Suppose a distiller to be situated sixty or seventy miles from market, and makes in the year, 8000 gallons, worth at market say fifty cents per gallon.

Supposing barrels to hold 30 gallons each, it will require for the above 266 barrels.

Hauling 8000 galls. at six cts. 480 00
Gauging and inspecting 266 barrels at 12½ cents. 33 25

779 25

Net proceeds will equal, 3220 75

Now supposing the above to be reduced ten per cent. it will amount to 8800 gallons, which at forty cents per gallon will amount to,

At 30 gallons per barrel it will require 293 barrels, 293 00
Hauling 8800 gallons at 6 cts. 528 00
Gauging and inspecting 293 barrels at 12½ cents, 36 62½

857 62½

Net proceeds equal, 2662 37½
To be deducted from net proceeds of proof whiskey as above, 3220 75

Leaves the balance in favour of proof whiskey, 558 37½

2 c
Now if a calculation be made upon the above principles, supposing the price of proof whiskey to be 40 cents per gallon, which indeed will be generally found more correct, the advantage in favour of proof whiskey will be still greater.

Is not this worth attention, particularly as the manufacturer of strong whiskey will find a preference always given to him?

We will now suppose the distiller to make his whiskey ten degrees above proof.

He will then have 7200 galls. at 60 cts. $4320.00
240 barrels will hold it, $240.00
Hauling 7200 galls. at 6 cts. 432.00
Gauging and inspecting, 30.00

$702.00

Net proceeds, $3618.00
But the net proceeds of the proof whiskey was, 3220.75

The balance then in favour of this, 397.25
Added to, 558.37½
Shews the difference between making whiskey 10 degrees below or 10 degrees above proof, in favour of the latter, $955.62½

Extend this calculation to spirits of wine, and the proportion will still be found favourable to the stronger
On the Proof of Whiskey.

spirit. But if it be made fourth proof, and proper attention be paid to the quality, it may be readily sold for one dollar per gallon.

The above calculations deserve the serious attention of every distiller. From them it is evident that by reducing the proof, although the bulk or quantity is increased, the expenses are also increased, but the price is decreased; the latter will be found greater in proportion to the increase of the quantity.

But as the proof is raised, the proportion increases in his favour.*

* The act of the legislature of New-York requires that all spirituous liquors offered for sale in the city of New-York, be subject to inspection. Southworth's dyrometer is the standard, by which first proof is fixed at 15 degrees below proof on Dicas's hydrometer.

Contracts for gin or whiskey are understood to be for hydrometer proof, and the inspector marks accurately the degrees under or over proof, for which an allowance is always made.

The act of the Pennsylvania legislature requires that all spirituous liquors shall, prior to exportation from the port of Philadelphia, be gauged, inspected, &c. Liquor 10 degrees below proof on Dicas's hydrometer, to be considered as 1st proof—5 degrees as 2d proof, and 5 above as 4th proof. Dicas's hydrometer is the standard. In all cases where the spirit is not proof, the inspector's fee shall be paid by the person offering the same for sale; in other instances it must be paid by the purchaser.

The mode of inspection in Baltimore is not generally known; a few words therefore are necessary to put distillers on their guard on this subject.

When gin or whiskey is below proof, every degree is carefully marked, and a deduction of one cent per gallon for each degree, will be made by the purchaser. But if it be a few degrees above proof, no notice is taken of the number of degrees, except they be sufficient to entitle it to be called 2d proof, which may be nine or even twelve degrees above proof; and 4th proof spirit, which is twenty-five degrees and more indeed above proof, will be marked about fifteen degrees above proof, at the will of the inspector.
CHAPTER XXIV.

Of Geneva or Gin.

GIN is formed by the distillation of whiskey, or any other spirit, with a portion of juniper berries, or oil of juniper.

The name of Geneva is derived from Genevre the French name of the juniper berry. It was formerly a custom to mix a variety of article with malt spirits, in order to take off the disagreeable flavour. Among other things used for this purpose, some tried the juniper berries, and finding that they gave not only an agreeable flavour, but very valuable virtues to the spirit, the custom became general, and the liquor sold under this name. The method of adding the berries was, to the malt in grinding, a proper proportion was allowed, and the whole was reduced to meal together, and worked in the common way. The spirit thus obtained, was flavoured ab origine with the berries, and exceeded all that could be made by any other method.

