

AN ENTHUSIA  
ARTISAN DISTILLIN

GUIDE TO THE  
POTENT POTABLES

THE ART OF

**DISTILLING**  
**WHISKEY**

AND OTHER SPIRITS

EDITED BY  
BILL OWENS AND  
ALAN DIKTY

Q U A R R Y

**THE ART OF DISTILLING**  
**WHISKEY**  
**AND OTHER SPIRITS**



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WHISKEY  
AND OTHER SPIRITS**

**AN ENTHUSIAST'S GUIDE  
TO THE ARTISAN DISTILLING  
OF POTENT POTABLES**

**EDITED BY BILL OWENS  
AND ALAN DIKTY  
FOREWORD BY FRITZ MAYTAG**

BEVERLY MASSACHUSETTS

QUARRIES



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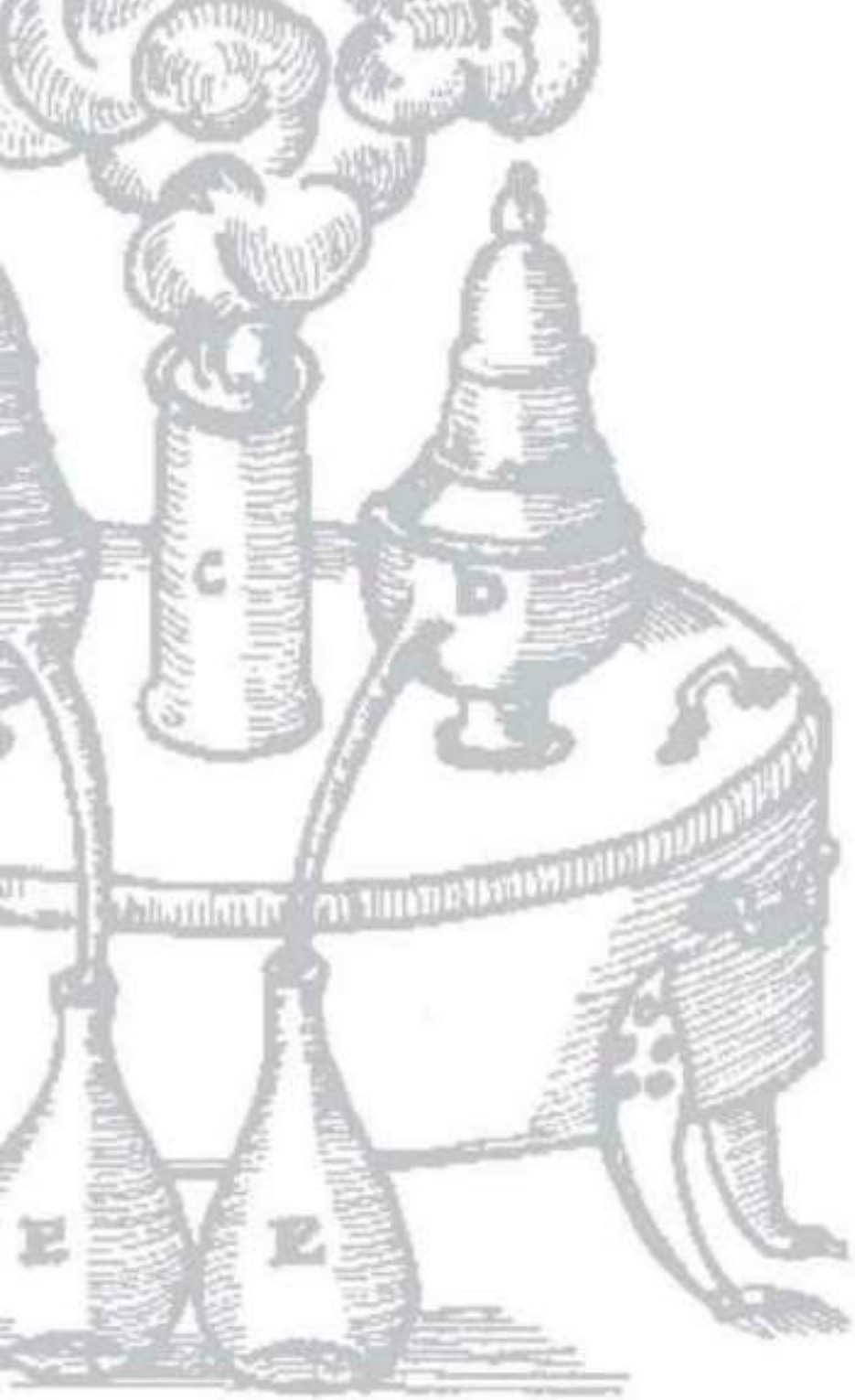


# DEDICATION

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In fond memory of our friend Michael Jackson, who is, we have no doubt, now enjoying his well-deserved angel's share of the world's barrels of maturing whiskey





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# FOREWORD

**T**HE SECOND Whiskey Rebellion is happening in the United States, and it is already spreading around the world. In this marvelous book, Bill Owens, Alan Dikty, and their contributors—like intrepid war correspondents—take you to the front lines. You will find here an up-to-the-minute report on the excitement, creativity, and brash enthusiasm of the United States' craft distillers.

*Detail of the fermenting process of making bourbon, Woodford Reserve Distillery.*





Charring oak barrels at  
*Bluegrass Cooperage*.



I have known Bill Owens since his early involvement in the U.S.'s microbrewing renaissance: He was one of the movement's most fervent innovators. His own achievements are many, and his enthusiasm for the whole wild explosion of brewing creativity is evidenced in his obvious enjoyment of the successes of his brewing colleagues.

The craft-brewing renaissance, of course, began in the 1960s. By the early '90s, it was inevitable that it would evolve into a craft-distilling renaissance. And so Bill and his cohorts are at it again, now celebrating a small-distillery revolution and the variety and creativity that is springing up everywhere. Yes, we now have "craft" whiskey distillers, experimenting with all facets of grain distilling. And, as with the brewing revolution, the consumer reaps the rewards. We are entering a golden age for the spirits lover, and *The Art of Distilling Whiskey and Other Spirits: An Enthusiast's Guide to the Artisan Distilling of Potent Potables* is an indispensable guidebook to its beginnings.

Where did the craft-distilling phenomenon originate? You could say that it came down from the mountains, where pot-distilled whiskeys made by hand—in secret folds—have never entirely disappeared. Or you could say that it came up from the vineyards and orchards, where for many years there has been a tiny craft-distilling segment of superb, hand-crafted fruit brandies and eaux-de-vie. Just know that a second

Whiskey Rebellion is upon us and that it is happening right now in a little building near you. And if you have picked up this book already knowing about the great food awakening and hoping for a guide to distilling, you have found it!

What particularly fascinates me about the distillation of alcohol is the enduring mystery surrounding its origins. Distillation itself is a physical art with a long—and colorful—history. And the distilling of all sorts of materials for myriad purposes is an ancient process. But when did the production of distilled spirits as a beverage begin? You are welcome to your opinion, and good luck finding anyone to agree with you! No matter what you think, I encourage you to savor the eternal enigma that is embodied in a distilled spirit. It is a form of magic to take fruit or grain, ferment it, put it in a pot, heat it and make it disappear entirely, and then watch it reappear, drop by drop, as a clear, volatile, almost ethereal liquid. And it is a dangerous liquid—do not kid yourself. It can catch fire, it can explode, and abusing it can ruin lives. It is powerful, mysterious stuff, surely one reason that it captures the imagination of the

producers and consumers swirling and swilling around the current awakening.

So drink deep of Bill and Alan's guide, get on the road with them, go exploring and learning, and enjoy being an early participant in the movement. And take my word for it, as a distiller of whiskey since the second Whiskey Rebellion's first shot: "Heads we win, tails we win!"

**Fritz Maytag**  
*Anchor Distilling*  
San Francisco  
April 2009



# INTRODUCTION



**A**S A YOUNG MAN in the 1970s, I had long hair, a Volkswagen Beetle, a hip wife, and a career as a newspaper photographer. I also published four photography monographs, including the classic *SUBURBIA* (still in print), and I received a Guggenheim Fellowship in photography and three National Endowment for the Arts grants. My dream was to work for *LIFE* magazine or *National Geographic*, and I ended up stringing for the Associated Press and covered the Hell's Angels beating people with pool cues at Altamont. While all this was happening, I was homebrewing in the garage.

By the 1980s, when I reached middle age, I had a flattop, sold the VW and cameras, and lost a wonderful wife. In 1982, I opened the first brewpub in the United States: Buffalo Bill's Brewery in Hayward, California. The beer was good. My pumpkin ale is still being brewed by many breweries. My public image was "colorful," and the news media loved me. I started believing my own press clips. I opened two more brewpubs and launched a public stock offering to fund the building of a large-scale production brewery. It all seemed like a good idea at the time. It was, after all, "Morning in America," Reagan was in the White House, and the operative phrase for the times was "Greed is good."

I wanted success, money. I had three brewpubs. I grossed a million dollars that year, but I had to pay sixty employees and ended up with no profit. Things don't always work out as you dream. The stock

offering never got off the ground, and one by one, the brewpubs were sold off, with Buffalo Bill's being the last to go. But I'll always have Alimony Ale ("The bitterest beer in America!").

By the 1990s, I had gray hair and a new wife, and I was publishing two magazines: *American Brewer* and *BEER: The Magazine*. Once again my timing was good, and the *American Brewer* rode the first great wave of craft brewing. Things were looking great, but financially, the two magazines turned out to be not such a great idea. I soon stopped publishing *BEER* and sold *American Brewer*.

Soon after, the AARP mailings started showing up, and I opened an antique store. That venture lasted six months. Then my agent sold some *SUBURBIA* photographs to Elton John, giving me enough money for a (used) Lexus and the cash for a three-month trip across America, so I ran away from home. On this trip I decided



to visit some craft distilleries. I was intrigued, and the creative juices started to flow again. When I returned to California, I founded the American Distilling Institute (ADI). In 2003, I held the first ADI distilling conference at St. George/Hangar One Distillery, and some eighty people showed up.

In 2007, I decided to make another trip across America. Again, the trip was funded by selling photographs to museums, an assortment of art galleries, and friends in the United States and in Europe. This second trip (21,000 miles) took four months, and from fifty-three DVDs of images, we selected a hundred or so for this book. By 2009, the ADI database contained 1,246 names, of which 205 are members, and of those, 165 are craft distillers. The future for the industry is bright. More and more people want to learn the art of craft distilling. They want to learn how to run small businesses selling their handcrafted products to the public. My recent "how-to" book, *Craft Whiskey Distilling*, has sold 300 copies in three months.

