

Pale Malt, as I have before stated, should always be brewed with hard Waters; because the mineral Particles, wherewith these Waters are

are impregnated, help to prevent the Cohesions of those which are drawn from the Grain, and the better enable them to pass the proper Secretions; and the viscid Particles of the Grain likewise prevent those of the Waters from doing the Mischief which otherwise they might occasion: but soft Waters are best calculated to draw out the Substance of high-dried Malts, which retain many fiery Particles in their Contextures, and are therefore better lost in a smooth Vehicle.

Hops are well known to be a subtle, grateful Bitter in their Composition; therefore, with this Liquor, they add somewhat of an alkaline Nature, i. e. Particles that are sublime, active, and rigid; by which Means the ropy and viscid Parts of the Malt are more divided and subtilized; and are, therefore, not only rendered more easy of

Digestion

Digestion and Secretion in the Body, but also, while in the Liquor, they prevent its running into such Cohesions as would make it ropy, vapid, and sour.

SUGAR.

Sugar, Saccharum—a very sweet, agreeable saline Juice, expressed from the Sugar Cane, which grows plentifully in the West Indies. Used in the Copper.

HONEY.

Honey is a sweet vegetable Juice, collected by the Bees from the Flowers of different Plants: it contains a Quantity of fixed Air, and

and is antiseptic, as well as detergent and diuretic. Chemists draw a Water, a Spirit, an Oil, &c. from Honey. When used in the Brewery, it is for Ale, and should be in the Copper; though some prefer the Jack Back, and others the Tun.

MOLOSSES.

Molosses is that gross yet fluid Matter remaining of Sugar after refining, and which no boiling will bring to a Consistence more solid than that of Syrup. Properly, Molosses are only the Sediments of one Kind of Sugar, called Chypre, or brown Sugar, which is the Refuse of other Sugars not to be whitened or reduced into Loaves. It is generally used for Amber; sometimes in the Tun, and sometimes in the Copper.

STICK

STICK LIQUORICE.

STICK LIQUORICE.—New Green Liquorice should be chosen smooth and even, about the Thickness of the middle Finger: ruddy without, yellowish within, easy to cut, and of an agreeable Smell. This Root, when carefully dried and powdered, is of a richer and more agreeable Taste than when fresh. It is used ground, and in the Tun: it is very balsamic and detergent.

SPANISH LIQUORICE.

SPANISH LIQUORICE, or JUICE, is made from boiling the foregoing Root lightly in Water till the Fluid has acquired a deep yellow Tincture, and the Water, at Length, evaporated over a moderate Fire. There

remains

remains a black solid Sediment, of a pleasant Smell; of a dark reddish-brown Colour when in the Mass, and, when drawn out into Strings, of a golden Colour, which we call Liquorice Juice, or sometimes Spanish Juice. Its Quantity amounts to nearly half the Weight of the Root. Long boiling impairs the Sweetness of the Juice, and gives it an unpleasant Bitterness.

COLOURING.

I SHOULD recommend to every Brewer to provide himself with a sufficient Quantity, as it gives a good Face to the Beer, and enables you to gratify the Sight of your different Customers.

I have

I have tried most Colourings, and find them very beneficial in Porter and Table Beer.

Unless you mix it up in your Finings, it should be put in just before sending out.

COCULUS INDICUS.

Coculus Indicus is used as a Substitute for Malt and Hops, and is a great Preservative of Malt Liquor: it prevents second Fermentation in bottled Beer, and, consequently, the bursting of the Bottles in warm Climates. Its Effect is of an inebriating Nature.

BITTERS.

THE Qualities of bitter Bodies are supposed to be dry, warm, astringent, and earthy. According to Grew, all Plants that are bitter and pungent, either on the Tongue or in the Throat, are deemed good Cleansers, &c.

Bitter Things are generally reputed stomachic; yet, according to Abercromby, they are naturally the reverse, and hurtful to the Stomach, and only become beneficial to it where their Astringency renders them proper.

Phil. Trans. No. 171, p. 1026.

HOPS.

HOPS.

Hops :—the principal Use of them is in the Brewery, for the Preservation of Malt Liquors, which, by the Addition of this balsamic, aperient, and diuretic Bitter, become less viscid, less apt to turn sour, more detergent, more disposed to pass off by Urine, and in general more salubrious. They are said to contain an agreeable odorous Principle, which promotes the vinous Fermentation. When slightly boiled, or infused in warm Water, their Spirits are increased.

CALAMUS AROMATICUS.

Calamus Aromaticus is a spicy bitterish Root, brought from Lithuania and Tartary :

it

it is knotty; reddish without and white within; is used in cephalic and stomachic Compositions, and in the Brewery as a Succedaneum for Hops and Strength, by slicing it thin, and boiling it a short Time with the Hops; one Pound of which is equal to six of Hops.

QUASSI LIGNUM.

Quassi Lignum—or Quassia Wood.—This Wood is so called from a Negro who was named *Quassi:* he lived at Surinam, and used it medicinally. He had great Success in giving it in Fevers of the malignant, intermitting, and putrid Kinds. It is the Quassia amara of Linnæus. The Wood has no Smell; is very bitter, and stronger and more concentrated than that of any one Medicament yet known: it is quite void of styptical

Effects.

Effects. When used in the Brewery, it is ground; but it leaves so severe a Bitter on the Palate, long after the Liquor is drank, that it requires much Judgment in using it.

GENTIAN.

GENTIAN.—This Root is one of the best stomachic Bitters in the Materia Medica; it promotes an Appetite, and greatly assists Digestion. It has also been extolled as a Febrifuge and Alexipharmic, and as a certain Remedy for the Bite of a Mad Dog:—on this Occasion it is not only recommended internally, but externally, in the Form of a Cataplasm; the Powder of the Root made up with Venice Treacle, and applied to the Wound.