It was soon however discovered, that there was a great similarity in the flavour of oil of juniper and that of turpentine, though a very material difference in the
price; the juniper was accordingly, entirely omitted, and spirits of turpentine substituted; such is the common practice in England, at present.

I have never heard of the method of grinding the berries, being used in this country, though there is no doubt, that by mixing the oil or berry, with the wash previous to, or during fermentation, a more complete union will take place.

The use of spirits of turpentine however, has unfortunately become too common, and is one great cause of the badness of American gin, and consequent prejudice against it. But as this article is frequently mixed with, and sold for, juniper oil, the distiller is deceived; and at a loss to account for the bad quality of his gin.

The improvements in gin making, have been very considerable within a few years past, and some of our distillers seem to be actuated by a laudable determination to equal the Holland gin, justly esteemed superior to that of any other part of the world. This is certainly a great desideratum, when we consider that Holland gin is selling for from two dollars to two dollars and fifty cents per gallon, while our American gin is frequently sold at fifty cents, or if of very superior quality, ninety cents.

Whence this great difference? and why cannot we make gin equal to Holland? The superiority of their
gin is generally attributed to some secret, known only to themselves, and which has never got without the walls of their distilleries.

That we may make gin equal to theirs, without the aid of this wonderful secret, I believe, and for these reasons.

It is a well known fact, that they frequently have taken grain from this country to make gin; it is also known, that they use large quantities of buckwheat which is considered inferior to rye or corn; it is well known that there is a great difference in gin from the different distilleries in Holland, and it is also well known that distillers from Holland who come to this country, cannot make better gin than we do ourselves. Many who have experienced the fact, state, that the new gin in Holland, is not better than that made in some distilleries in this country; and it has also been ascertained that a voyage to sea has so improved American gin that it passed for Holland. What then but age and the sea voyage creates the difference? Or have they a different method of incorporating the juniper with the spirit? And are they not more attentive to cleanliness* in their distilleries than we? With respect to the great secret, if this is a fact, would not some of the distillers who emigrate to this country bring it with them? Or, would not some American here this have obtained it either by purchase or by

* The cleanliness of the Hollanders is proverbial.
Of Geneva or Gin

...bringing over some person acquainted with it? Whence the difference in quality of Holland gin, from different distilleries, if they all have the same secret? Let those who argue in favour of the secret, and who say we cannot equal Holland gin, take into consideration, that fifteen or twenty years ago scarcely any attempts were made in this country to manufacture gin; that the Hollanders have pursued it as a regular business for four hundred years, and that in the single town of Schiedam in the year 1775, there were 120 distilleries; in 1792, there were 220; and in 1798, there were 260; and in the whole province of Holland, 400; each of which made annually 4,992 ankers or pipes of gin.

These distilleries were probably the sole dependence of their owners for a living; and to them their whole attention was devoted. But in this country, even to this time, how few distillers are there who depend solely upon their distilleries? or who pay any attention to the quality of their spirit?

Let it also be recollected that gin is a product of art, and does not depend, either upon soil or climate; and that if the same materials be employed, and the same process be observed, the result must be the same, whether in Russia, Holland or America.

Their materials we know to be the same, and their process corresponds nearly with ours. But there are many little circumstances which affect the quality of gin, to which we pay no attention.
Let us not, then, because some few men have failed to imitate Holland gin, by pursuing what they supposed to be the Holland plan, give it up as impracticable; but rather, reflecting, that as it requires time to bring any art to perfection, we must ultimately succeed by pursuing it steadily with that determination.

What would we say of a bungling mechanician who, because he failed in finishing off an article equal to an imported one, pronounced his pattern inimitable?

I have indulged myself in these observations from a belief in their correctness, and in the hope that it may stimulate our distillers to pay more attention to a matter not absolutely hopeless; but to return to the subject more immediately requiring our attention.

There is certainly an advantage in rectifying whiskey previous to its distillation with juniper, this however is too tedious and complicated an operation for the grain distiller. I have generally succeeded very well in making gin, and the plan I adopted, was to throw into each charge of singlings a sufficient quantity of juniper berries, without any other addition whatever, being satisfied that most of the other ingredients generally used are rather injurious than beneficial; the quantity of berries can only be ascertained by experiment, as there is considerable difference in the quality; generally however, twenty and thirty pounds to 110 gallons spirits, will be right.
Of Geneva or Gin.

