Thirty-Three Questions On Taste Rich Distilling...

Awnsered By Odin

Introduction

My Name Is...

My name is Edwin van Eijk, but most people know me as Odin. In fact, my official name is something like Drs. H.E.J. van Eijk, MScBA, etc., etc. Yes, my parents gave me lots of names and I got lots of diplomas and titles after that.

Contrary to what you may think, none of these diplomas had anything to do with distilling. Why? Because my background is in business administration, with a specialization in change management. There you have it: you are reading a book that'll be as much about changing your views on distilling as it is about … distilling.

All right. What's more? Well, I am married, my wife is from Hungary, and together we have four kids. One son, three daughters. So you understand that I am currently also interested in rifles to keep the boyfriends at bay. Just kidding.

What this book offers? It offers you answers to some of the most important questions surrounding distilling. In an easy and concise way. It may take away some of the "magic" other teachers have thrown at you, but I'll replace that with real and tested answers and solutions you can use in your day to day distilling operation. It's the questions I had when I started out in this industry. And this booklet is about sharing the answers I found with you.

In retrospect, it was a great thing that I wasn't a trained engineer or chemist to start with. I came into this industry with a fresh mindset (yeah, quite dumb, really!) and with loads of questions.

I hope this book helps you answer some of your questions. But most of all I wish that it will help you cultivate a mindset of persistent curiosity. That it helps you to start asking more of your own questions. There are no stupid questions but it is stupid not to ask the questions you have. I don't know all the answers (yet), but as long as questions keep popping up in my mind, I know I'll keep on learning more about the fascinating science of distilling.

So, let's get started!

Regards, Odin.

Question 1

Why does this fruit brandy taste better than that one?

When you visit Hungary, and I often do because that's where my wife's from, you get loads of fruit brandy. Everywhere, people make their own fruit brandy. Some of it is good. Some of it is not so good. Some of it is actually quite awful.

Which ones are good? Which ones are bad? Did it have to do with the fruits the brandy was made from? Maybe I liked plums better than pears, right? Right, but not right. It turned out that I liked some pear brandies and some plum brandies. And that other plum or pear (or apple or whatever) brandy wasn't so good. Okay, so it wasn't the fruit. But what was causing the huge differences in taste, then?

Talking to distillers, the answer I usually got, went like this: "Distilling! They use different distillation procedures and cut differently."

So my next questions became …

Question 2

What are cuts?

If you want to make spirits, you need to start out with a liquid that contains alcohol. Like a beer (for whiskey or vodka) or wine (for brandy). You put the beer or wine in a boiler, bring the contents to a boil, manipulate the alcohol rich gases to a condenser, and cool the gases down to liquid. If you boil an 8% beer, you may well end up with a 30% strong distilled beverage.

Okay, now clean out your boiler, put that 30% alcohol in and distill again. The vapors are richer in alcohol than before and if you cool these gases down, you may well end up with a spirit that's 60%. That means 40% pure distilled water and 60% alcohol.

Great alcohol percentage for barrel aging right?

If the drink tastes okay, of course. But alcohol isn't just one sort of molecule. Alcohol stands for a family of different molecules, all boiling at different temperatures, all coming over at different parts of the distillation run. And different alcohols taste very different.

Take for example acetone, you may know the pungent smell of nail polish remover, that's acetone! It boils at around 30 degrees Celsius. That's why you can smell it so easily: it evaporates tremendously even at room temperatures

Ethyl acetate may not ring a bell with you. But it's vinegar alcohol and the name says it all. It boils at around 77 degrees Celsius. Propanol, butanol, furfural, and methyl alcohol are also part of the alcohol family, each with their different boiling points.

Luckily, most of the alcohol (around 98% of it) is pure and good ethanol alcohol. The other alcohols, mentioned in the previous paragraph, that cause headaches and stomach aches.