Chambers.

CORIANDER.

CORIANDER, while green, has a nauseous, disagreeable Smell; but the Seed, when dry, smells gratefully. It is reckoned very strengthening to the Stomach, and is a Carminative. Matthiolus says it is antiseptic. It is much used by Brewers, to give a Flavour to Ales.

CAPSICUM.

CAPSICUM, or GUINEA PEPPER, is used in Ales and Amber. It is of a warm Nature; disperses Wind, and is a good Preservative in the Summer Season, &c.

CARA-

CARAWAY SEED.

CARAWAY (CARUI) SEED is of a brisk aromatic Taste. It is one of the greater hot Seeds, and is esteemed stomachic and diuretic: it expels Wind, strengthens Digestion, &c. It is put into Ales, for the Flavour; and is used in the Tun.

GRAINS OF PARADISE.

GRAINS OF PARADISE are of a warm Nature also, and are used in Ales; but more frequently in Amber Beer. They disperse Wind, and communicate a Warmth to the Stomach. They are always ground, and used in the Tun.

GINGER.

GINGER.—This warm aromatic Root appears to be much less liable to heat the Constitution than might be expected, from the penetrating Heat and Pungency of its Taste, and the Fixedness of its active Principles. It gives Part of its Virtue to Water, tinging it with a pale yellow Colour.

As to its medicinal Use, it is hot and penetrating, and is held good to strengthen the Stomach, and to promote Appetite. It also promotes Digestion, prevents Putrefaction, &c.

Chambers.

This Article, when used in the Brewery, is always ground fine, and made Use of in the Tun, at the Time of cleansing; principally in Amber.

SALT.

SALT.

SALT.—Mr. Beaume defines Salts to be Bodies composed of Earth, Water, and Phlogiston, which are sapid, and have a Disposition to unite with Water, Earth, and inflammable Matter. Common Salt is a Genus of natural Salt; of the Order of alkaline or rather neutral Salts.

It decrepitates in the Fire. Its Crystals are of the cubic Form, and composed of the muriatic Acid and fossil Alkali. The Acid arises from this Salt in white Fumes, on mixing with it the concentrated vitriolic Acid.

Edwards.

SALT OF TARTAR.

Salt of Tartar is made of Tartar, washed, ground, purified, and calcined by a reverberatory Fire; or it is made by pulverizing what remains in the Retort after the Distillation of Tartar. This Salt is aperitive: it is used to draw out the Tincture of Vegetables. Potash dissolved in Water, then filtered through Paper and evaporated to Dryness, has the same Effect.

BEANS MALTED.

Beans Malted.—Mr. Boyle has several Experiments on Beans treated pneumatically, to shew the great Plenty of Air they afford, on which their Flatulency depends. They tend to mellow Malt Liquor; and, from their Properties, add much to its inebriating Qualities;

Qualities ; but they must not be used in too large a Quantity.

OYSTER SHELLS.

Oyster Shells.—These are an Alkali of a more powerful Kind than is commonly supposed. The Proof of all Alkalies is in their Solution by and Effervescence with acid Spirits ; and Mr. Homberg found that they dissolved much more easily in the Acids of Nitre and Sea Salt than Pearls, Coral, &c., which he supposes to be owing to their containing in the Body of the Shell a considerable Portion of the Sal-salsus, which is easily perceived upon the Tongue, and which keeps the whole Substance of the Shell in a Sort of half-dissolved State.

These

These Shells are found to produce very great Effects on the Stomach when injured by acid Humours; and Mr. Homberg is of Opinion that their Easiness of Solution is one great Reason of their good Effects, and that the Quantity of Sal-salsus which they contain contributes not a little towards it; since we are not to look upon that as mere Salt, but a Salt of a peculiar kind, formed of Sea Salt by the Organs of the Animal, and the several Fermentations it undergoes in the Body of them. The hollow Shells are preferred; which, after being cleanly washed, and laid in the Sun to dry, are to be pounded in a Mortar, and then placed in the Sun again to dry.

They are very good to recover sour Beer; but, when used, you must leave the Bung out.

ISINGLASS.

Isinglass,—the English Name of the Fish from which the Drug called Ichthyocolla, or Isinglass, is made. It is a Species of the Accipenser, or Sturgeon, and is distinguished by not having any of the Tubercles which the Body of the common Sturgeon has.

The particular Manner of using it I have before given you.

ALUM.

Alum,—a Genus of earthy Salts, in the Order of earthy neutral Salts. It consists of the vitriolic Acid and a clayey Earth: it changes

changes the purple Juices of Vegetables to a red Colour.

Quincy.

It is a Kind of mineral Salt, of an acid Taste, leaving in the Mouth a Sense of Sweetness, accompanied with a considerable Degree of Astringency.

Boyle.

When used in the Brewery, it is generally put in the Vats, as it gives Beer the Smack of Age.

ON

ON THE

Saccharometer.

The SACCHAROMETER *as applied to Practice.*

AS the Qualities of Water differ, the first Thing required is, to regulate your Instrument till it becomes the exact Representative of the Water you are about to brew with.

The Doctrine of the Saccharometer is founded on the well known Theorem, that, when a solid Body is floating in any Fluid, the Part of the Fluid displaced by it is equal in Bulk to so much of the solid Body as is immersed in it, and equal in Weight to the Whole of that Body.

On

On this Principle, the Instrument, being immersed in Water, should sink to a given Point upon the Scale, and there remain stationary: but, as the specific Gravity of Water is not every where the same, Mr. Richardson, by his Invention of the Regulator, has rendered the Instrument correctly applicable to every Variety of Water; for, by drawing it outwards, or pressing it inwards, till the Instrument sinks to the required Point in the Water intended to be made use of, it then becomes the exact Representative of that Water, and is fit for immediate Application.