Since the above was written I have read in the "Archives of useful Knowledge," a paper on the subject of the gin distillery in Holland, by a Mr. Crookens. Some of his assertions appear to me erroneous, and it is difficult to reconcile others. He notices however, the difference in the quality of gin made at different distilleries, and lays much stress upon the kind of water which is used, and the manner of making and using yeast, which he says is kept a secret. He says they prefer rye grown upon a dry sandy soil, and mostly use the Prussian rye, which from the circumstance of being kiln dried, is called dried rye, and at least one fourth malt. This accounts for the difference between Holland and American gin in some measure, for it has always been observed that there was a rawness in American gin not perceptible in Holland gin, supposed to be from the use of corn; and to divest it of this flavour has been always considered necessary to imitate Holland gin.

From experiments however which have been made with rectified whiskey, it is evident that something more is necessary than merely to divest our spirit of this raw flavour. It is also requisite to give some other flavour with the juniper. This must probably be done during the fermentation, and by using kiln dried grain. Care, attention and cleanliness, age and sea voyage, all assist.

It has been asserted by Dutch distillers who come to this country, that the Holland distillers use dry
yeast, which is sent down the Rhine from the German breweries.

The scarcity and high price of berries has obliged the distiller to resort to the use of the oil of juniper, which has been reprobated for the reasons above stated; unfortunately the distiller has no method of detecting the imposition, and is equally deceived with the consumer; when however genuine oil can be obtained, it will be found equal to the berry.

Shaw in his essay on distillation, says, "the best method of introducing the oil, so as to avoid all inconvenience, is to reduce it first to an oleosaucharum by grinding it in a mortar with a due quantity of fine sugar in powder. The oil thus added, with its particles disunited and in form of powder, will readily mix with the liquor (or wash) and immediately ferment with it."

The method which I have adopted in using oil is this:

Take two gills of juniper oil, pour it on four or five handfuls of rye meal, and stir it until it has the appearance of brown sugar, then pour on boiling water enough to make it of the consistence of paste, add rye meal to make it into stiff dry balls, each containing sufficient for one charge of singlings, the whole being equal to eighty pounds of berries, provided the oil is good; a few trials will shew the proper quantity.
When the oil of juniper can be obtained perfectly pure and unadulterated, it may be mixed with alcohol. After standing a few days until the oil is completely dissolved and united with alcohol, it may be mixed with proof spirit. I have known this to be done, and the gin thus made, not to turn blue upon being mixed with water; it however cannot be relied on owing to the impurity of the oil, except obtained direct from the importer.

This information well known to chemists, is sold by many pretended Holland distillers, as a great secret.
CHAPTER XXV.

Of the advantages of feeding Swine or Cattle, and the proper management thereof.

The wash or swill after distillation, affords good food for hogs, or cattle, and if properly managed, this branch of business, will be found to form a considerable item in the profits of a distillery. Yet it is not only neglected by many distillers, but even said to be unprofitable. Setting out with the absurd idea that hogs will not thrive, but in dirt, and that they are naturally fond of living in the mire, a number of hogs are crowded together, in a small pen, without a floor, it is soon rooted up in every part, and upon the first rain becomes a perfect quagmire. The trough out of which they eat, is generally half full of mud, and the swill is let into it, in a half boiling state. Yet even this unpalatable mixture, the natural voraciousness of the animal, induces it to swallow. The inevitable consequence of this treatment is, that the animal becomes diseased and falls away; yet will frequently continue to eat as heartily as ever, which induces the owner, without once reflecting that there is any thing wrong or wanting on his part, to conclude, that swine are unprofitable stock for a distillery. In cases where rye is
used alone in the distillery, the swill is not so good as from a mixture with corn; hence it will be observed that in all rye countries the feeding of hogs is not considered so profitable as in places where much corn is raised. It is questionable whether hogs wallow in the mire from love of filth, from a desire of taking a bath, or of being cooled; for it is observed that in warm weather they will root up the fresh earth when they wish to lie down, or will go into a creek and sit for a considerable time completely immersed in the water, except the head. The writer of this, had a pen so situated that he could bring water six or eight feet over the top, where it was conducted in a small trough. It was suffered to run for a few hours every day in very warm weather. As soon as it commenced, the hogs would arrange themselves around, and one at a time get under the spout; after remaining a short time and being well washed, they retired to a clean part of the pen to lie down, and never shewed a disposition to wallow in filth while the clean bath was daily given. Hogs will at all times, when practicable, keep a part of their pen clean and dry for sleeping on, and carefully avoid the dirty part. Hence it may be concluded that hogs require a warm, clean, and dry pen.