Ethanol boils at around 78 degrees Celsius. Ethanol is what we want to harvest, while distilling. The other alcohols we don't want so much. That's where "cutting" comes into play. Many alcohols (acetone, methanol, and ethyl acetate) boil at lower temperatures than the good ethanol. Others (propanol, butanol, and furfural) boil at much higher temperatures.

It is easy to imagine that the lower boiling point alcohols come over in the first part of the spirits production process. They are lighter and more volatile. (Okay, a chemist will kill me for that remark, but it's good enough for us here). Let's consider lower boiling point alcohols as light. The

alcohols with higher boiling points can be considered heavier. Most of them only boil off when the lower boiling point alcohols and the ethanol have gone.

Okay, stay with me please, because this is important. We call the first fraction of the run “Heads”. This is the parts that contain lots of “Headsy”, low boiling point alcohols. The last part of the run is called “Tails”. This is when the heavy, high boiling point alcohols come over. The middle part is the fraction we are after. It mostly contains good ethanol. This middle fraction is called “Hearts”.

What are cuts? Cuts are decisions the distiller has to make during the distillation run. “When do I stop collecting Heads and start to collect Hearts? When do I stop collecting Hearts and start to collect Tails?”

(There you have it: the answer to the second question.)?

The answer to the first question? Well, this is how the distiller’s answer needs to be interpreted: one fruit brandy is good, the other is bad, because one has been cut correctly and the other was cut poorly. They would have a point. Badly cut fruit brandy, with too much acetone and vinegar … that’ll make for a bad drink for sure.

I am going to confuse you a bit here. Yes, the answer was correct. And no, the answer was all wrong. All right, so we can use cuts to separate out unwanted alcohols and undesired tastes. But the real question of course is …

Question 3

Where is taste formed?

Most of the taste (and all of the alcohol) is made during fermentation, not during distillation. Fermentation is the process of making alcohol, where distillation is the process of concentrating it.

With beer it goes like this: crack malt, add water, bring it to 65 degrees Celsius. The enzymes in the malted barley will convert the starch to sugars. Now bring the temperature of your “mash” down to 25 degrees Centigrade and add yeast. Yeast are micro-organisms that feed on sugar and turn it into alcohol and CO2. Okay, there is much more to it, but we are just starting here, so let’s keep it simple for now! Right, the yeast eats the sugar and makes alcohol, and you end up with a fermented drink with maybe 7 or 8% alcohol. This is often called a “Wash”. Mashing is converting starch into fermentable sugars, and once it is fermented, we call the resulting drink a wash.

Around 80% of the taste of any alcoholic beverage is created during the fermentation process. So the answer to question number 1, “Why does this fruit brandy taste better than that one?”, can be related to cuts, but it is most definitely also related to fermentation.

Fermentation is where taste is made, distillation is where tastes are concentrated and separated. Remember how the gases, during the distillation process, are higher in alcohol? That’s how we concentrate them. Remember how we can cut for Heads, Hearts, and Tails? That’s how we use a still to separate them.

So distilling great fruit brandy is about separating. Separating takes tastes out: the ones that go into the Heads and Tails receivers. Therefore a bad tasting fruit brandy isn’t caused by bad cuts. Cuts help polish up a drink, by cutting out undesired tastes.

Bad cuts turn a bad fruit ferment into a bad brandy. Good cuts turn a bad fruit ferment into a brandy. But it is only good cuts on a good fruit ferment that will give you a great brandy. And the same holds true for whiskey, rum, and vodka.

My next question …

Question 4

How is taste created during fermentation?

The technical term for the chemical process of taste formation is “esterification”. “Esters” are taste molecules and they are formed during fermentation.

During fermentation, not during distillation!

Esterification takes place where alcohols and organics meet, in a wet, warm, and sour environment. So, we need alcohol and organics to start with. It’s organic molecules, meeting alcohol molecules, that form esters. This process of taste formation needs a wet environment, so the molecules can meet and form esters. Warmth, sourness, and time help as well.