The craft distilling industry is really about lifestyle. People take great pride in producing their products. This book is a look at craft distillers and the rest of the whiskey, rum, vodka, and gin industry.

I still have a foot in both camps, photography and distillation. But if I had to choose, it'd be distilling, because it's a way of life.

Special thanks to Alan Dikty, the editor of this book and a personal friend. Alan has been with me as a friend and writer for some thirty years. Alan knows spirits. A big thank-you also to Andrew Faulkner, photographer and photo editor for this book.

**Bill Owens**

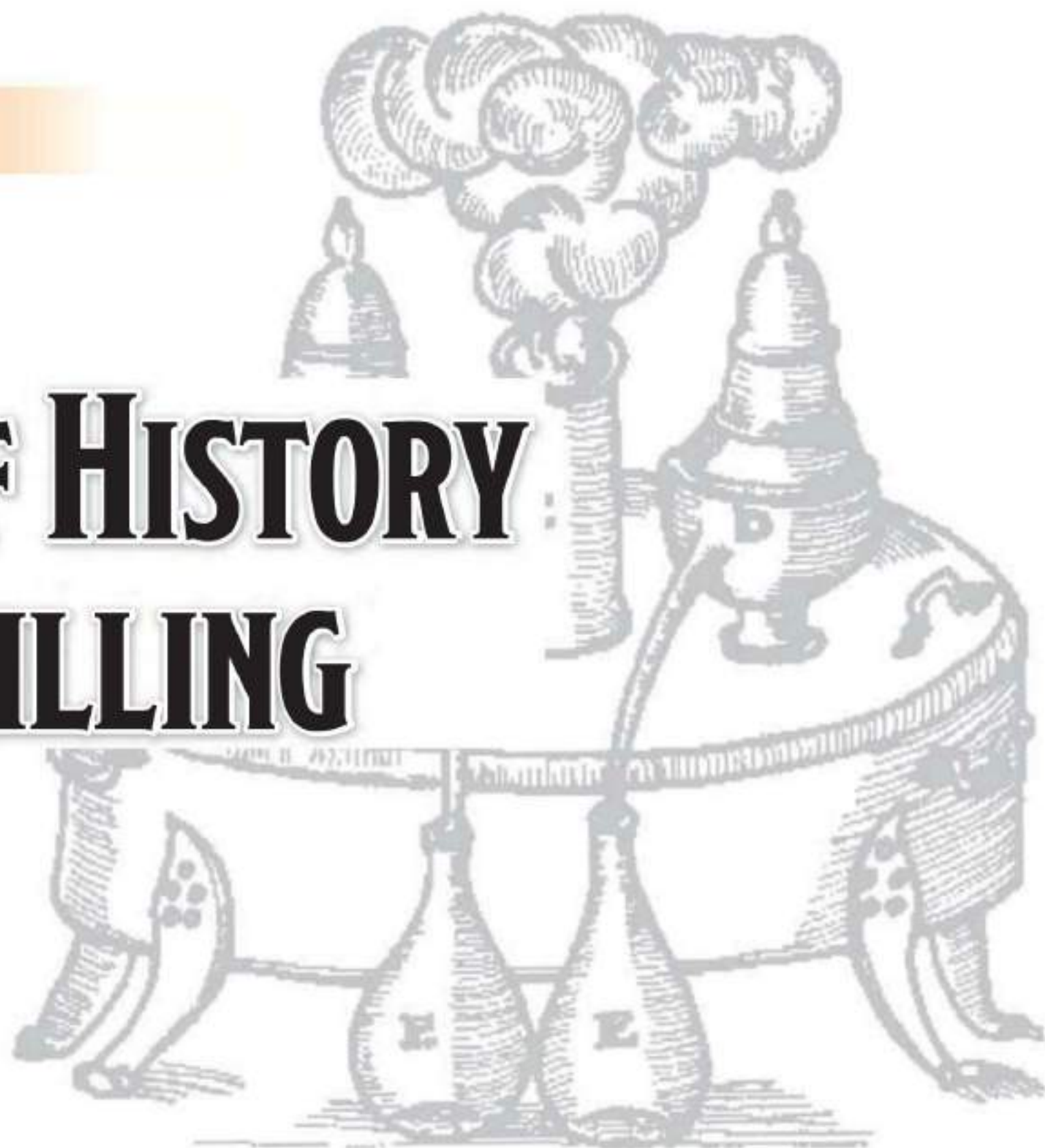
*Hayward, California  
March 2009*

**AUTHOR'S NOTE  
ON SPELLING**

*For reasons that have yet to be adequately explained, American and Irish distillers spell the word whiskey with an e while their Scotch, Canadian, Japanese, and New Zealand peers spell whisky without it.*



# A BRIEF HISTORY OF DISTILLING



**S**INCE the earliest known use of distillation about 5,000 years ago, practice of the art has grown and spread around the world in several waves, the speed and extent of each being dictated by geography, trade routes, and cultural and religious influences. Each successive wave gave rise to significant technical advances in distillation, making it less expensive, more efficient, and more controllable.

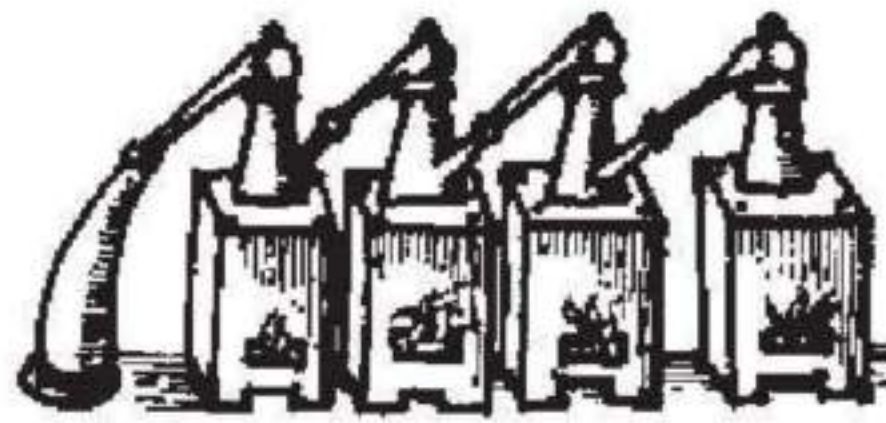
Possibly the earliest written record of distillation is in the *Epic of Gilgamesh*, which describes a form of essential oil distillation practiced in Babylon as far back as 3000 BCE. Herbs were placed in a large heated cauldron of boiling water, and the cauldron's opening was covered with a sheepskin, fleece side down. Periodically the sheepskin was changed, and the condensate soaking the fleece was wrung out into a small jar. Essen-

tial oils floated to the surface of the water collected in the jar and were skimmed off. Medieval texts and woodcuts show the same principle being used to concentrate alcoholic vapors from boiling wine. (Incidentally, this is similar in principle to a method that the Phoenicians used for consuming cannabis.)

**Very Fine Whiskey** bottle, circa the 1920s: This vintage bottle was acquired at a flea market, then filled with Old Forrester.







## DISTILLING MIGRATES EAST AND WEST

By 500 BCE, alcohol distillation was an established industry in the ancient Indian area known as Taxila (in modern northwest Pakistan), where archeologists discovered a perfectly preserved terra-cotta distillation system. In this process, steam rising from a pot of boiling water passed through a bed of fermented grains, picking up alcohol and flavors from the grains. The vapors then struck the bottom of a second pot filled with cold water, where they condensed and dripped into a collection tube.

From Taxila, knowledge spread to the East and the West, and by 350 BCE, knowledge of the distilling process appeared in the writing of Aristotle in Greece and Sinedrius in Libya. The first arrival of distillation technology in China is misty, but by 25 CE, bronze stills of similar design were being produced and used there.

By the end of the first millennium CE, the practice of distillation had spread throughout northern Africa and the Middle East. The process had advanced significantly over this thousand-year period, and the material being distilled was now boiled directly in a large sealed pot, which had a long tube leading from its apex to a small collection jar. When the Moors invaded Spain, they brought this technology with them, and soon the genie (or spirit) was out of the bottle. The technology spread from Spain to Italy in 1100 CE, and was recorded in Ireland by 1200,

Germany by 1250, and France by 1300. England, Scotland, Poland, Russia, and Sweden joined the club by 1400.

### DISTILLING TECHNOLOGY EVOLVES

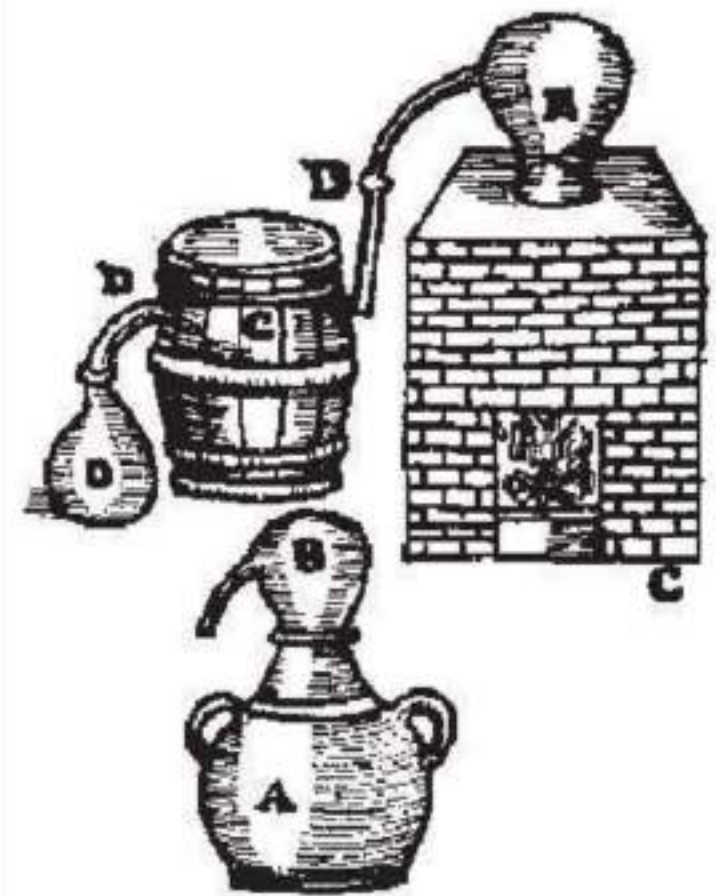
European exploration and conquest spread rapidly around the world, carrying the technology of distillation with it. The first stills in the Americas appeared not long after the conquistadores, and the Portuguese brought the technology to Japan by 1500.