The situation for the pens, therefore, should be considered in the first erection of the distillery. That they may be, as far as practicable, protected from the northern and eastern storms, exposed to the sun, and that there be sufficient fall for the swill to run from the cistern into the troughs, out of which the hogs feed.
The pens should be built with substantial plank floors, (two inch oak, if possible, as hogs will sometimes eat up pine plank,) with an elevation of about four inches to every ten feet in width towards the back part of the pen, which should be covered in completely for protection against the weather. The troughs must be so contrived as to prevent hogs from getting into it. This is most effectually done by means of rounds, let in with an inch augur, about two inches from the top of the trough. These are less liable to be destroyed than slats nailed across the top, and if done as the trough is first put together, will render it much stronger than it would otherwise be. The rounds should not be more than eight or nine inches apart. The trough about nine inches deep, and wider at top than the bottom. The pens are to be made of proper size, for about fifteen hogs each, allowing about ten square feet for each hog, a sliding door to be made for each pen; communicating doors between the pens will also be found very convenient.

The pens being prepared, care should be taken in selecting the stock of hogs proper for the establishment. In doing this, none must be admitted of less than sixty pounds weight; and sickly or diseased hogs, by no means allowed. They should be classed in sizes as near as may be conveniently done, and two or three more put into each pen, than the proper complement, for it is frequently necessary to take out two or three during the season, who get hurt or become diseased.
Of Swine and Cattle

The swill with which they are now fed should be allowed to get quite cold before it is given to them, which is easily managed by having two separate cisterns to be used alternately. Pieces of soft brick bats should occasionally be thrown to them; and salt is said to be sometimes necessary, but I always found it to injure some of my hogs, when they eat it. The pens should be kept clean, as it is fully evident, from the preceding remarks, that hogs do not delight in dirt, but in cleanliness, without which, at least they certainly will not thrive.

Care should be taken not to have too large a stock; it is better always to have a little swill to spare. The usual calculation is, that one bushel of grain will feed ten hogs. This I think rather exceeds the mark; it can only however be ascertained by experience.

The preceding directions are particularly applicable to the management of hogs that are fattening at a distillery unconnected with a farm. When however a farm constitutes part of the establishment, it becomes a question whether hogs do not thrive faster for occasionally running out, and getting grass.

There is a considerable variety of opinions on this point, but, so far as my own experience goes, and from the best information I can obtain from others, I believe that if proper attention is paid to hogs they will fatten sooner, and upon less food when closely confined than when suffered to run at large.
It is for the purpose of raising pigs, that a farm is particularly valuable, as an appendage to a distillery.

No pains should be spared in getting a good breed of hogs, where it is intended to raise them for the distillery. The most profitable kind are such as grow large and fatten quick; two properties seldom united, but best obtained probably by an union of the large English breed, with the no bone, or with the China hogs. This is the best kind I have met with; there are however, in many parts of the country very fine hogs which probably are as profitable as these I mention. A number of sows are to be kept for breeders, and to be well fed at all times; the pigs at three or four weeks old, should be fed with meal and swill, and allowed full liberty to go to the swill when they please; if they can also have the range of a clover field, they will be fit for the pens at two months old. The notion that swill injures them, is erroneous. It is the dirt and confinement, when a number are put into a small dirty pen. Care should be taken, that they are not stunted in the growth, if this happens, it will be a long time before they get over it. Connected with a distillery, there is probably no better way of employing a part of a farm, than in raising pigs. The boar pigs should be castrated quite young, as soon indeed as they can be handled; and the sow pigs spayed at about four months old. They will thrive much faster after this operation, than if it had not been performed.
Of Swine and Cattle.