In what way? Let’s progress to the next question!

Question 6

So why do so many big whiskey distillers ferment for only three days?

The excuse they have is that most of the alcohol is made in the first three days. And that it is pointless to wait for another two days to gain just 0.1 or 0.2% of additional alcohol. Nonsense! It's on day four and five that most of the esterification takes place. This makes one wonder, what the real reasons are …

There are two reasons why the big brands ferment for shorter periods. The first one is that they don't use cooled fermenters. Fermentation is a process that generates huge amounts of heat. When the fermentation breaches 35 degrees Centigrade, the yeast starts to die. It's just too darn hot for them. Dying yeast creates off flavours, so that's why many big whiskey distilleries start distilling after three days.

The second reason is that marketing and sales often trump taste. If demand is high, a distillery can produce more when applying shorter fermentation cycles.

Question 7

How does warmth influence taste?

In general, chemical processes go faster at higher temperatures. The higher the temperature, the more esterification happens. But, there is a maximum. That maximum temperature has to do with the yeast's heat tolerance. Some forms of yeast have high temperature tolerance, other yeast strains are less tolerant.

Traditional beer yeasts are not very temperature resistant. Many believe these yeast strains to be perfect for whiskey, since both beer and whiskey are grain based. That's not true however. Whiskey benefits from higher fermentation temperatures and different yeasts strains than beer does.

Baker's yeast (which works with the grains in your bread) has very good heat resistance and will make an awesome whiskey. An awesome whiskey and an awesome rum.

Question 8

Are you kidding me? Baker’s yeast!?!

Yes, baker’s yeast! It works well with grains. Has to, right, since we make bread with it. It’s heat resistant, so can cope with higher temperatures. And higher temperature fermentations in general create more taste.

Baker’s yeast is also the natural choice when making rum. Rum, or better still, sugar cane, is a tropical product. It needs to ferment hot. Not only does baker’s yeast have the desired heat resistance, baker’s yeast is also grown on molasses, which is a sugar cane by-product essential to rum making.

Question 9

So it’s baker’s yeast for all our ferments?

If only life were so easy. No, baker’s yeast is not the best option for brandy or fruit brandy. Brandy benefits from special yeast. Do you want a sweeter note? Go for a Tokay yeast strain. Do you want freshness? How about a Chardonnay yeast? Is a more neutral and/or high alcohol ferment your goal? Maybe choose a Champagne yeast.

Question 10

Champagne yeast is used in Champagne?

Yes, but if you have ever heard of Turbo Yeast, please know that's Champagne yeast as well. Turbo yeast aims to produce high percentage neutral alcohol. Champagne yeast is neutral and very alcohol tolerant, so it is the obvious choice for Turbo Yeast. Oh, and that package isn't just yeast. It also has pH stabilizers (we'll get to that), nutrients, and fertilizers.

Question 11

How does sourness influence taste?

Just like warmth, acidity accelerates esterification. Try to say that ten times without twisting your tongue: “acidity accelerates esterification”! But just as with warm conditions, there is a limit to how sour you want your ferment to become. Anything below pH 4.8 is great. It is sour enough for esterification and too sour for potential bacterial infections to spoil your ferment. pH 4.0 is pretty much the lower limit. Below pH 4.0 the yeast itself starts to get performance issues.

Question 12

So we aim for pH 4.5, start the ferment, and we're good?

Not quite. The fermentation itself is a process where sugar is consumed and alcohol and CO2 is formed. The activity of fermentation has an influence on pH. In general terms, the faster and hotter the ferment, the more pH drops. If you start with pH 4.5, you may well end up with pH 3.5, meaning that your yeast can crash and stop the production of alcohol all together.

This is what you do on your first ferment: measure pH every day. If it drops below pH 4.0, add lime. Lime ups the pH. Which leads to the next question.

Question 13

How does water influence taste?