This technology was largely controlled by alchemists and monasteries, who continuously experimented and improved on the equipment. By the mid-1600s, several texts had been published on the subject of distillation, a sample of which included the woodcuts on this spread, from *The Art of Distillation* by Jonathan French (1651). As this information spread beyond clerical and scientific circles, wealthy individuals began to establish still houses on their estates.

As knowledge blossomed throughout the Renaissance, distillation continued to develop rapidly. Distillation was removed from the exclusive province of scientists, monks, and professionals and became a common household art. Recipe books abounded.

By the 1700s, the complexity and sophistication of commercial-scale distilling equipment advanced rapidly. Advances in the understanding of how distillation actually worked led to new still designs that could make better quality spirits more easily and

*These woodcuts from **The Art of Distillation** by Jonathan French (1651) show a small part of the wide variety of forms distilling equipment had taken by the seventeenth century. Two key improvements are shown: multiple distillations in one setup (one still feeding into the next) top of page, and an improved vapor condenser (a coil of tubing known as a “worm” in a barrel of cold water), below and opposite page.*



*“There is more refreshment and stimulation in a nap, even of the briefest, than in all the alcohol ever distilled.”*

— **Ovid** (ancient Roman classical poet and notorious wet blanket at bacchanals, 43–17 BCE)





## GEORGE WASHINGTON AND GERRYMANDERING

*It is well known that George Washington was a distiller. What is less well known is that the laws he crafted set the distinction between the heavily taxed small distillers and the lightly taxed large distillers, the line being drawn just below the size of his distillery. Politics worked in much the same way then as it does today.*

*The George Washington still recreation at the **Mount Vernon Distillery** in Mount Vernon, Virginia*

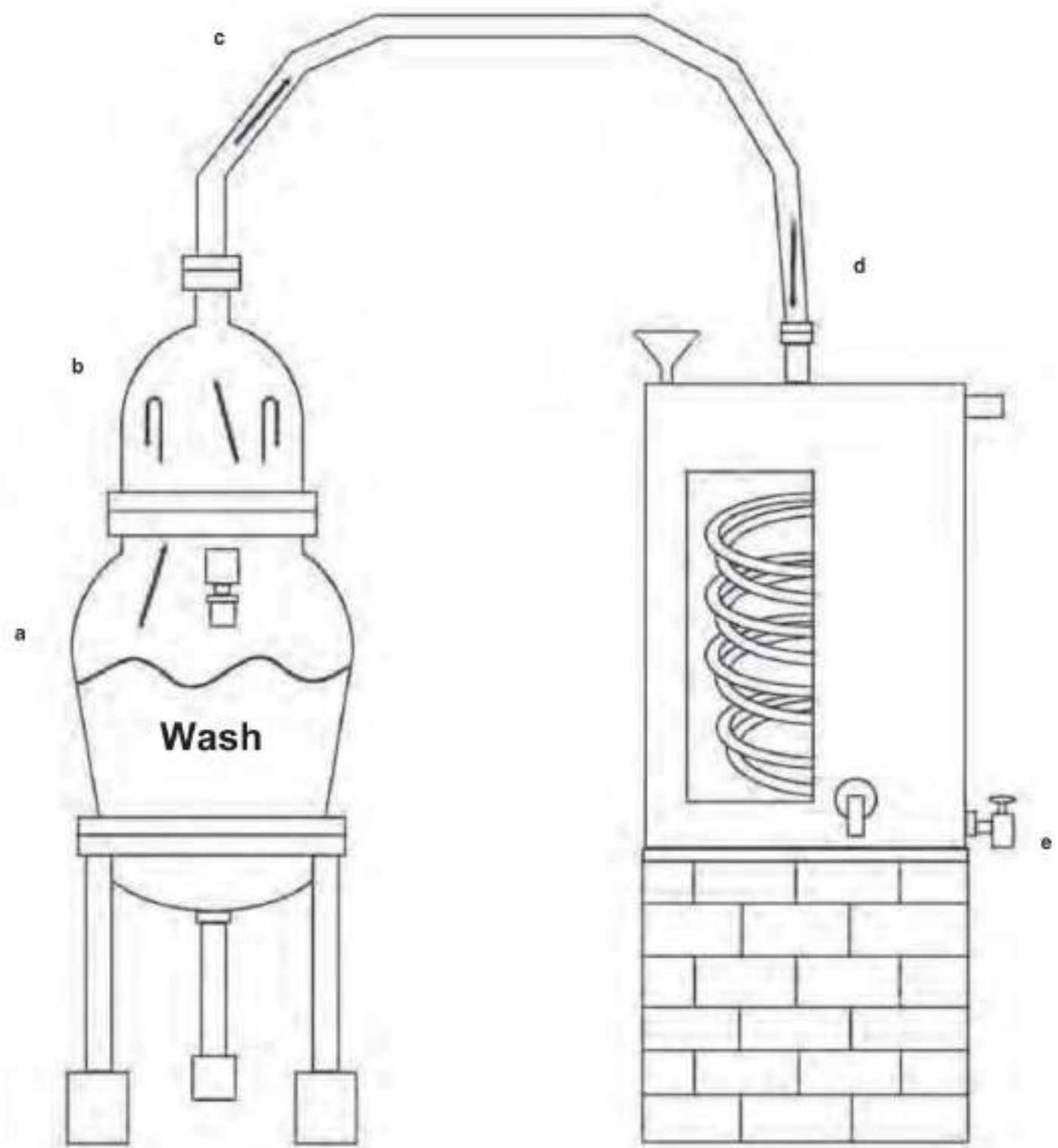
faster than in the past. Distilling became more accessible to the masses, and the monopoly held by the church and the elite classes was threatened. These centers of power soon enacted restrictions, at first to protect that monopoly, and later purely for revenue.

## REGULATION AND REBELLION

Since 1700, the regulation and control of distillation has been mostly a story of lost freedoms and rights. A few rays of sunshine have since poked through the clouds.

The elite and governments of Europe tried repeatedly to exploit and control distillation. In England, for example, the first taxation of commercial distillation appeared in 1690 to pay for a war with France. Private distillation was exempted from this tax, and it remained free from interference as taxes and regulations were raised, lowered, abolished, and resurrected over the next century. Private distillation in England flourished and grew significantly during this time (and perhaps not a little of this product found its way into commercial channels via the back door), until it was outlawed in 1781 to enhance the collection of revenue. The massive Gin Craze of early eighteenth-century Great Britain had its roots, in part, in this unfettered spread of distillation.

## Blueprint of a Simple Still



- a) Steam jacket: Heats the pot and the wash
- b) Pot: Holds the wash
- c) Swan Neck: Allows for separation of the components of the mixture
- d) Tube in Shell Condenser: Condenses the alcohol vapors in spirits
- e) Spigot: The vapors are collected from a spigot at the bottom of the condenser.





Three stripping stills and a spirit still made from stainless steel drums at the **New Deal Distillery**

The United States government's first attempt to tax distillation resulted in the Whiskey Rebellion of 1791, which was put down by federal troops led by George Washington (who was brought out of retirement for the conflict).

Federal excise taxes were abolished after the end of the War of 1812, only to be imposed during the Civil War in the 1860s (and continue to this day).

Napoleon introduced regulation in France. The laws varied widely over the next century, but stabilized in 1914, when the right was granted to anyone with a vineyard or orchard to distill up to 20 liters of spirits from their fruit if they agreed to pay a tax. This right was originally inheritable, but that was revoked in the 1950s. This system led to the development of traveling stills, known as *bouilleurs de cru*, which were once very common sights in the French countryside. Because the number of permitted individuals has shrunk with every passing year, very few of these mobile distilleries remain.

Australians lost their right to distill their own beverages in the aftermath of World War I, again as a revenue measure.

Many African, Latin American, and southern European nations have continued to allow private distillation under a wide variety of rules, ranging from none, through inspection of stills, to onerous regulations and high taxation. In general, traditional alcoholic beverages are made in most farmhouses using traditional equipment (mostly pot stills of various forms), without any adverse effects on society.

The most recent and hopeful change in the global regulation of distillation was the legalization of private, noncommercial distilling by New Zealand in 1996. The New Zealand government found that the expense of enforcing the ban on private distillation far outweighed the revenue coming from fines, so the law was abolished. This change led to widespread adoption of small-scale distilling as a hobby, and, as hobbyists always will, they experimented with equipment and techniques

continuously. Many significant innovations have been developed, making small-scale distilling equipment more available, much less expensive, and very much easier to control than anything that came before.

## **FUTURE TRENDS**

Just as the appearance of microbreweries followed the renaissance of homebrewing, increasing the choices and level of quality for all beer drinkers, microdistilleries are starting to thrive around the world, some using traditional equipment, but many using new equipment, methods, and techniques developed by the newly liberated home distillers. Many of these modern small distilleries are experimenting with new types and categories of spirits, creating novel and sometimes uniquely local spirits.



# MOONSHINE

*As surely as thunder follows lightning, whiskey follows beer, and in the 1980s, the scent of whiskey charged the air like an approaching storm*

**T**HE PROSPECT of making whiskey, gin, rye, brandy, and other flavorsome spirits at home is enough to make some modern cocktail enthusiasts and craft brewers grow glint-eyed. Ever so quietly, the more adventuresome of them have begun tending home-sized stills to make the smallest-batch American spirits since the Prohibition days of stove-top alky cookers. Unlike unscrupulous producers who made rotgut that could blind, cripple, and occasionally kill its drinkers, many of today's home



*A tombstone that was used during Prohibition for stashing moonshine near Morgantown, West Virginia*



*Moonshine still, dismantled*

distillers have adopted high-tech equipment and a code of honor that ostracizes those who try to sell their makings. Because these distillers are running the very best they can for their immediate friends and families, the results can be spectacularly good.

The ability to create personal stocks of liquor from scratch falls squarely in the modern mixologist's pursuit of making what can't easily be had—real grenadine from actual pomegranates; ginger-spiked falernum; Jamaica's pimento dram, a sucker punch of allspice and rum; and potent aromatic house bitters—but all tuned to their personal tastes. When it comes to making the base spirits for those bitters, it couldn't be easier—or cheaper.