The Instrument being so adjusted, the Water is then the true Standard of Comparison for our Experiments; and if, on being immersed in Wort, it refuses to sink to the same Point to which it descended in Water, we are certain that the former is more dense

than

than the latter, by the Resistance it makes to the descending Instrument; and that, if a Weight added to the Top of the Scale causes it to sink to the Point intended, the Weight so added must be the Representative of the specific Gravity of the Wort, or of the Addition made to the Density of the Water by the Accession of fermentable Matter; for that Part of the Fluid displaced by the Instrument is still the same in Bulk, but of greater Density, because the Part of the Instrument immersed is of the same Magnitude, though the Instrument itself is increased in Weight, agreeably to the Theorem just quoted.

Circumstances in which the SACCHAROMETER *may be of considerable Utility.*

I have already pointed out the Use of this Instrument in ascertaining the Value of Malts;

Malts; but there are other Circumstances attendant on the Use of it in brewing: one of these is, that disagreeable Accident termed *setting the Goods;* which is, converting the Malt in the Mash Tun into a Paste, or clammy Consistence, occasioned by an injudicious Application of Heat in the Liquor first turned on the Malt, which shuts up the Pores of it, and causes a great Deficiency in both the Quantity and Quality of the Extract; in the Detection of which the Use of the Instrument is singularly advantageous.

The Occurrence of this Accident, *totally*, is not indeed frequent; but I apprehend that its *partial* Appearance is more common than many are apt to imagine.

If the Brewer estimates his Loss by the Quantity deficient, or attempts to make good

good the Deficiency by an Addition of Water (on a Supposition that his Wort is strong in Proportion to the Shortness of the Length, or Smallness of the Quantity extracted), he is egregiously wrong. The Instrument will shew him not only that his Quantity is less, but the Strength or Gravity of the Extract is also deficient; from the Discovery of which he will be enabled to guard against injuring the Reputation of his Beer, by a false Estimate of its Strength on that Occasion, and will be prepared to provide for the Prevention, or Remedy, of similar Accidents in future. The experienced Brewer will thence adopt a Practice productive of better Effects.

Mr. Richardson gives an Account of an Accident, that came within his own Knowledge, of setting the Goods, through the Inattention of a Servant; wherein, by two

Mashings,

Mashings, adopted to produce the Length of one, the Gravity of the Wort, which should have been thirty Pounds per Barrel, was only eleven; and still the Quantity was somewhat less, being thirty-one instead of thirty-two Barrels: the Loss, therefore, in the first Extract only, may be thus estimated:—

	lbs.
First Wort should have been 32 Barrels, at 30 lbs. per Barrel----------	960
Instead of which it was only 31 Barrels, at 11 lbs. per Barrel----------	341
Deficiency	619

Which divided by seventy-five Pounds, the average Amount of the fermentable Matter then extractable from a Quarter of Malt, the actual Loss appears to be 8.25 Quarters of Malt.

Similar

Similar Accidents, though in a less wasteful Degree, no doubt, frequently occur, and pass unnoticed, for the Want of these or similar Means of discovering them.

Again ; the Saccharometer is particularly useful (indeed I know not how it can be dispensed with) in the making up a Vat of Beer, even if filled by successive Brewings. And, with regard to those made up in the usual Way, it is clear that, without this or a similar Assistance, the Party must be in utter Darkness, and perhaps being deprived of a considerable additional Profit, the Loss of which may never be perfectly known.

It is very necessary to keep the Instrument clean, which is easily done, by plunging it, after every Experiment, in warm Water, and rubbing it with a Linen Rag,

or a Piece of soft Leather, recollecting that the Ball will not bear rough Usage; because any Bruise which shall reduce the cubic Size of the Ball will not only render a fresh Adjustment necessary, but, by destroying the Relationship between the Instrument and its Weights, will render it useless till it is repaired.

Where you purchase your Instrument, Tables of Heat, Expansion, and every other necessary Information for your Practice, will be given you.

LICENSING.

LICENSING.

AS this Treatise is intended, principally, for the Use of young Brewers, any Information that concerns them cannot but be acceptable.

LICENSES, granted at the general licensing Day, shall be made for one Year only, to commence on the 29th of September: 26 Geo. II, C. 31, § 4. And Licenses granted at a Petty Sessions, where a House has become unoccupied, shall be made till the next general licensing Day: 29 Geo. II, C. 12, § 24.

By the 30th Geo. III, C. 38, from October 10, 1790, the recited Duties under former Acts to cease, excepting Arrears and Fines; and from that Day, Licenses granted to sell Wine or Spirits by Retail are to be void. Persons whose Licenses shall be so voided were to be allowed a rateable Proportion for the Time unexpired, on taking out new Licenses.

From October 10, 1790, Retailers of Wine and Spirits are to take out Licenses, if within the Limits of the chief Office of Excise in London, under the Hands and Seals of two or more of the Commissioners of Excise in England for the Time being, or of such Persons as they, or the major Part of them, shall appoint for that Purpose: but if in any Part of the Kingdom of England not within the said Limits, under the Hands and Seals of the Collectors and

Supervisors

Supervisors of Excise within their respective Collections and Districts.

Persons applying for Licenses to pay as follow, viz.

	£	s.	d.
For every License to retail Foreign Wines in England, if the Party has not a Spirits or Beer License----------	*10	8	0
And if the Party has a Beer License, but not one for Spirits	*8	8	0
If he has also a Spirits License---	†2	4	0
For every License to retail British made Wines in Great Britain--	†2	4	0
For every License to retail Foreign Wines in Scotland, if the Party has not a Spirits or Beer License----------	3	6	8

* The above Sums include the additional Excise Duties which commenced in February 1815.

† See last paragraph in p. 143.