Bad water creates bad tastes. Especially in the USA I have visited places where chlorine levels are just too high. In that case you need to purify your water by reverse osmosis (r/o) and get rid of it. The problem is that reverse osmosis also removes calcium. Right, lime. And as we've just read, lime is a great buffer that helps protect against pH-crashing. Well, in that case you need to add lime after you r/o your water.

If the water tastes good, the only thing you need to check are the calcium levels. If they are between 30 and 60 ppm I congratulate you. Nice tasting water with adequate lime. You don't need an r/o system (at least not for your ferments), and you don't need to add lime.

Question 14

And what about the organics?

Good question! I almost forgot about that, but you are right: it’s alcohol and organics combined that make esters. What organics? Well, whatever is carbon based. In practice: grains or fruits.

If you want to make a very tasty whiskey or brandy, ferment with the grains or fruits present. More organics mean more esters, it’s that easy.

Question 15

Then why is Scottish single malt not fermented on the grain?

There are two explanations. The first one says “tradition”. It’s the way it has always been done. Imagine a 17th Century Scottish inn keeper making beer once a week. When a batch isn’t consumed in one to two weeks, it’ll turn sour. Bad for beer taste, but a good basis to distill a whisky from.

The other explanation is slightly less romantic and a bit more realistic. Scottish single malt is made from 100% malted barley. Grains that are malted have germinated. The actual plant starts to grow, breaching the hull and activating the enzymes. This allows bacteria in. Fermenting single malt with grains present introduces huge amounts of bacteria that will spoil your wash.

Question 16

How much yeast do we use?

An easy rule of thumb is this: 1 gram of yeast per liter of ferment. So for a 1,000 liter ferment, you need 1,000 grams of yeast. Boil the crap out of 250 grams. Add it to the mash prior to adding the yeast. The boiled up yeast is the best yeast nutrient there is. Makes sense: yeast feasts on other yeast, because they are made up out of the same compounds.

A quarter of the total yeast amount we just calculated is used as yeast nutrient. The rest (750 grams in this example) is used to convert the sugars into alcohol.

Question 17

Pitching yeast . . . how does that work?

Well, you probably learned that on one of the distilling courses you followed. I mean, you must remember all the talks about inoculation, yeast bombs, yeast starter, and how to stir things in.

If you did, carefully collect your notes and throw them out of the window.

In the 1910's and 1920's, WW 1 and prohibition killed off any remaining craft distillers in the Western Hemisphere. Almost all knowledge was lost. Now things are starting to boom again. And instead of people learning it, we have invented modern day 'medicine men' that know all about distilling. They talk about craft and they talk about doing things the right way. They make you feel like they are magicians, and that you still have lots to learn. Reality? They don't know that much either, but to be able to put on a show with yeast starters and bombs? Quite the theater, and that's all there is to it.

How do I know? Because I have challenged these methods. And I came up with something much better, albeit less theatrical.

Take the yeast and sprinkle it on top of the wash. That's all. Don't stir it in. Let the yeast get accustomed to the water on its own. Since it was previously dehydrated, that's important. It limits yeast cell mortality.

Other thing you limit is uncertainty. You know exactly how much yeast you added. With a yeast starter or yeast bomb, who knows?

And finally, this is the fastest way to start your ferment. Believe me. I have tried all different procedures, and it's this simple act of sprinkling the yeast on top of your wash that works best and fastest.

Question 18

Odin, a summary on fermenting, please?

Here we go. For whiskey and rum, use baker's yeast. Aim for temperatures of 28 to 32 degrees Centigrade. Acidity should be pH 4.0 to pH 4.8. Ferment for five to seven days. Ferment with the grains present, unless you are making single malt.

Ferment your fruits a bit cooler and go for two weeks. Use wine yeast.

In all cases, make sure you pitch the yeast by sprinkling it on top of your beer or wine to be.

Question 19

Alright, so stills are not important, but fermentation is?