## **BUT IS IT LEGAL?**

Making bitters and falernum from pre-distilled spirits is **entirely legal**. However, unlicensed distillers operating unregistered stills violate a number of federal, state, and local laws, but a lack of permits hasn't stopped would-be distillers from buying and building personal stills in increasing numbers since the mid-1990s. Some of them are content with very smooth vodka, while others embrace the entire concept of artisanal production and are creating fantastic small-batch spirits using the best ingredients they can afford. Running these tiny batches, with yields of just a few liters, is a practice some have called *nano-distilling*.



## DIRT TRACK DISTILLING

Students of American popular culture know that moonshine whiskey and NASCAR go together like actor Burt Reynolds and muscle cars. Starting in 1973 with the movie **White Lightning**, Reynolds made a career of portraying Southern good ol' boys delivering moonshine in fast cars, while out-running the local sheriff.

The real-life inspiration for such cinema characters was Robert Glen Johnson Jr. (born in 1931 in Wilkes County, North Carolina), better known as Junior Johnson. Johnson was a moonshiner in the rural South who became one of the early superstars of NASCAR in the 1950s and '60s.

Johnson grew up on a farm and developed his driving skills running moonshine as a young man. He consistently outran and outwitted local police and federal agents in auto chases, and he was never caught while delivering moonshine to customers. Johnson became something of a legend in the rural South, where his driving expertise and "outlaw" image were much admired.

Johnson is credited with inventing the "bootleg turn," in which a driver escapes a pursuer by sharply putting his speeding car into a 180-degree turn on the highway, then speeding off in the opposite direction before his pursuer can turn around. Johnson was also known to use police lights and sirens to fool police roadblocks into thinking that he was a fellow policeman; upon hearing his approach, the police would quickly remove the roadblocks, allowing Johnson to escape with his moonshine.

In 1955, Johnson decided to give up delivering moonshine for the more lucrative (and legal) career of being a NASCAR driver.

Unfortunately, the "Revenues" had not forgotten Junior. In 1956, federal agents found Johnson working at his father's moonshine still and arrested him. Johnson was convicted of moonshining and was sent to federal prison, where he served eleven months of a two-year sentence. He returned to the NASCAR scene in 1958 and picked up where he left off. He went on to win fifty NASCAR races in his career before retiring in 1966.

In 1965, writer Tom Wolfe wrote an article about Johnson in *Esquire* magazine. The article, originally titled "Great Balls of Fire," turned Johnson into a national celebrity and led to fame beyond



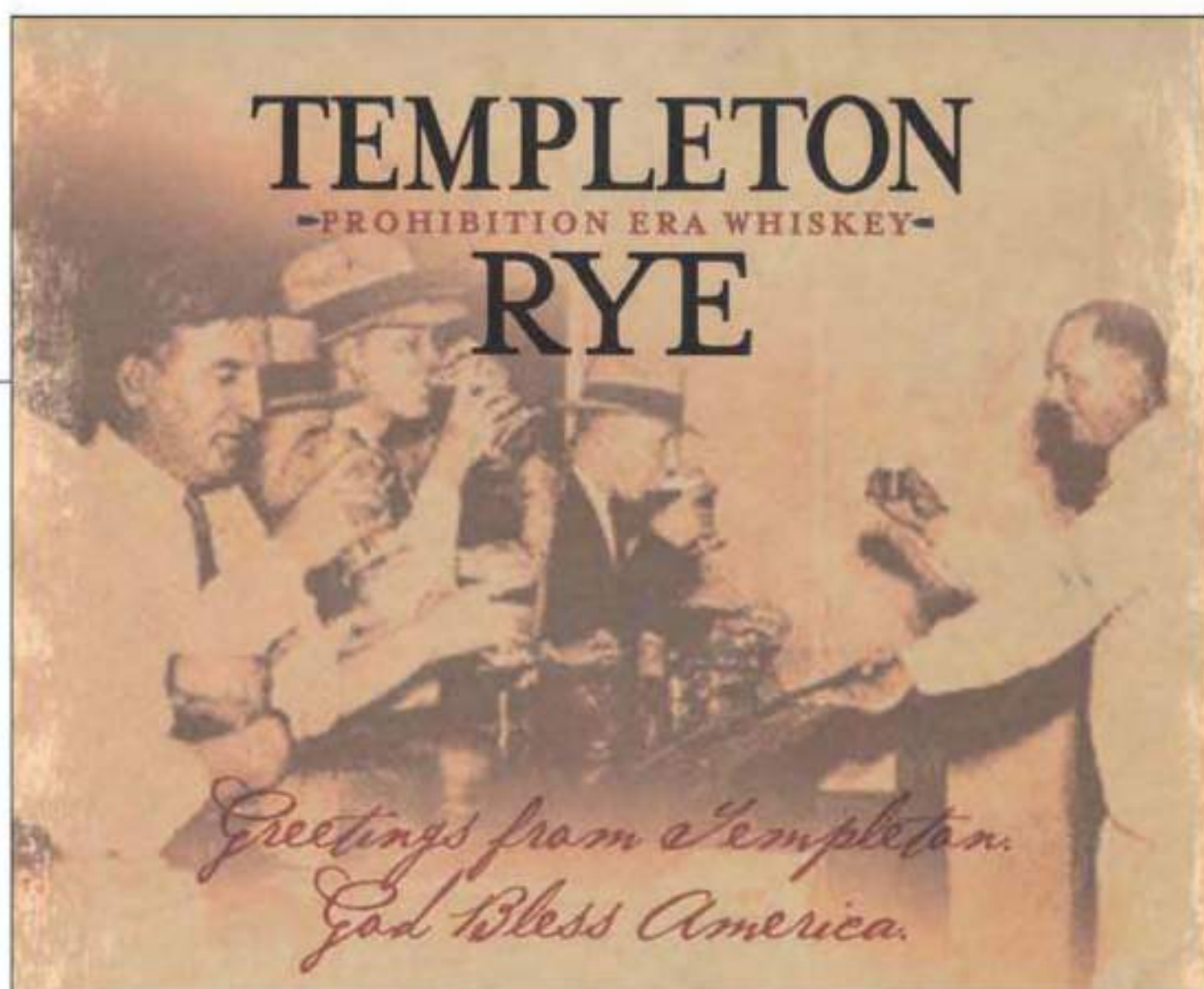
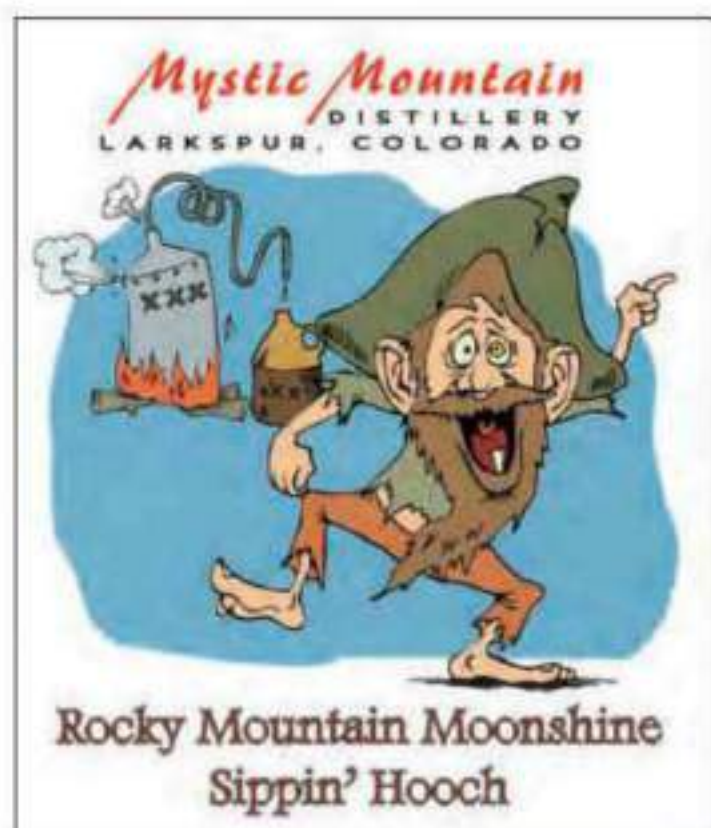
A POS card advertising **Junior Johnson's Midnight Moon** by **Piedmont Distillers**

his circle of NASCAR fans. In turn, the article was made into a 1973 movie based on Johnson's career as a driver and moonshiner titled *The Last American Hero*. Jeff Bridges starred as the somewhat fictionalized version of Johnson, and Johnson himself served as technical advisor for the film.

More recently, Johnson's family has licensed the Junior Johnson name for use in promoting a legal distilled product: Junior Johnson's Midnight Moon from Piedmont Distillers in Madison, North Carolina.



Label for *Mountain Moonshine*  
by *Mystic Mountain Distillery*



A postcard from *Templeton Rye* "Prohibition Era Whiskey"

## DON'T TRY THIS AT HOME

(Nudge, Nudge, Wink, Wink, Say No More)

Soon after national Prohibition began in the 1920s, a person could walk into virtually any grocery store in the United States and find for sale brick-size blocks of compressed raisins bound together with condensed grape juice. Attached to the block was a small container of dried yeast. The wrapping contained the following text:

### WARNING

**Do not dissolve this fruit brick in warm water and then add the contents of the yeast packet, as this will result in fermentation and the creation of alcohol, the production of which is illegal.**

Needless to say, the local A&P sold a lot of fruit bricks while Prohibition was in force.

Traditional moonshine starts out with the production and fermentation of what is basically a simple beer. Traditionalists would create a mash of ground corn, hot water, and enough malted barley to provide sufficient enzymes to convert the starch in the grains into simple sugars. Once the starch conver-

sion was complete, yeast was added to the mash, with the resulting fermentation turning the sugars into alcohol. The fermented mash would then be boiled in the pot still to distill off the alcohol.

Alas, times, and moonshine, are not what they used to be. Modern moonshiners tend to skip the grain mashing and go directly to fermentation by dissolving regular sugar in warm water, fermenting the sugar water with baker's yeast, and then distilling off the resulting alcohol. The results are spirit much inferior to a distilled grain spirit, and ultimately an arrested moonshiner. The Alcohol and Tobacco Tax and Trade Bureau (TTB, also known as "the Feds") keeps track of the sale of large quantities of bulk sugar, particularly in rural areas with a past history of moonshining.