If

	£	s.	d.
If he has a Beer License, but not one for Spirits----------	2	13	4
If he has also a Spirits License---	1	6	8
For every License to retail Spirits in Great Britain, if the Party's House is rated under 15*l*-------	4	14	0
If rated at 15*l* and under 20*l*----	5	2	0
If rated at 20*l* and under 25*l*----	5	10	0
If rated at 25*l* and under 30*l*----	5	18	0
If rated at 30*l* and under 40*l*----	6	6	0
If rated at 40*l* and under 50*l*----	6	14	0
If rated at 50*l* or upwards--------	7	2	0

The Money for Licenses is to be paid within the Limits of the chief Office of Excise in London, at the said chief Office of Excise; and for Licenses taken out in any Part of Great Britain, not within the said respective Limits, to the respective Collectors of Excise granting such respective Licenses.

Licenses

Licenses are to continue in force until the 10th of October ensuing the granting thereof; and if granted between the 5th of April and the 10th of October, a rateable Proportion only is to be charged.

By an Act of Parliament which passed in the 55th Geo. III, C. 30, and which took place from and after February 18, 1815, Licensed Victuallers are to pay per Annum, in *Addition* to the several Sums for Licenses before specified, the sum of *2l..2s.* for the Beer License, and *2l..4s.* for the Wine License. The above Act also authorises the additional Payment of *2l..4s.* per Annum upon Retailers of British made Wines.

A TABLE

A TABLE

OF THE

CLEAR DUTIES OF EXCISE

ON

Strong Beer,

Payable by the Common Brewers of London and in the Country; with the Malt Allowances deducted from the original Duties.

Barrels.	£	s.	d.
1 . . .	0	9	2
2 . . .	0	18	4
3 . . .	1	7	6
4 . . .	1	16	8
5 . . .	2	5	10
6 . . .	2	15	0
7 . . .	3	4	2
8 . . .	3	13	4
9 . . .	4	2	6
10 . . .	4	11	8
11 . . .	5	0	10

BARRELS.	£	s.	d.
12 . . .	5	10	0
13 . . .	5	19	2
14 . . .	6	8	4
15 . . .	6	17	6
16 . . .	7	6	8
17 . . .	7	15	10
18 . . .	8	5	0
19 . . .	8	14	2
20 . . .	9	3	4
21 . . .	9	12	6
22 . . .	10	1	8
23 . . .	10	10	10
24 . . .	11	0	0
25 . . .	11	9	2
26 . . .	11	18	4
27 . . .	12	7	6
28 . . .	12	16	8
29 . . .	13	5	10
30 . . .	13	15	0
31 . . .	14	4	2
32 . . .	14	13	4
33 . . .	15	2	6

Barrels.	£	s.	d.
34 . . .	15	11	8
35 . . .	16	0	10
36 . . .	16	10	0
37 . . .	16	19	2
38 . . .	17	8	4
39 . . .	17	17	6
40 . . .	18	6	8
41 . . .	18	15	10
42 . . .	19	5	0
43 . . .	19	14	2
44 . . .	20	3	4
45 . . .	20	12	6
46 . . .	21	1	8
47 . . .	21	10	10
48 . . .	22	0	0
49 . . .	22	9	2
50 . . .	22	18	4
51 . . .	23	7	6
52 . . .	23	16	8
53 . . .	24	5	10
54 . . .	24	15	0
55 . . .	25	4	2

Barrels.	£	s.	d.
56 . . .	25	13	4
57 . . .	26	2	6
58 . . .	26	11	8
59 . . .	27	0	10
60 . . .	27	10	0
61 . . .	27	19	2
62 . . .	28	8	4
63 . . .	28	17	6
64 . . .	29	6	8
65 . . .	29	15	10
66 . . .	30	5	0
67 . . .	30	14	2
68 . . .	31	3	4
69 . . .	31	12	6
70 . . .	32	1	8
71 . . .	32	10	10
72 . . .	33	0	0
73 . . .	33	9	2
74 . . .	33	18	4
75 . . .	34	7	6
76 . . .	34	16	8
77 . . .	35	5	10

Barrels.	£	s.	d.
78 . . .	35	15	0
79 . . .	36	4	2
80 . . .	36	13	4
81 . . .	37	2	6
82 . . .	37	11	8
83 . . .	38	0	10
84 . . .	38	10	0
85 . . .	38	19	2
86 . . .	39	8	4
87 . . .	39	17	6
88 . . .	40	6	8
89 . . .	40	15	10
90 . . .	41	5	0
91 . . .	41	14	2
92 . . .	42	3	4
93 . . .	42	12	6
94 . . .	43	1	8
95 . . .	43	10	10
96 . . .	44	0	0
97 . . .	44	9	2
98 . . .	44	18	4
99 . . .	45	7	6

BARRELS.	£	s.	d.
100 . . .	45	16	8
200 . . .	91	13	4
300 . . .	137	10	0
315 . . .	144	7	6
320 . . .	146	13	4
330 . . .	151	5	0
340 . . .	155	16	8
350 . . .	160	8	4
360 . . .	165	0	0
370 . . .	169	11	8
380 . . .	174	3	4
390 . . .	178	15	0
400 . . .	183	6	8
450 . . .	206	5	0
500 . . .	229	3	4
550 . . .	252	1	8
600 . . .	275	0	0
650 . . .	297	18	4
700 . . .	320	16	8
750 . . .	343	15	0
800 . . .	366	13	4
850 . . .	389	11	8

Barrels.	£	s.	d.
900 . . .	412	10	0
1,000 . . .	458	6	8
2,000 . . .	916	13	4
3,000 . .	1375	0	0
4,000 . .	1833	6	8
5,000 . .	2291	13	4
6,000 . .	2750	0	0
7,000 . .	3208	6	8
8,000 . .	3666	13	4
9,000 . .	4125	0	0
10,000 . .	4583	6	8

A TABLE

A TABLE

OF THE

CLEAR DUTIES OF EXCISE

ON

Table Beer,

Payable by the Common Brewers of London and in the Country; with the Malt Allowances deducted from the original Duties.