Basically, taste is created during fermentation. Those tastes are then concentrated and separated during the distillation process. Distillation concentrates alcohol and tastes, and the noble art of making cuts helps you decide which of these tastes you want in your final product.

This makes stills very important. Distilling is about concentrating and harvesting the right tastes for your drink. Some stills are better at it than others. Some stills are better at harvesting certain tastes than others.

In fact, there are even stills that not only concentrate taste, but actually add taste during the distillation process. So you'd better choose the right still for your distillery and your drinks.

Look at it as creating art. Fermentation is your pallet; it is where you make tastes (or colours). Distillation is like your brush; it's how you apply and combine these colors to create a beautiful painting. And not all brushes are created equal.

Question 20

Wait a moment! Did you just say that some stills actually add taste?

I am glad you paid attention! Yes, some stills actually contribute to taste, and the way I found this out was quite interesting. By that time iStill produced both directly fired stills and indirectly fired stills with a water bath. I didn't particularly like the indirectly fired stills, because they were more expensive to build, took longer to heat-up, produced at slower rates, and were slower to adapt to higher or lower power settings.

Both units, a directly fired version and an indirectly fired water bath version were used to make rye whiskey. When I tasted the whiskies, I liked the one from the directly fired still better. Did that make sense? How was that possible? Maybe my preference for the more efficient, directly fired still got the better of me? I tried and tested the rye whiskey again. I was still sure I liked the first one better, but had no theory to explain why.

But after the run, when I cleaned out the still, I got a big clue. The remains (often called "stillage") that were left in the directly fired still came out brown, while the stillage from the indirectly fired still was yellow. The directly fired still had brought a chemical change to the boiler contents, that the indirectly fired unit didn't do!

Have you ever heard about the Maillard Reaction? It is a chemical reaction that triggers a taste cascade. The Maillard Reaction takes place just below the boiling points of water and is triggered by temperature differences. The organics in the boiler get a browner colour and give off taste. It's a bit like caramelization, the difference being that Maillard, taking place under 100 degrees Centigrade, triggers a taste cascade, while caramelization takes place above 100 degrees and does not create taste.

Do you see where this is going? Directly fired stills have slight temperature differences in the boiler, where indirectly fired stills have a perfectly even temperature, due to the indirect, big surface area for heat transfer.

So if you ferment correctly, you can create very tasty spirits. And if you distill these spirits in a direct heated still, you will get even more, even better taste.

Question 21

Okay, we have to buy directly fired stills, right?

Yes, you can. But many people buy indirectly fired stills. First, because they don't know about the advantages of direct heating. Secondly, because the bigger heating surface area and the more even heating it results in, allows them to distill very thick washes, like grappa or fruit brandy. Imagine apple sauce thick washes, and it is easy to understand why a bigger surface area that radiates out less Watts per square centimeter can be beneficial.

There is more to it. It is now possible to even distill those apple sauce thick mashes directly, reaping the benefits of the Maillard Reaction, while preventing potential scorching. But the answer to the question of how that's done will have to wait. I will deal with that later on. First, let's build up a solid base by answering the next question.

Question 22

What sorts of stills are there?

Quite a few! Here is a categorization I think is useful for craft distillers use:

- Pot stills;
- Plated column stills;
- Packed column stills;
- Hybrid stills.

A pot still is a simple still. It consists of a boiler, a riser, a bridge and a product cooler. The boiler is heated-up, gases rise up and find their way to the product cooler, where they are condensed into a higher alcohol spirit. The pot still gives you one distillation, which means you need to distill twice to get to barrel aging strength (60% or a bit more).

A plated column still has a taller column on top of the boiler, that holds a number of plates. On top of the column sits a cooler, often called “dephlagmator”. The dephlagmator cools part of the rising gases down to liquids, these liquids (reflux) are send down the column and collected on the plates. The new gases, that rise up from the boiler, now have to travel through those reflux filled plates, performing an additional distillation. With the dephlag on, every plate in a plated column still gives you one additional distillation.