You have been warned.





*Whiskey is what beer wants to be when it grows up.*



*Virginia Lightning Corn Whiskey by Belmont Farm*

Despite an uptick in amateur distilling and a greater willingness among some to talk more openly about the craft, the long history of secretive, and sometimes violent, moonshining means that, until recently, reliable information was scarce and difficult to verify. That situation is rapidly changing, and distillers, from curious novices to accomplished home artisans, are far from isolated anymore. In less than a generation, they've learned to talk to each other, pool their knowledge, and ask ever more nuanced questions about building and operating a range of stills.

## MODERN “MOONSHINERS”

The current interest among hobbyist distillers in creating first-rate liquors, and the general wholesome quality of their products tracks primarily to three convergent trends:

- 1) Craft brewers
- 2) New Zealand
- 3) The Internet

### CRAFT BREWERS

Craft brewers are not simply the first ones to study how to make outstanding small-batch

spirits; they are also going to shape the face of micro- and personal distilling. Brewers have already mastered three key skills: how to collaborate, how to organize, and how to drive legislation.

The current interest in distilling among brewers is so widespread that it is virtually impossible to talk to craft brewers who aren't already distilling on the sly or working on permits, or know someone who is. One erstwhile brewer framed his transition from beer to liquor with this aphorism: *Whiskey is what beer wants to be when it grows up.*



*Chuck Miller stands in front of his pot still at Belmont Farm Distillery, one of a dozen distilleries in the United States producing a legal moonshine product.*



Distiller **Ben Fris** stands next to a custom-built one-of-a-kind pot still at **New Holland Brewing and Distilling**.

Making beer at home has been going on for most of the twentieth century, but it's only been legal on a federal level since 1978. For a decade or so after it was permitted, homebrewers (in the United States) explored all kinds of beer and ale styles they could not purchase through their local stores. They perfected their techniques, competed against each other in regional and national contests, published their personal recipes, gave out awards to their peers, and later put that knowledge to use by opening brewpubs and microbreweries everywhere.

Homebrew supply shops everywhere were selling hops, malts, specialty grains, carboys, esoteric scientific equipment, and lab-cultured yeasts to tens of thousands of homebrewers trying, good-naturedly, to best each other in rounds of *My Beer Is Better Than Yours*.

By the 1990s, some brewers were pushing the limits of their equipment and ingredients, becoming essentially novice distillers. Their homemade rigs looked pretty much the same as brewing equipment. The ingredients were the same. They were learning on pot stills because, for hundreds of years, variations on that model had been the choice of folk distilling. Most of what a casual researcher found in popular culture references were the big, copper, pumpkin-shaped boilers of a style that would have been familiar to eighteenth-century farmers.

As brewers, they already knew about grains, malt, yeast,



enzymes, ideal fermentation temperatures, filtration systems, and the water profiles that lead to great-tasting beverages. Some had come to believe that the only thing stopping them from having whiskey was too much water. Because they had developed widespread networks for sharing information already—books, magazines, contests, clubs, festivals, newsletters, and rudimentary online newsgroups—questions began to circulate about how best to remove that excess water.

Sharing, critiquing, and judging were an entrenched part of the culture that was starting to take up

what had long been a secret practice. Anonymous online forums were ideal tools for vetting home-distilling questions. Unlike the old Appalachian moonshiners, modern distillers with homebrewing backgrounds were already used to talking to each other online and in person.

#### **NEW ZEALAND**

Because few of the twentieth-century books on moonshining held much practical information on techniques for building and operating stills, amateur distillers without a family history in such matters learned by trial and



error. Then, in 1996, New Zealand lawmakers scrapped legislation forbidding home distillation. In Australasia, an explosion of interest and innovation, specifically around design for home-size stills that veered off from traditional styles, reverberated widely.

Local distilling enthusiasts were studying the physics of stills, attaching probes and meters to measure exactly what was going on when they fired up. They learned how tall and wide home-size stills should be. They affixed columns to their pots and loosely filled them with ceramic and copper packing material for maximum efficiency. Those stills started looking like something out of a refinery, churning out high-proof alcohol on single runs rather than the multistage process that traditional pot stills called for.

#### THE INTERNET

These innovative distillers went online and, because their hobby was legal, started talking to each other openly. Brewers who were getting into distilling, with their already established networks and culture of openness, noticed. They seized on a wealth of new verifiable information coming out of the Southern Hemisphere and added their own experiences, especially in online forums.

Since then, as reliable information has been vetted online about how best to build and operate small-scale stills, home column, or reflux, stills have evolved, becoming more compact and efficient, and able to put out as close to



A copper still from [CopperMoonshineStills.com](http://CopperMoonshineStills.com), (as seen in the movie *The Dukes of Hazzard*)

pure alcohol as is possible outside a laboratory (in short, very clean stuff). Most recently, a specific style of distilling has evolved that's all about purity, efficiency, and making lots of neutral spirits in very compact column stills. Easily built and easily operated, they are more efficient and less work than pot stills.

#### MOONSHINE DEFINED

A broad definition of *moonshine* is any liquor made from unregistered stills by unlicensed distillers. This definition covers a Kentucky farmer making the liquor his father did, a New York imbibor wresting 10 ounces of gin from a case of Budweiser, as well as a San Francisco chef tweaking her grandmother's kummel to carry on the tradition.

Today's nano-distillers don't sell their products. In fact, profit seems almost anathema. One of the quickest ways to really anger others is for unlicensed distillers

to start selling their makings. Some embrace the moonshiner identity; others avoid the term because of its association with lawlessness.

Regardless of what distillers call themselves, they fall into three loose categories—**economic**, **technical**, and **artisanal producers**.

#### ECONOMIC DISTILLERS

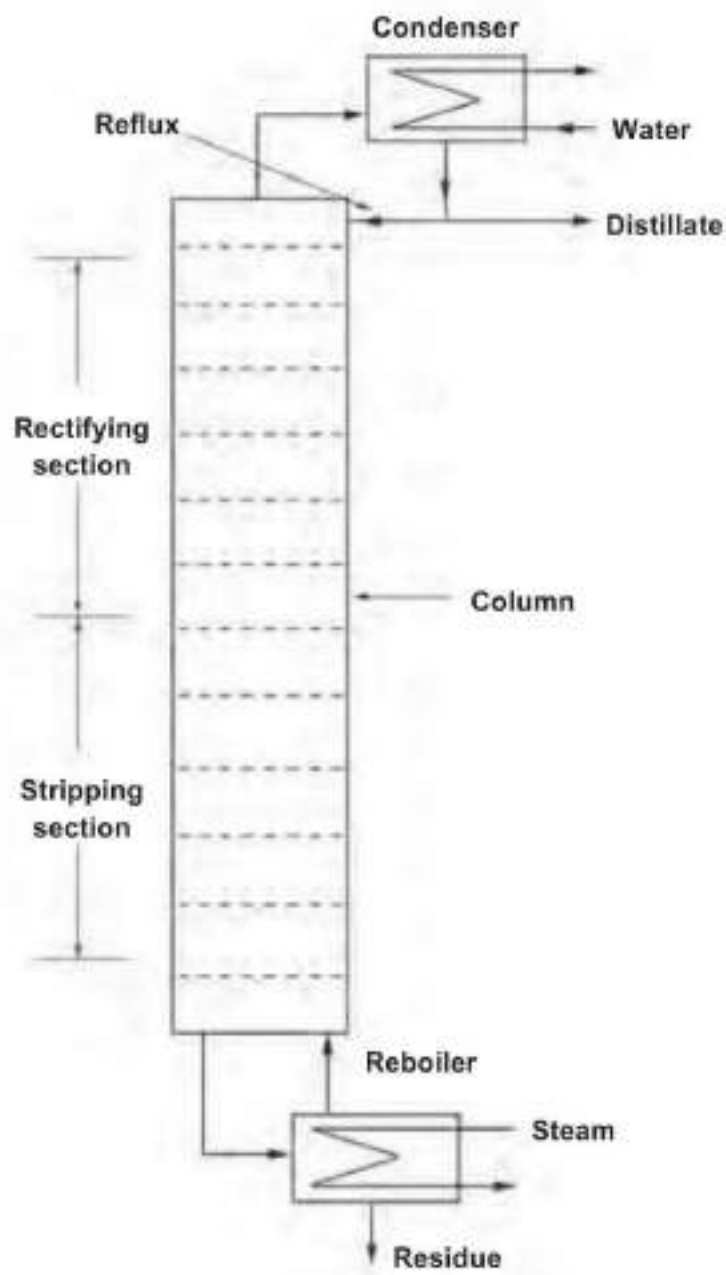
Economic distillers make liquor because homemade is cheaper than store-bought. Any type of still might be used, from an inherited copper pot still, to modern reflux models, or even an aquarium heater in a plastic bucket. They are apt to distill sugar spirits, but also grains and fruits when they may be had inexpensively. Although their products are prone to be of questionable quality, they are not necessarily bad liquor—think of marc and grappa, made from pomace that might otherwise be thrown away.