Barrels.	£	s.	d.
1 . . .	0	1	10
2 . . .	0	3	8
3 . . .	0	5	6
4 . . .	0	7	4
5 . . .	0	9	2
6 . . .	0	11	0
7 . . .	0	12	10
8 . . .	0	14	8
9 . . .	0	16	6
10 . . .	0	18	4
11 . . .	1	0	2

Barrels.	£	s.	d.
12 . . .	1	2	0
13 . . .	1	3	10
14 . . .	1	5	8
15 . . .	1	7	6
16 . . .	1	9	4
17 . . .	1	11	2
18 . . .	1	13	0
19 . . .	1	14	10
20 . . .	1	16	8
21 . . .	1	18	6
22 . . .	2	0	4
23 . . .	2	2	2
24 . . .	2	4	0
25 . . .	2	5	10
26 . . .	2	7	8
27 . . .	2	9	6
28 . . .	2	11	4
29 . . .	2	13	2
30 . . .	2	15	0
31 . . .	2	16	10
32 . . .	2	18	8
33 . . .	3	0	6

BARRELS.	£	s.	d.
34 . . .	3	2	4
35 . . .	3	4	2
36 . . .	3	6	0
37 . . .	3	7	10
38 . . .	3	9	8
39 . . .	3	11	6
40 . . .	3	13	4
41 . . .	3	15	2
42 . . .	3	17	0
43 . . .	3	18	10
44 . . .	4	0	8
45 . . .	4	2	6
46 . . .	4	4	4
47 . . .	4	6	2
48 . . .	4	8	0
49 . . .	4	9	10
50 . . .	4	11	8
51 . . .	4	13	6
52 . . .	4	15	4
53 . . .	4	17	2
54 . . .	4	19	0
55 . . .	5	0	10

Barrels.	£	s.	d.
56 . . .	5	2	8
57 . . .	5	4	6
58 . . .	5	6	4
59 . . .	5	8	2
60 . . .	5	10	0
61 . . .	5	11	10
62 . . .	5	13	8
63 . . .	5	15	6
64 . . .	5	17	4
65 . . .	5	19	2
66 . . .	6	1	0
67 . . .	6	2	10
68 . . .	6	4	8
69 . . .	6	6	6
70 . . .	6	8	4
71 . . .	6	10	2
72 . . .	6	12	0
73 . . .	6	13	10
74 . . .	6	15	8
75 . . .	6	17	6
76 . . .	6	19	4
77 . . .	7	1	2

BARRELS.	£	s.	d.
78 . . .	7	3	0
79 . . .	7	4	10
80 . . .	7	6	8
81 . . .	7	8	6
82 . . .	7	10	4
83 . . .	7	12	2
84 . . .	7	14	0
85 . . .	7	15	10
86 . . .	7	17	8
87 . . .	7	19	6
88 . . .	8	1	4
89 . . .	8	3	2
90 . . .	8	5	0
91 . . .	8	6	10
92 . . .	8	8	8
93 . . .	8	10	6
94 . . .	8	12	4
95 . . .	8	14	2
96 . . .	8	16	0
97 . . .	8	17	10
98 . . .	8	19	8
99 . . .	9	1	6

Barrels.	£	s.	d.
100 . . .	9	3	4
200 . . .	18	6	8
300 . . .	27	10	0
315 . . .	28	17	6
320 . . .	29	6	8
330 . . .	30	5	0
340 . . .	31	3	4
350 . . .	32	1	8
360 . . .	33	0	0
370 . . .	33	18	4
380 . . .	34	16	8
390 . . .	35	15	0
400 . . .	36	13	4
450 . . .	41	5	0
500 . . .	45	16	8
550 . . .	50	8	4
600 . . .	55	0	0
650 . . .	59	11	8
700 . . .	64	3	4
750 . . .	68	15	0
800 . . .	73	6	8
850 . . .	77	18	4

BARRELS.	£	s.	d.
900 . . .	82	10	0
1,000 . . .	91	13	4
2,000 . . .	183	6	8
3,000 . . .	275	0	0
4,000 . . .	366	13	4
5,000 . . .	458	6	8
6,000 . . .	550	0	0
7,000 . . .	641	13	4
8,000 . . .	733	6	8
9,000 . . .	825	0	0
10,000 . . .	916	13	4

NOTE.

NOTE.

	s.	d.
Quarter of a Barrel of Strong Beer--	2	3½
Half ditto----------	4	7
Three Quarters ditto----------	6	10½

MALT DUTY.

Old Duty, per Bushel----------	2	4
New ditto during the War----------	2	0

Only ⅘ of a Couch charged; ⅕ allowed for Swelling in the Couch.

The Allowance for Waste and Leakage is 3 out of every 36 Barrels.

DRAWBACKS.

	s.	d.
For every Barrel of Strong Beer or Ale duly exported to Foreign Parts as Merchandise, and so in Proportion for any greater or less Quantity	13	11
Additional Drawbacks during the War	4	11
	18	10

BOUNTIES.

For every Barrel of Strong Beer or Ale duly exported to Foreign Parts as Merchandise, when Barley is at 24 Shillings per Quarter, or under	1	0

APPEN-

APPENDIX.

THE improved Saccharometer, with the Apparatus annexed to it, is made by Messrs. Dring and Fage, Mathematical and Philosophical Instrument Makers to the Honourable Board of Excise, Tooley Street, Southwark. It unites Simplicity in Construction and Use with the utmost Degree of philosophical Accuracy.

It is similar in Principle to the Saccharometer of Richardson before mentioned, but it answers every Purpose to which that Instrument can be applied with two Weights only; and, by the Assistance of a Scale which accompanies it, ascertains the Strength or Gravity of Worts at any required Degree of Heat, without the Use of Tables, or the more troublesome Method of reducing the Worts to one standard Temperature.