The packed column still is the new kid on the block. It does not have fixed plates in the column, but special column packing. The reflux, created by the column cooler, slowly works its way down the column, performing additional distillations.

Hybrid stills combine pot distillation and a column with plates. You can decide to bypass the column to distill very taste rich. Or you can feed the gases into the column, and create a purer product. Packed column stills are, by definition, also hybrid stills: you can adapt the amount of reflux in order to create the amount of distillations you want - anything from pot distillation to very pure product with many distillations.

Question 23

How do pot stills help me harvest the right tastes?

Pot stills are ‘crude’ distilling devices. Now, I don’t mean that in a negative way! Interpret crude like this: pot stills do not have a lot of concentration or separation power. One distillation run will take an 8% wash to a half-product of around 30%, that’s called “low wines”. You collect a few batches of these low wines, and distill them again. You will now end up with “high wines”.

It’s during the second distillation cycle that you make cuts for heads, hearts and tails. Because of the limited separation power, some heads and tails will end up in your hearts. That’s actually a good thing for taste rich products like whiskey, brandy, or rum. The product is not as pure, but there is a lot of fruity (heads related) and nutty (tails related) taste. Quite often, pot distilled product is aged for prolonged periods of time, to give your spirit time to mellow out and to develop a deep and intense character.

Question 24

And how do plated column stills help me harvest the right tastes?

The first thing I want you to know, is that there are basically two types of plated column stills. One uses bubble caps on top of fixed plates, the other version uses perforated plates.

The fixed plates on the bubble cap design create a fixed liquid layer. Non-volatile, heavy, tails related alcohols and tastes will assemble on the lower plates and not come over in your spirit. This still design is oriented towards fruity tastes instead of nutty and rooty tastes.

The perforated plates design does not have a fixed liquid layer. If you stop distilling, the liquids assembled on the perforated plates will just fall down (right through the perforations!) and back into the boiler. Because the liquid baths are not fixed, this type of still allows for some early tails to come over in your drinks. This allows some rooty and nutty tastes to come over.

Question 25

Wow! Wait! What's that about heads and tails, and fruity and nutty tastes?

Do you remember that distilling is about concentrating the alcohol, and then separating it into heads, hearts and tails? Heads contain excess amounts of lower boiling point, very volatile alcohols. Tails contain excess amounts of higher boiling point, not very volatile alcohols. Heads are the light and skinny assholes, tailsy alcohols are the fat bastards, so to speak.

Generalizing a bit, I can tell you that heads, hearts, and tails are all responsible for about 1/3rd of the total taste profile a certain spirit can have. Heads associate with fruity notes, that you taste first, in the front part of your mouth. Hearts associate with the body of the drink (grains for whiskey, for example, and grapes for brandy). It is a middle of the mouth (not middle of the road!) experience, that comes – taste wise – after the fruity notes. Tails associate with rooty, nutty tastes. Tails and tails-related tastes give that long, interesting finish deep down in your throat. And if there are too many tails, it gives you that throaty after-burn.

So, there you have it: tastes are related to heads, hearts, and tails. And just as some drinks get better with a bit of early tails in your heart cut, other spirits benefit from some late heads. Some stills are good at harvesting heads (and associated fruity tastes), others are better at smearing early tails into hearts. Do you understand now, why it is important to select the right type of still? Even though most taste is created during the fermentation process, you need the right still to harvest the right flavors!

Question 26

Shot for open goal: can you tell me what “the right flavors” are?

Yes, I can! Fruit brandy benefits from … fruity notes. Makes sense, right? Fruit brandy is heads oriented. There are heads and hearts, but nothing much can be found in tails. Tails easily overpower the fruity notes, thus ruining the fruit brandy.