A sow goes nearly four months with young, and brings forth from six to thirteen or even fifteen at a time. They generally breed twice a year, sometimes, three times, and the following remarkable increase is thought worth notice here: a sow, in England, four years old, has farrowed 229 pigs, which is an average of fifty-seven per year, and except the first time, always brought up thirteen. Observations upon the importance of this subject might be extended to a considerable length; anything further however is deemed unnecessary, but merely to remark, that with proper care, a hog will gain more than one pound a day. This assertion is doubted by many and even laughed at by others; to satisfy all reasonable people, I take the liberty of subjoining the following account of two prize pigs, shewn before the Smithfield Club, in England, at their annual meeting in December, 1810. Such increase as this however cannot be always expected, but we should endeavour by close attention to approximate it as much as possible. From the best observations I have been able to collect, the increase of each hog at a distillery, taking the general average of some years, is rather more than six tenths of a pound a day.
Prize Pigs shown before the Smithfield Club, in England, in 1810 Annual Meeting—December.

| Mr. I. Roads, 60 weeks old, spotted Berkshire pig, fed on skimmed milk, and four bushels barley meal. | 502 | 14 | 3½ | 25½ | 55½ |
| Mr. I. Roads, 40 weeks old, spotted Berkshire sow-pig, skimmed milk, and four bushels barley meal. | 366 | 14 | 3½ | 25½ | 411½ |

In 1802 there was a hog in England, in an unfatted state, allowed by competent judges to weigh one hundred stone. It measured in height, between three and four feet; in girt eight feet, and in length from the point of the snout to the extreme of the tail, ten feet. It was sold to the owner for thirty-five pounds.

Three hogs were sold in Wilmington, in January, 1813, which weighed together, 2301 pounds.

Mr. Eli Cooley, of Deerfield, (Mass.) fatted eight hogs, which were killed in February, aged 18 months, which weighed as follows: one 590 pounds, one 520, one 502, one 500, one 455, one 452, one 428, one 405; six of which were sold in Boston for $14 62½ per hundred. The Massachusetts Agricultural Society granted him the premium, 50 dollars.

Swill is of great service to milch cows, and cattle may be advantageously fed with it. It is alleged, however, that without hay they will not thrive, as they must have a cud to chew. From my own experience.
I can say nothing as to this fact, but I have heard of several instances of cattle being put into the pens with pigs, and very soon becoming fat, fine beef, without any thing to eat but swill. It is also stated that cattle will not thrive when confined. The following statement, which may be relied on as correct, will fully satisfy any one of the incorrectness of this opinion. It will also go to shew the incorrectness of the prevalent opinion, that cows cannot bear confinement. It will serve to shew the vast advantage which may be derived from a dairy connected with a distillery, in the neighbourhood of a large city, where a large revenue may be daily received from a number of cows, which are at the same time increasing, in size and fitness, for the market.

Many of the dairy's on Long Island, near New-York, are supported from one distillery; very little other food is used. If some of our capitalists would undertake a similar establishment near Philadelphia, it would be to them a source of considerable profit, and a benefit to the public at large.

"In Glasgow one of the greatest curiosities shown to strangers, and one of the greatest curiosities in Britain, is a cow-house, set up on his own plan by a Mr. Buchanan, an old but a very skilful and successful master-weaver. In this cow-house are kept constantly about 300 cows, in the neatest, most clean and healthy order. The house, (one room,) is a square building, the roof supported in the centre by iron pillars. The
floor is boarded, washed clean, and sanded. Small long stages, about a foot above the floor are erected, each containing perhaps twenty cows. These stages are just as wide as the cow is long, and behind the cow is a trough to carry away what falls from it. They are kept two and two together, and fed regularly with grass of some kind, and watered; women attend upon them, and groom them as men do horses; but during the nine months they are in milk they never change their situation. They live upon about six square feet each, yet their skins are always sleek and silky, they are fat and beautiful. The moment they become dry they are sold to the butcher, for whom they are highly fit. The owner has a man or two travelling about the country, purchasing new ones coming into milk; the owner also keeps a farm, which the cows' manure enables him to dress well. In this way the business goes on like clock-work, it being but secondary to his weaving trade, and has gone on for eight years; no bustle, no confusion. He sells his grass milk for half the price the Londoners sell their nauseous mixture, though land is dearer around Glasgow than around London."
CHAPTER XXVI.