The Facility with which the Knowledge

of

of using this Instrument may be acquired, and the expeditious Mode of ascertaining the Value of the Extract by it, are likewise strong Recommendations in its Favour, for any one of ordinary Talents may learn the Method of applying it in a Quarter of an Hour.

The Use of the Hydrometer, Thermometer, or Saccharometer, in the Brewery, has, perhaps, very much contributed to the Improvements that have been lately made in the Art of brewing Malt Liquors; for, by taking Notes and comparing them, different Brewers are enabled to communicate their practical Modes of working in an easy Manner, and, consequently, to adopt any improved Plan which one may suggest to another. Indeed, the Advantages resulting from the Use of these Instruments are such, that their immediate Adoption cannot be too strongly recommended to every one who

has

has hitherto refrained from applying them to those valuable Purposes.

The grand Obstacle to Improvement in every Manufactory is the apparent Difficulty of introducing a new Mode of Practice, which is considerably increased, if the Workman has never seen the Machine or Instrument he is to use: but the great Utility of these Instruments to the Brewery, and the Simplicity of their Construction, have overcome those Prejudices; and it is found, that a Miller or Baker may as well be without a Pair of Scales, as a Brewer without those Instruments.

As Messrs. Dring and Fage's Saccharometer is now become the Standard of Comparison generally referred to, by the Brewers in Town, when speaking of the Value of their Malt, or the Extract of it, the following Description of the Apparatus, with the Method of using it, will be found extremely useful. The

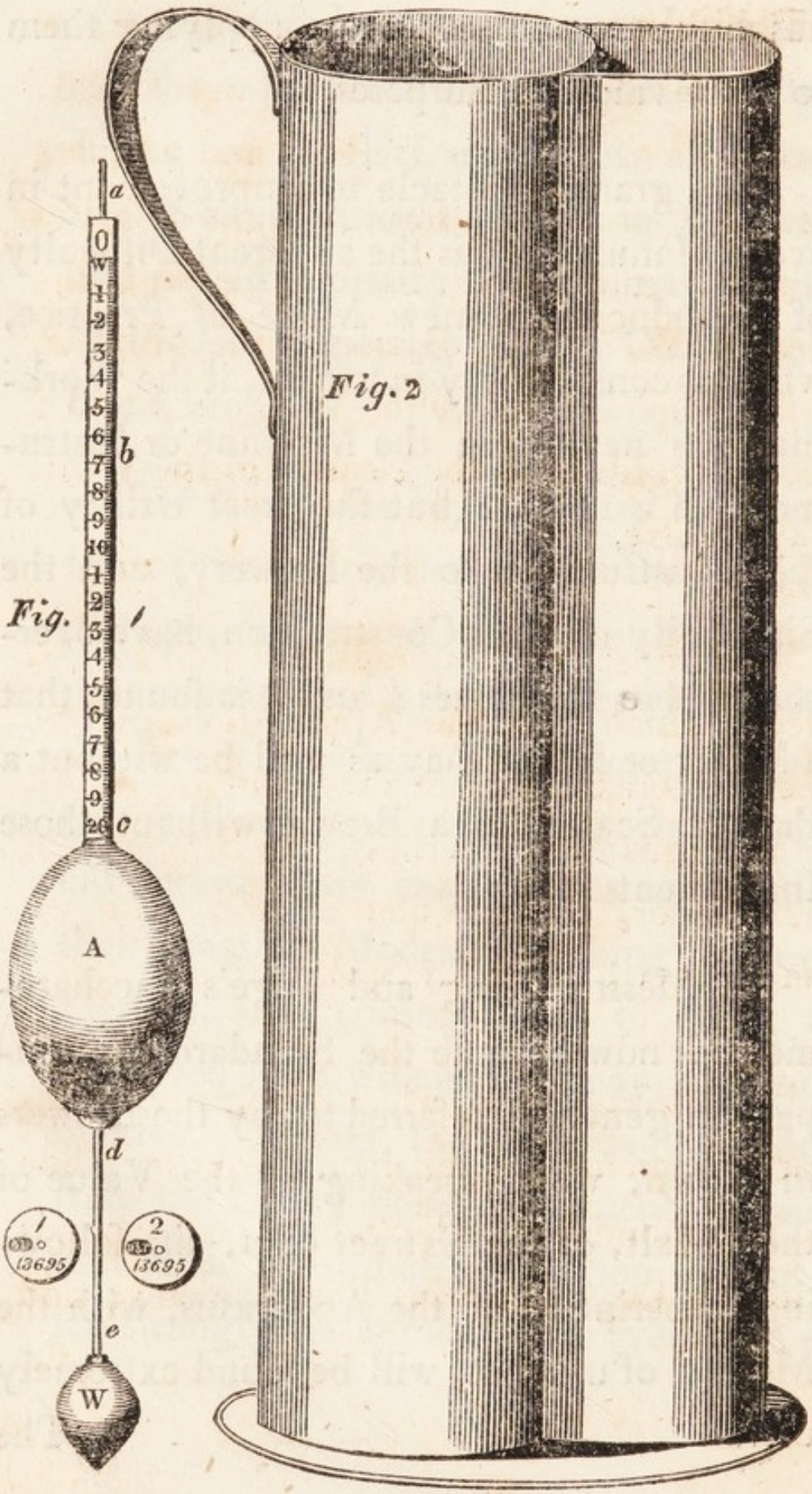

Fig. 1

Fig. 2

The Saccharometer is made of Brass, of the Form represented in the Plate, *Fig.* 1. It consists of a hollow Ball A, and a square Stem *b c*, projecting from the upper Part of it, and a round lower Stem *d e*, with the Weight W, at the Bottom: the Wire *a*, at the Top, is to place the Weights 1 and 2 upon, according as the Density of the Worts may require.