Brandy and medium rum is hearts oriented. A little bit of late heads for some fruitiness (especially on the brandy), and a little bit tails. In a brandy, this approach to cuts will get you that great grape taste over. The nutty and rooty early tails, make the brandy stand up to the wood, when it’s aged in an oak barrel. In a rum you’ll get the molasses over very nicely. A hint of roots and nuts creates character.

Whiskey (especially single malt whisky) and heavy rum are oriented towards tails. A good whiskey and a heavy rum give you a taste that lingers in your mouth for 30, 40 seconds. It’s complex and deep and full of character. The tails are responsible for that.

Question 27

So what still do I need?

That depends on what drinks you want to make! If you want to make fruit brandy, go for a bubble cap plated column still with three or four plates. The columns are wide, so the vapor speeds inside the column are low. The low speeds in the column help concentrate and separate the very volatile heads faction with relative easy. The fixed liquid baths prevent tails from coming over.

If you want to make a brandy or medium rum, a perforated plate column still may help you out. The vapor speeds in this type of column is slightly higher (to maintain liquid on those perforated plates), and the smearing of early tails into hearts is easier to achieve.

Vodkas are made in both plated and packed columns. And hybrid stills combine pot stills and plates, so should serve you to make a wide variety of drinks.

For whisk(e)y and heavy rum you need either a pot still or a packed column still. The design of the column allows for high vapor speeds. And that's what you need in order to be able to smear early tails into hearts.

Question 28

Yeah, you almost forget that one! How do packed column stills perform, taste wise?

The packing allows for anything from one to 40 distillations. That makes the packed column still a versatile machine, that can help you at making brandy, rum, whisk(e)y, and vodka.

The column favors high vapor speeds. In pot still mode, with minimal reflux and only one distillation, it’s great at making that heavy rum and whisk(e)y. If your packed column can be dialed in to do two or three distillations in one go, you can make whisky, rum and brandy in one run.

Question 29

Why are most stills made from copper?

Great question! It's one of the first questions I asked. I will give you another answer as to what I got. The answer people provided me with went like this: "Stupid question, because that's how it has been done for ages!" Personally, I thought that was a stupid answer, because it didn't explain why.

"Because it does some magic!" was the best I could get out of my interlocutors. But what magic? It was as if everybody knew it was important, but nobody remembered why.

The reason why copper was used since the dawn of time, was that it was easy to acquire, affordable and not too difficult to form into different shapes.

That copper also reacts with sulfurs that may have developed during fermentation, and sort of cleans up your spirit, is a mere (but important) coincidence.

Today, copper is expensive. The only reason to keep on using it, is because it catalyzes sulfurs. Sulfurs are a bad byproduct of a bad ferment. So this is what copper really is: a medicine for a bad wash.

Question 30

Okay, I get it. So we need copper stills?

No, that’s not what I said. What I said is that copper catalyzes sulphur. And that sulphur is the result of a bad fermentation process. Improve your fermentation and you won’t need copper at all. If you want to be sure about sulphur control, you can buy a complete copper column, or you can choose a stainless steel unit with a copper catalyst.

Question 31

What's a catalyst and what is the advantage of using it?

A catalyst is a dedicated part of the column. It's filled with high surface area copper, so that sulphur is taken care of.

Question 32

Yeah, but that’s what a copper still also does. So what is the advantage?

Copper is not inert. It corrodes. Particles may come over in your drink. The column needs extensive cleaning between runs. Copper is like a high maintenance partner. Looks pretty, wears out swiftly, and leaves you behind with a shitload of problems.

Using a catalyst allows you to combine the advantages of sulphur control, without the hassle. A catalyst is more like a friend with benefits. It allows you to work with a stainless steel column and boiler. Low maintenance and they don’t corrode.

Question 33

Can you tell us more on how to make brandy, rum, vodka, or whiskey?

Yes, I can, but not in this booklet! This one is about distilling and fermenting. But there will be other booklets on brandy, rum, vodka, and whiskey making soon! Well, maybe. Depends a bit on what you think of this first one. So … let us know if you have any remarks, any feedback, please!