#### TECHNICAL DISTILLERS

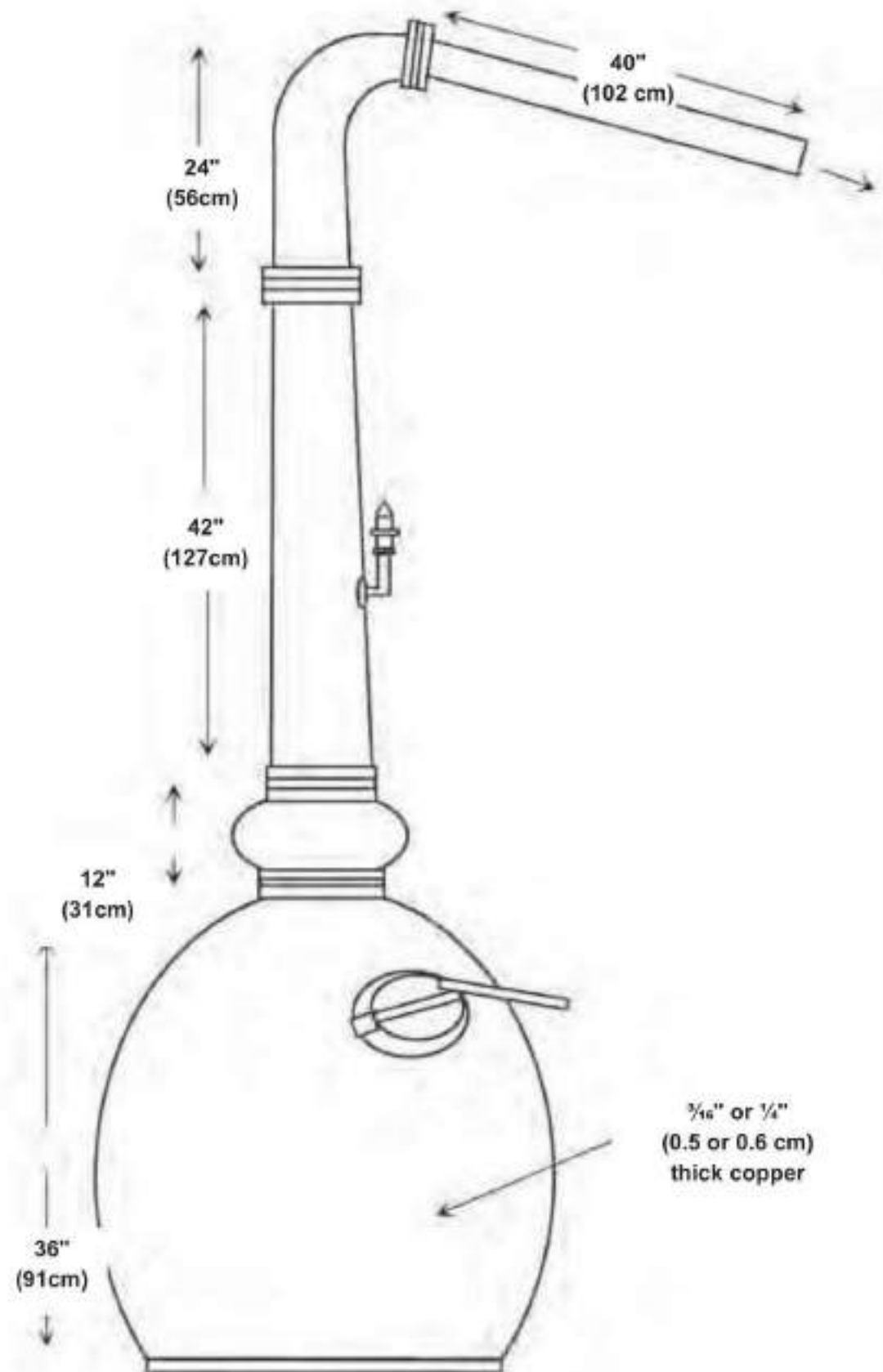
Technical distillers are arm-chair (or even professional) engineers and chemists, gear-heads who strive to make the most efficient distillery setup they can, forever tweaking and adjusting their rigs, creating technological wonders. They run and rerun a batch of spirits to create the purest spirit they can, taking meticulous notes of every temperature fluctuation, proof variation, and yield. Technical distillers tend to have an inordinate amount of vodka on hand because the end result of their frequent experiments is often



**Fig. A: Diagram of a Column Distiller**



**Fig. B: Dimensions of a Typical Spirits Still**



a high-proof, nearly pure spirit they can supplement with extracts and essences for the exact flavor they want.

**ASPIRING AND ACCOMPLISHED ARTISANS**

Aspiring and accomplished artisans comprise the third group, whose goal is to make authentic and great-tasting spirits. While technical distillers consider

unwanted chemical compounds obstacles to pure liquor, artisans rightfully regard taste and aroma as the backbone that defines their own personal style of distilling. They tend to use less-efficient, old-school pot stills—they might immediately recognize the kind that a farmer used in 1740. Some use column stills, but without the columns at maximum efficiency, thus preserving taste and aroma

by not distilling to the highest proof possible. Finally, they tend to ferment grains and fruits rather than sugar, and not to care what it costs—because it's for them, not for sellin'.



**Fig. C: Anatomy of a Pot Still**

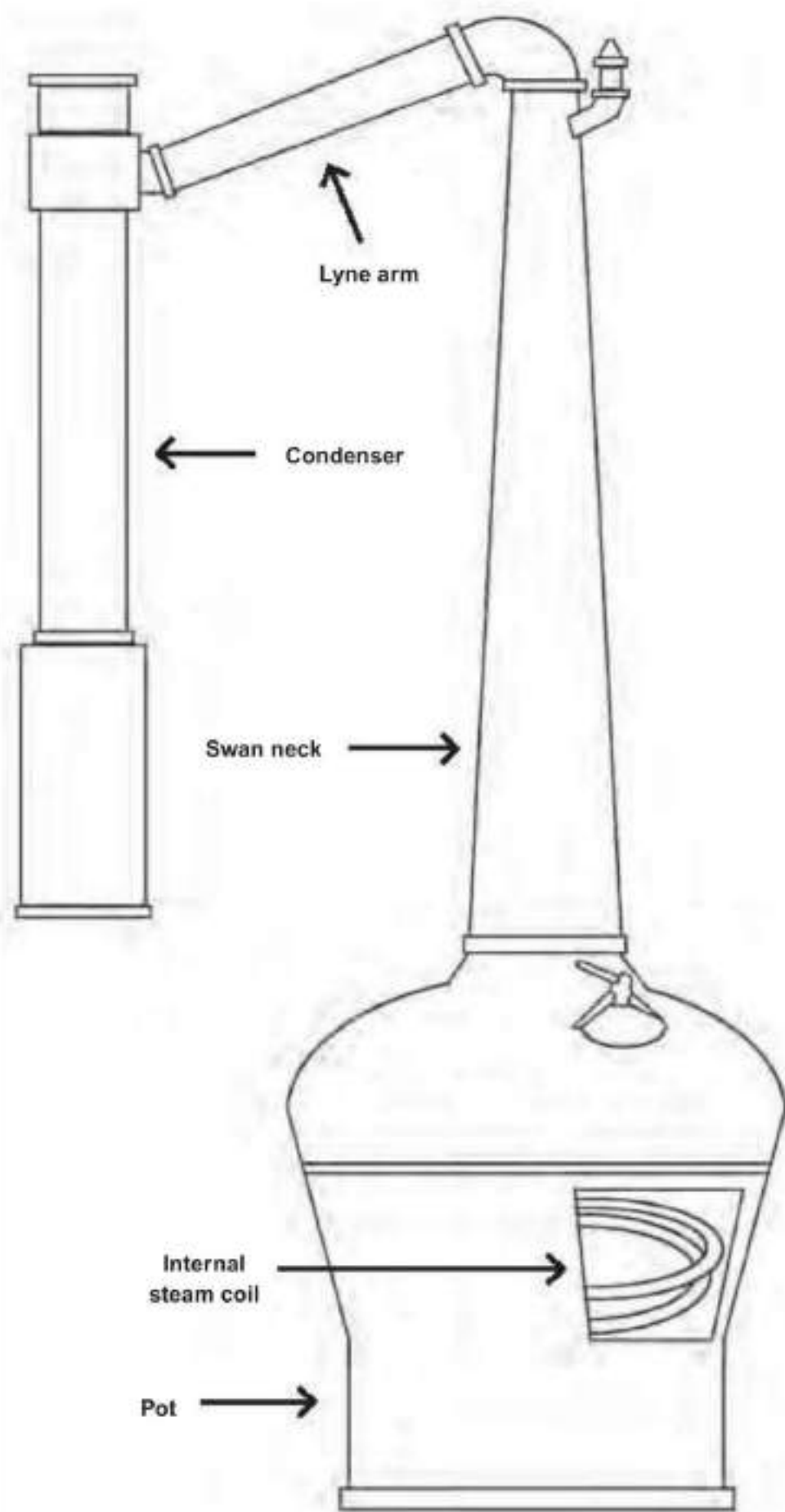


Fig. A: This flowchart illustrates how the wash is transformed into spirits. The bottom of the still strips out the water, while the rectifying section (top of the still) distills the liquors to increase their spirituousity.

Fig. B: A pot is wider than tall, allowing vapors to escape from the wash. A tall swan neck allows for separation of the components of the mixture. The shape of the still affects the flavor components of the spirits. Every pot still is unique, as distillers want distinctive flavor profiles in their finished spirits.

Fig. C: As illustrated here, a whiskey still has four parts: pot, swan neck, lyne arm, and condenser. The shape of each affects rectification and the flavor of the spirit.

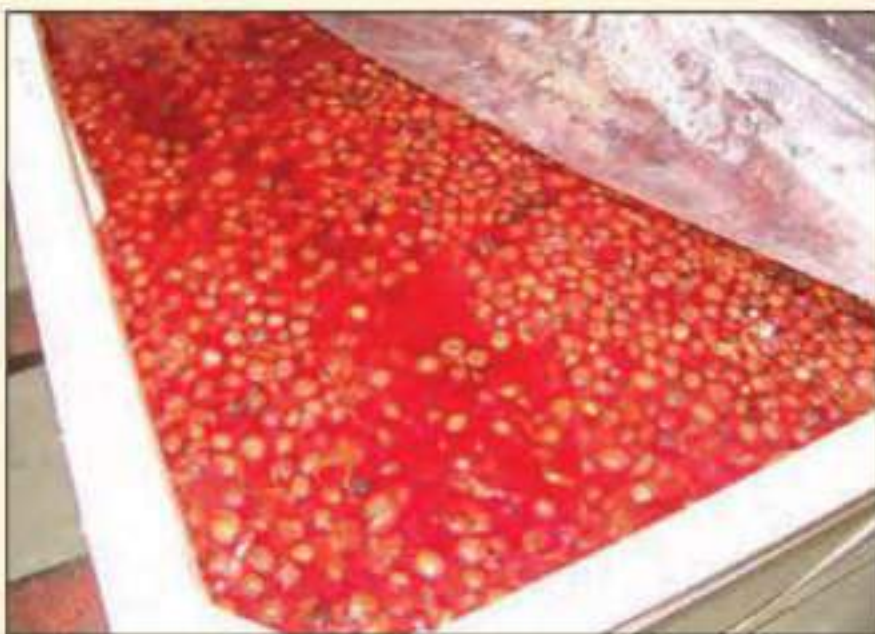
*Pot:* The pot can be any shape: round, onion, or conical. The shape of the pot affects how the wash is heated (always to 172°F [78°C]). It can be heated by direct fire, steam, gas, or wood. Most pots have a sight glass so the distiller can check for foaming during the distillation process.