The upper Stem is graduated into 20 Degrees, which, by the Application of two Weights on the Top of the Stem, ascertains, to the greatest Exactness, the Strength of the Liquor, from Water to the strongest Worts ever brewed for Sale.

The Sliding Rule, which accompanies this Saccharometer, contains on the Ivory Slide a Thermometer Scale, which corresponds with the Degrees of the Thermometer; and the

the Figures on the Stock and the Slide shew the increased Strength of the Liquor at every Pound per Barrel, from Water to the strongest Worts; and each Pound being subdivided into ten Parts, gives the Strength to the tenth Part of a Pound per Barrel.

DIRECTIONS FOR ITS USE.

HAVING filled a Vessel with the Wort you intend to ascertain the Strength of, take the Heat by the Thermometer (suppose it to be 130°), immerse the Saccharometer in the Wort, and 12 on the Stem cuts the Surface; then set 130° on the Ivory Scale of Heat at 12 lbs. on the Line of Density Stock A, and against every Degree of Heat you have the Weight of the Wort.

Suppose the Heat 120, and the Surface of the Wort cuts the Stem at 30, with the

No.

No. 1 Weight on; then set 120° of the Ivory Scale at 30 lbs. on the Stock marked C, and against every Degree of Heat you have the respective Density, dry Extract per Cent, dry Extract per Barrel, proof Spirit per Cent, and Specific Gravity laid down.

Suppose the Heat 100°, and the Saccharometer stands at 45, with the No. 2 Weight on; then place 100° of Heat on the Ivory Slide to 45 lbs. on the Line of Density Stock marked D, against which you will find nearly 28 lbs. of dry Extract per Cent, 115 lbs. dry Extract per Barrel: 29 Gallons of Proof Spirit per Cent may be created, if the Attenuation is carried to its greatest Extent; Specific Gravity 1122⅓.

—

USE

USE OF THE SACCHAROMETER,

In ascertaining the Average of two or more Worts.

EXAMPLE I.

SUPPOSE a Gyle of Beer to be made up of only two Worts, which are equal in Quantity, but different in their Specific Gravity; then add the Specific Gravity of each Wort together, and divide by 2, the Quotient will be the Average.

Worts.	Specific Gravity.	Barrels.	Density.	Dry Extract, per Barrel.
1st	1075 4	65	27 6	69
2d.	1043 0	65	15 8	39
	2) 2118 4	130	2) 43 4	2) 108
	Average.....1059 2	Average....21 7		Aver. 54

EXAMPLE

Example II.

Suppose a Gyle of Beer intended to be made up of three Worts, and each Wort to be equal in Quantity, but different in their Specific Gravity; add the Specific Gravity of the three Worts together, and divide by 3, the Quotient will be the Average.

Worts.	Barrels.	Specific Gravity.	Density.	Dry Extract, per Barrel.
1st.	60	1059 0	21 6	54 1
2d.	60	1050 4	18 4	45 9
3d.	60	1042 2	15 5	38 3
	180	3) 3151 6	3) 55 5	3) 138 3
	Average.....	1050 5	18 5	46 1

If there should be a greater Number of Worts, and the Quantity of each Wort is equal, the Process is the same; add the Number of all the Worts together, and divide

vide the Sum by the Quantity of Worts, and the Quotient will be the mean Average Gravity contained in the whole Gyle. But if the Worts should not be the same in Quantity, then multiply the Quantity of each Wort by its Specific Gravity, and divide the Sum of the Product by the Quantity contained in the whole Gyle.

COMPA-

COMPARATIVE VALUE of the DIFFERENT KINDS of MALT,

AS FAR AS THE QUANTITY OF EXTRACT IS CONCERNED.

ENGLISH.	Raw Grain per Bushel.	Malt per Bushel.	Extract in lbs from a Bushel of Malt	Extract in lbs. from a Bushel of raw Grain.	Extract from a lb. of raw Grain.
First Quality	50.208	37.02	22.894	24.54	0.4803
Second Do.....	50.680	37.74	21.849	23.117	0.4561
Third Do.....	50.459	36.561	21.893	22.980	0.4562
Average.....	50.449	36.879	22.212	23.383	0.4642
SCOTCH.					
First Quality	52.237	38.80	24.696	25.17	0.4876
Second Do.....	50.820	38.327	22.739	22.834	0.4498
Third Do.....	48.93	36.98	20.976	21.076	0.4307
Average.....	50.383	37.501	22.803	22.975	0.4560
BIGGS.					
First Quality	48.278	36.28	22.424	22.47	0.4646
Second Do.....	47.403	37.40	20.946	20.858	0.4399
Third Do.....	44.72	35.03	20.545	19.414	0.4341
Average.....	46.584	36.23	21.305	20.773	0.4462

The Thermometer, which forms a Part of the Apparatus, and which is packed in the same Mahogany Box with the Saccharometer and Scale, is absolutely necessary where the Brewer has none but the common large ones used for taking the Liquor in the Copper, &c., which are generally too bulky to be admitted into an Assay Jar: they are likewise equally useful for taking the Heat of the Worts in the Coolers, &c.

Fig. 2 (see p. 162) is a Representation of an Assay Jar, for examining the Gravity and Heat of your Worts at the same Time. It is made of Copper or Tin. Three of these Jars will be found necessary to contain your different Extracts; a Specimen of each of which should be kept until you pitch your Tun.

Fig. 3

Fig. 3 is a Representation of a common Brewer's Thermometer, in a Tin Case. The Use of this Instrument having been so fully explained already, and being generally known, little need here be said about it.