Miscellaneous Observations.

EVERY man almost who enters into business, of whatsoever kind, has a certain degree of confidence in his own knowledge, or in his abilities to acquire information, that soon induces him to adopt a particular routine, from which it is difficult to persuade him to depart. Others however are convinced that none are too wise to be informed, and that valuable hints may sometimes be obtained from the most ignorant. To such, a few observations, the result of several years practice, are submitted.

The owner of a distillery, who pays proper attention to it, will find a variety of occupations, constantly demanding his superintending care; but unfortunately, distillers are too apt to attach themselves to some particular branch of the business to the neglect of the others. Thus the whole delight of one is to see fine fat hogs; of another, that the fermentation is good; of a third, that there should always be sweet yeast; of a fourth, the manner of running the stills; while a fifth is constantly riding through the country in search of wood and grain, (which has the effect of prevent-
ing the sellers of these articles from coming to him.)
The impropriety of this kind of partial management,
must be obvious upon very slight reflection. A detail
of all the minutiae, requiring attention would be tedious and unnecessary; they will soon become obvious
to a man of observation.

A due regard to his own interest will convince the
owner of a distillery of the necessity of having a regular supply of grain, wood, and every thing necessary; no excuse will then be afforded to the hands for the neglect or postponement of their work.

Care should be taken in hiring hands, that they are
careful, sober and honest; each should have his particular station; or they should be put under the direction of one, who should have a general superintendence
and be accountable for the internal management of the distillery.

A regular discipline should be established, and strictly adhered to. The mashing should commence at a particular hour every day; by which much confusion
and loss will be avoided, and the owner may always make his arrangements to be present at this operation, without interfering with other parts of his duty. The
doubling still should also be charged at a particular
time, and always run in the day time; so soon as the spirit is off, it should be reduced and made ready for market, and the still be washed clean and filled with wa-
ter, which should remain until the time of charging again the next day.
The advantages of a regular system cannot be too strongly inculcated.

It is a common observation, that any fool may be taught to run a still; this may be true; the writer of this however, enters his caveat against trusting such; the man who attends a still should be particularly careful, and possessed of sufficient presence of mind to attend to his duty in case of accidents; which may happen in the best regulated distilleries; he should have sufficient sense to perceive at once when anything is wrong, and act accordingly. The noise of the chains in a patent still are very perceptible, and some little exertion is necessary in stirring; the writer of this however trusted his stills to a fool who had been two or three years in a distillery; the spindle broke, but he continued charging, turning and running the still for eighteen hours in this situation, until a hole was burnt through the bottom. The smell was so strong as to be perceptible the next day at a distance of one hundred yards.

Particular attention should be paid to the hogs, that they are kept clean, and regularly fed with cool wash.

In some instances we find men trusting their whole establishment to the management of hirelings, by whom they are flattered with the idea of getting three gallons to the bushel, when upon winding up at the end of the year, they find a yield of nine or ten quarts;
Miscellaneous Observations.

this is a painful discovery, especially upon hearing others boast of an annual average yield of three and a half to four gallons from the bushel; will not this stimulate to more particular and close attention? Let it also be added that some European chemists have advanced the opinion, and even given directions for obtaining six gallons, or even more from the bushel; however, although this idea may be ridiculed, we certainly do not know the precise quantity of spirit contained in a bushel, or the method of extracting it; nor can it be known but by actual experiment; neither can we set bounds to our expectation, when we consider that one gallon of molasses has been known to yield more than one gallon of spirit. Here then is a wide field for the industry and talents of the distiller, and he who succeeds better than his neighbours, even in a slight degree, in his experiments, will find himself amply re-munerated.

Another thing requiring attention is the flavour of the whiskey. Almost every distilled spirit partakes of the flavour of the subject from which it is distilled; but in fermented liquor, this may be destroyed by any more powerful agent which may happen to be present. Now the flavour of rye, corn, or malt, separately considered, are not disagreeable, and when mixed together in the mash tub, their combined flavour is very pleasant; whence then the nauseous smell of common rye whiskey? Some attribute this to the corn, even in cases where no corn is used! I think however it will rather be found in one or more of the following causes,