*Swan neck:* The swan neck sits on top of the pot. It can be tall, short, straight, or tapered. Often the swan neck is connected to the pot via an ogee, a bubble-shaped chamber. The ogee allows the distillate to expand, condense, and fall back into the pot during distillation. Most pot stills have a tapered swan neck, allowing for better separation and better enriching of the spirits during distilling.

*Lyne arm:* The lyne arm sits on top of the swan neck. It can be tilted up or down, and it can be tapered or straight. Often pot stills are fitted with a dephlegmator, or a purifier. Its main purpose is the enrichment of spirits before they're sent on to the condenser.

*Internal steam coil:* The internal steam coil heats the wash to 173°F (78°C), where the alcohol separates from the wash.

*Condenser:* The condenser, or worm, is used for cooling the spirits and providing a small stream to a collection tank or pail.



A fruit eau de vie fermentation at **Stringer's Orchard Wild Plum Winery & Distillery**

### **ECONOMICAL INGREDIENTS FOR DISTILLING**

Consider a glut of plums for backyard slivovitz, or a skid of dried fruit at bargain pricing that can be turned into Arabian siddiqui. However, ersatz whiskeys made from breakfast cereals are not unheard of, so caveat emptor is the rule.



# THE DISTILLING PROCESS

*The condenser cools the vapors into liquid spirit, which is collected and bottled at Anchor Distilling.*

**I**N THE MOST literal sense of the word, distillation means the concentration of the essence of a substance by separating it from any other substances that it is mixed with. In the case of distilling alcohol, this means boiling a fermented liquid in a still to separate the

ethanol from the solids, water, and other chemical compounds in the fermented solution. But just as the devil is in the details, the art of distilling is in how the distiller achieves that separation, and how precise that separation is.

The wide range of stills described in this chapter each originally evolved to meet the requirements of producing a particular type of spirit. Depending on the type of spirit being made, precision is not necessarily the goal of the distiller. Thousands of chemical compounds are created by fermentation and distillation, all of which can have, for better or worse, an effect on the ultimate taste or character of a distilled spirit. The distiller's primary job is to retain the desired flavor elements, while discarding those that are not. This is not as simple as it sounds. And despite all of the high-tech controls in a modern distillery, the still master nevertheless has the final call.





*“Glass of brandy and water! That is the current but not the appropriate name: ask for a glass of liquid fire and distilled damnation.”*

—Robert Hall, nineteenth-century temperance crusader who was never the life of the party

## HOW DISTILLATION WORKS

Distillation is a physical process in which compounds are separated by virtue of their different boiling points. Two compounds with the same boiling point occurring together would not be separable by distillation. Fortunately, such occurrences with the ingredients in liquor and spirits are rare.

The separation in distillation occurs when a mixture of compounds in the still is brought to a boil. Compounds with lower boiling points vaporize at lower temperatures than compounds with higher boiling points. This means that the vapor, or steam, rising off the boiling mixture is richer in the lower-boiling-point compounds than in the higher-boiling-point ones. Next, this vapor is collected and cooled to condense it back into a liquid. The resulting liquid, called the **distillate**, contains a considerably higher concentration of the lower-boiling-point compounds than of the higher-boiling-point ones.

In a simplified example, let's consider a mixture of 90 percent water and 10 percent ethanol. Water has a boiling point of 212°F (100°C), and ethanol has a boiling point of 173.1°F (78.4°C). The ethanol will boil and vaporize well before the water, so when the vapors are collected and condensed, the resulting distillate will have a high concentration of ethanol and comparatively little water. The distillate will not be pure ethanol

because some water will vaporize at the boiling point of ethanol, even if the water itself is not at its boiling point.

Tails (see page 36) start at 203°F (95°C) and contain a high percentage of fusel oils, known to distillers as wet dog bouquet. A little bit is actually needed in some types of whiskey, but only a little bit. Think Islay Scotch Whisky.

Because all the compounds in a still will vaporize to a greater or lesser extent during boiling, the separation of the compounds will not be perfect, so more elaborate stills have been developed to intensify the separation of the vapors once they have left the boiler. In modern high-separation stills, this is done by employing a reflux column to manage the vapors after they leave the boiler and before they are condensed and drawn from the still.

## A STILL'S BLUEPRINT

The whiskey still has four parts: pot, swan neck, lyne arm, and con-

denser. The shape of each section affects rectification (redistillation) and the taste of the spirits. There is no perfect design; each manufacturer says its pot still makes the best-tasting whiskey.

At this point, distilling is an “art.” To make good whiskey, you need to have good ingredients (clean wash) and a good palate (nose and tongue), and you need to know when to start and stop (making head and tail cuts). When it comes to whiskey distilling, the process is controlled by a distiller, not a computer or a manual.

The **pot** can be any shape: round, onion, or conical. The shape of the pot affects how the wash is heated (to 172°F [77.8°C]). It can be heated by direct fire, steam, gas, or wood. All systems have advantages and disadvantages. There is no right way to heat wash. Most manufacturers, however, prefer a double-jacketed steam-water system that provides a gentle heat to the wash. Mainly, you don't want to burn the wash. Most pots have a sight glass so

## WHAT A DIFFERENCE A DEGREE MAKES

*Between 174° (78.8°C) and 175°F (79.4°C) a veritable witch's brew of nasty chemical compounds (known collectively as heads) are cut and removed by proper distilling. These include acetone, aldehydes, and methanol. Lazy moonshiners tend to leave them in, resulting in rotgut and a serious head-banging headache the next morning as you lie in bed and pray for the Angel of Death to come and finish the job.*



## THE CHEMISTRY OF PURE SPIRITS

Even a modern high-separation still cannot produce pure ethanol. This is because water forms an azeotrope with ethanol. An azeotrope is a mixture of two liquid compounds whose molecules become loosely bonded such that they have a common boiling point that is different from either constituent's. In the case of ethanol and water, the **azeotrope** occurs at a mixture of 96.5 percent ethanol and 3.5 percent water, and it has a boiling point of 172.67°F (78.15°C). This is 0.45°F (0.17°C) lower than the 173.12°F (78.4°C) boiling point of pure ethanol. In distillation, this azeotrope is a single compound with a boiling point of 172.67°F (78.15°C), and the still proceeds to separate it on that basis. The ethanol that is purified by a fractionating column is not, therefore, pure 100 percent ethanol but pure 96.5 percent ethanol, with the "impurity" being pure water. No amount of redistillation under the conditions discussed here will influence this percentage; 96.5 percent alcohol by volume (ABV) is the theoretical maximum purity that can be derived by the above process.

The temperatures stated above are at standard atmospheric pressure. In a column still, due to increased pressure at the bottom resulting from the pressure drop over the plates, the temperatures would be quite a bit higher than stated. For example, the spent wash, which would have a boiling point of about 212°F (100°C) at standard pressure, would have a boiling point of about 220°F (104.4°C) due to the increased pressure.

the distiller can check for foaming during the distillation process.

The **swan neck** sits on top of the pot. It can be tall, short, straight, or tapered. Often the swan neck is connected to the pot via an ogee, a bubble-shaped chamber. The ogee allows the distillate to expand, condense, and fall back into the pot during distillation. Most pot stills have a tapered swan neck, allowing for better separation and better enriching of the spirits during distilling.

The **lyne arm** sits on top of the swan neck. It can be tilted up or down, and it can be tapered or straight. Most arms are tapered down. Often pot stills are fitted with a dephlegmator, or what Scottish distillers call a purifier. The dephlegmator is fitted with baffles that use water plates or tubes to cool the distillate, sending 90 percent of it back into the pot. Its main purpose is the enrichment of the spirits before they're sent on to the condenser.

The **condenser**, or **worm**, is used for cooling the spirits and providing a small stream to a collection tank or pail.



A small pot still, similar to many moonshine stills, is in operation for tourists to see at the Glenmorangie Distillery, Scotland.



# WHISKEY STILLS IN DETAIL

There are several different designs of stills used for making whiskey. These include the moonshine still, gooseneck still, continuous-run column still, French Charentais alambic still, and artisan pot still. (The traditional English spelling of this French word is *alembic*.)

## MOONSHINE STILL

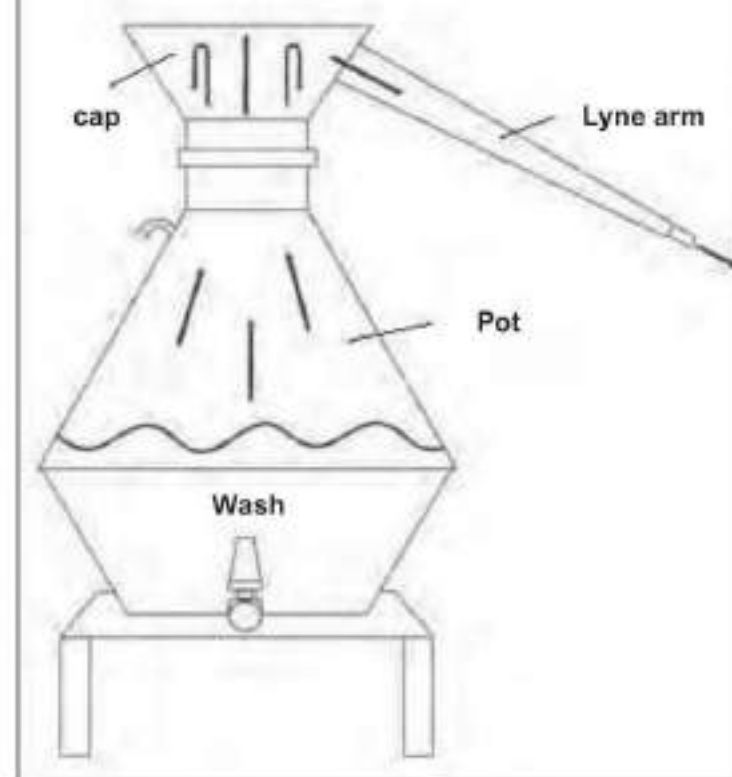
The most basic and rudimentary design is a crude pot still, or moonshine still, which is a closed pot, like a pressure cooker, with a pipe leading from the lid into a condenser coil. The condenser coil can either be long enough to air-cool the vapors, or it can be shorter and immersed in a water jacket. Such a still affords minimum separation of the vapors because there is almost no separation once they leave the boiler. Although this design of still is not suitable for producing beverage alcohol by modern standards, it will still concentrate an 8 or 10 percent ABV wash to 60 percent in a fairly fast run.