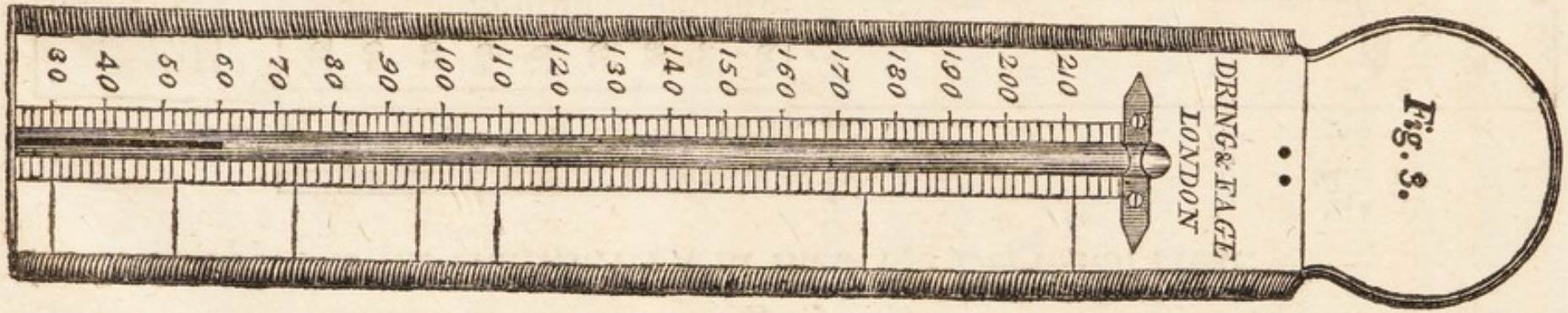

Fig. 3.

Fig. 4 is a private Thermometer, with a Pocket Scale: it is useful in many Respects, particularly when it is desirable to keep your Heats a Secret. A B is a Pocket Scale, graduated to the Thermometer Tube: if the Notch *c* be placed against the Brass Pin *d*, and laid along by the Side of the Tube, the Division on the Scale opposite the Quicksilver will shew the Degree of Heat.

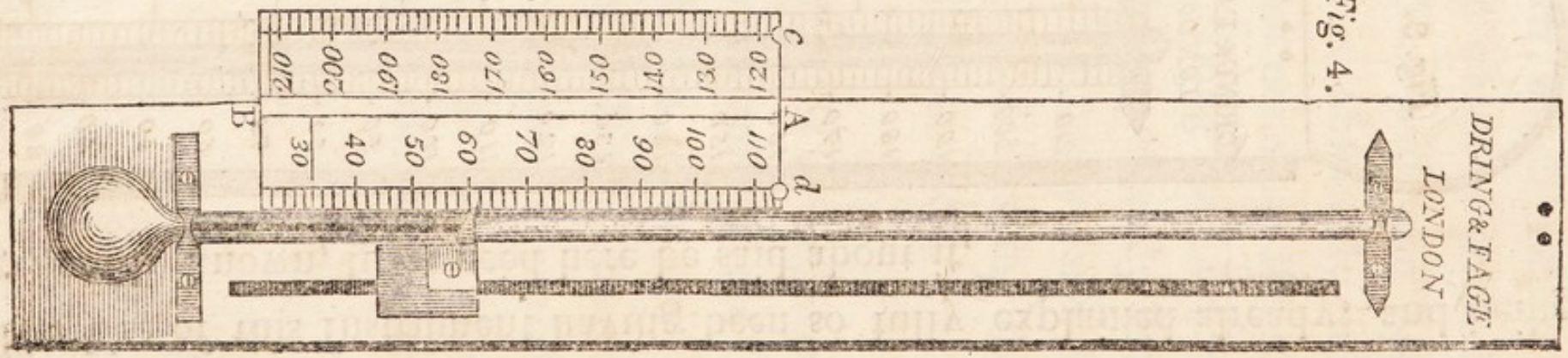

Fig. 4.

If you want to turn over your Liquor at 165 Degrees, for Instance, and wish to employ yourself on some other Business, having one of these Thermometers, you need not stand at the Side of the Copper to watch it, but may fix the Index (which slides in a Groove) to 165 on the Scale, and leave any one of your ordinary Workmen to take your Liquor, and turn over when the Quicksilver rises to the Index : this will save the Brewer a great deal of Trouble, and prevent the Disclosure of your Process.

A GLOS-

A GLOSSARY

OF SOME OF THE

TECHNICAL TERMS USED IN THIS WORK.

Astringent—Binding.

Pungent—Heat on the Tongue, sharp.

Balsamic—Unctuous, healing.

Aperient—Gently Purgative.

Diuretic—Having the Power to provoke Urine.

Viscid—Glutinous, ropy.

Detergent—That which cleanses.

Febrifuge—Good in Fevers.

Alexipharmic—That drives away Poison.

Cataplasm—a Poultice.

Reverberatory Fire—A Furnace of an intense Heat, where the Fire is reverberated upon the Matter to be melted or cleaned.

A Retort—A Chemical Glass Vessel to which the Receiver is fitted.

Aromatic—Spicy, fragrant.

Carminative—Whatever has the Power to expel Wind.

Antiseptic—An Antidote against Putrefaction.

Pneumatic—Consisting of Wind or Spirit.

Cephalic—

Cephalic—Medicinal for the Head.

Alkali—Any Substance which, when mixed with Acid, produces Fermentation.

Narcotic—Producing Torpor or Stupefaction.

Coke—Fuel made by burning Pitcoal under Earth, and quenching the Cinders.

Phlegmatic—Dull, cold, frigid.

Crude—Harsh, unripe.

Farinaceous—Mealy.

To Cap on—To put fresh Malt on the Goods.

Goods—Malt when wetted, before the Virtue is extracted.

Grains—Husks of Malt exhausted in Brewing.

Musty—Mouldy.

Weevil—A small Insect that infests Malt, and eats out its Flour.

Foxed—Tainted.

Must—Unfermented Extracts of fermentable Subjects.

Phlogiston—A Chemical Liquor extremely inflammable.

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