There are many home distillers and illicit commercial moonshiners using this type of still today. And, because this type of still is typically heated on a stove top or on a gas burner, it is necessary to remove all suspended solids from the wash before placing it in the boiling pot. To do otherwise would risk burning solids on the bottom of the pot.

*Fig. A: In the basic moonshine still, vapors from the heated wash rise into the cap.*

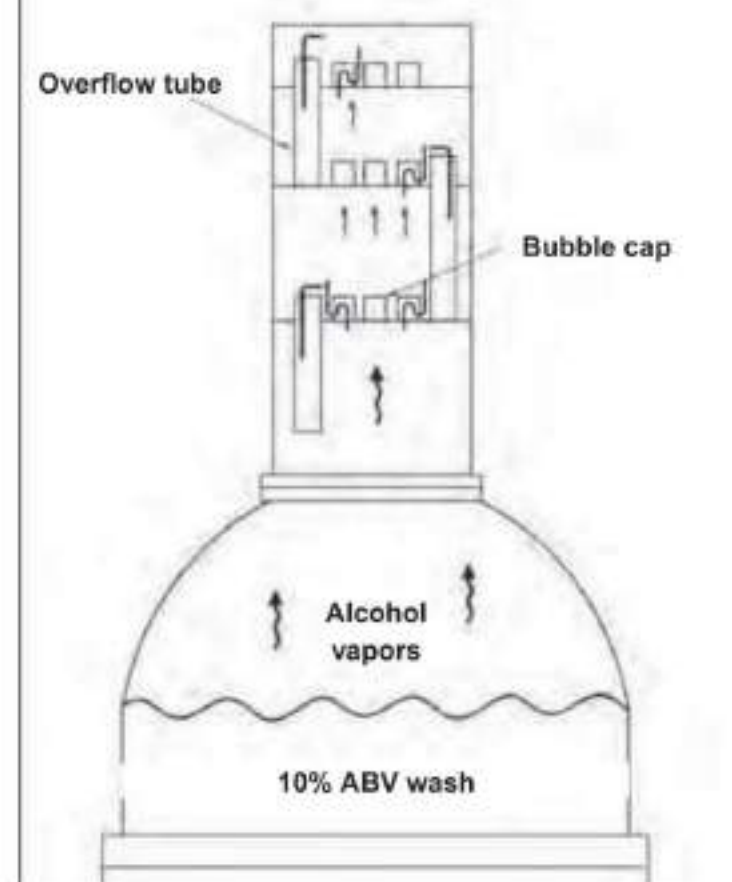
*After hitting the flat top of the still, vapors exit via the lyne arm into the condenser, where they condense and become spirits.*

**Fig. A: Flat-top Moonshine Still**



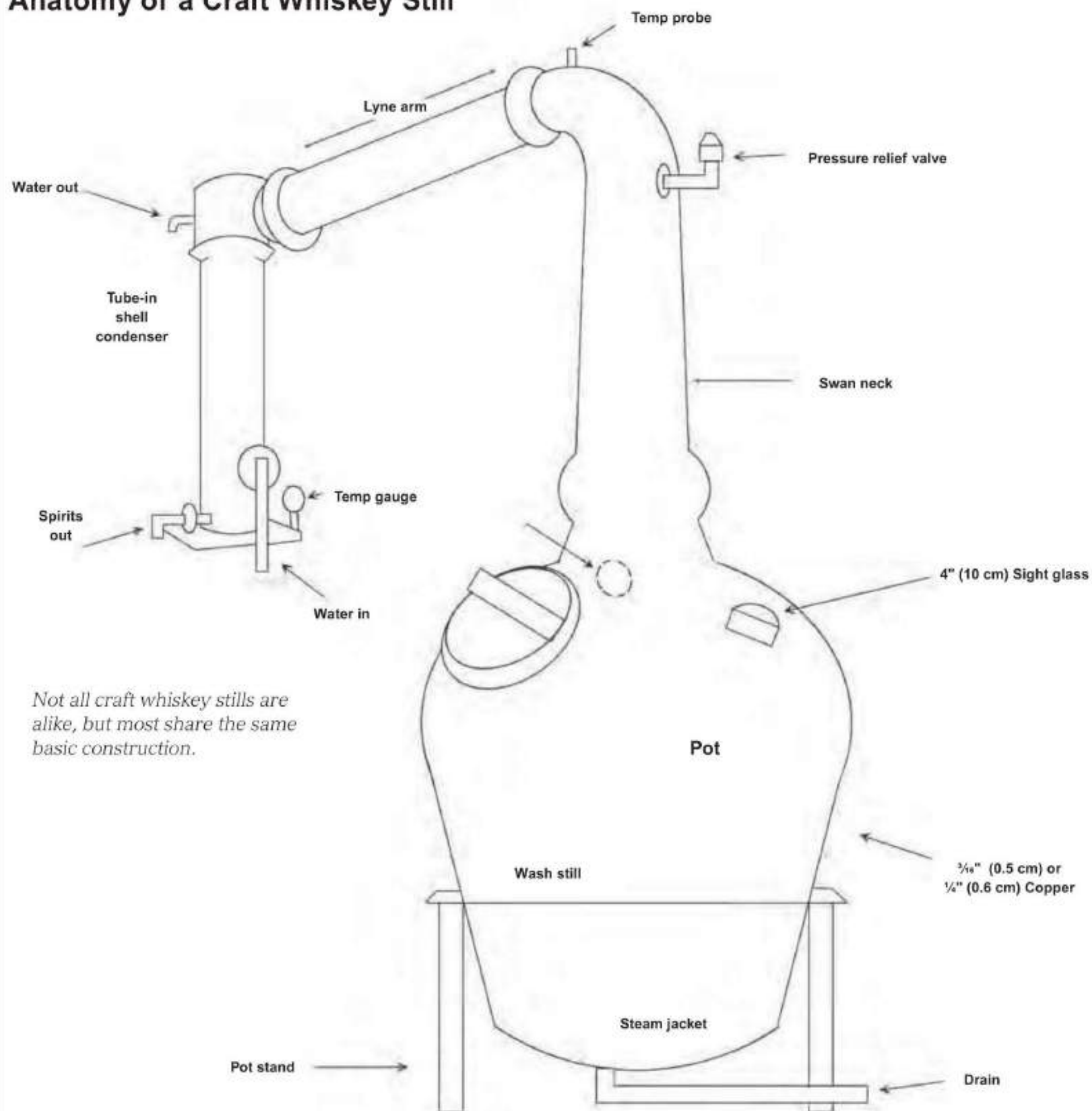
*Fig. B: The bubble caps sit on tray over vapors tubes in the column. The caps provide contact between the rising vapors and descending reflux, creating a distilling cycle and enriching the alcohol. Arrows indicate vapors rising from the wash and hitting the bubble caps. A percentage of pure vapors continue to rise and the "less pure" fall back into the still for re-distillation.*

**Fig. B: Cross-section of a Still's Bubble Cap**





## Anatomy of a Craft Whiskey Still



*Not all craft whiskey stills are alike, but most share the same basic construction.*

### GOOSENECK STILL

The gooseneck pot still is the most common design of still used to produce Scottish malt whisky. Some Irish whiskies and a number of American and Canadian whiskies are also distilled in this type of still. This style of pot still has

been in use for centuries for commercial whiskey production, and it is even more popular today in modern whiskey distilleries than ever.

The gooseneck still has a large round boiler and is functionally very similar to the crude pot still, except it has a long, broad neck

rising from the boiler that allows enough separation to hold back most of the fusel alcohols from the distillate while retaining the desired flavors in the finished spirit. The neck bends at the top and connects to a pipe called a **lyne arm** that leads to a condenser coil immersed in water. The lyne arm



*A gooseneck still clearly showing the lyne arm at Woodford Reserve Distillery*

usually angles downward slightly toward the condenser, but in some distilleries it tilts upward.

The level of separation in a gooseneck pot still is affected by the amount of condensation that takes place in the neck and lyne arm that falls back into the boiler. This condensation is called **reflux**, and the more reflux, the higher the level of separation. If the lyne arm is angled downward, then any vapor in the lyne arm that condenses will fall forward toward the condenser and become part of the distillate passing to the receiver. However, if the lyne arm is angled upward, condensation falls back to the boiler and will create additional reflux, and therefore additional separation.







*Model of a gooseneck Forsyths whisky still*

### **BEVERAGES PRODUCED IN GOOSENECK STILLS**

Because the long, broad neck provides a large surface area, which results in a larger proportion of reflux than crude pot stills, gooseneck stills are more suitable for distilling beverage alcohol. The gooseneck stills are suited to the production of whiskey, brandy, rum, schnapps, and other non-neutral spirits, for which they are widely used commercially. However, they are not suitable for the production of vodka, gin, or other spirits derived from neutral

alcohol, which requires a high-separation still capable of producing pure azeotrope ethanol.

The wash distilled in gooseneck stills is typically separated from the suspended solids, much like the malt washes used for making Scottish malt whisky. Some gooseneck stills are heated by an open fire under the boiler, which would result in the burning of suspended solids if they were in the wash. However, most contemporary stills are heated with steam jackets. This, combined with a **rummager**, can enable these stills to boil full mashes with all the

grain in the boiler without burning the solids on the bottom of the pot.

A rummager is an agitating device that slowly turns around inside the still pot, dragging a net of copper chains along the bottom of the boiler to prevent solids from caking up and burning during distilling.



## CONTINUOUS-RUN COLUMN STILL

This type of still is used for producing enormous volumes of spirit in a continuous operation that runs constantly for up to eleven months straight before it is shut down for cleaning and overhauling. They commonly have a fractionating column that stands about 100 feet (30.5m) high (similar to that of an oil refinery) and a series of bubble-cap trays spaced every couple of feet up the column. The trays are farther apart near the bottom and get closer together toward the top. It has no pot or boiler per se, and it is heated by blasting steam upward from the bottom of the column, while the wash is continuously fed into a tray at the middle of the column.

As the wash runs down through the trays of the column, it encounters the hot steam, which vaporizes the compounds in the wash and carries them up the column. The lower-boiling compounds continue to rise up the column while the higher-boiling ones condense and are carried down the column.

The column has an exit valve at every tray where vapor can be drawn off and led to a condenser. This enables the operators to configure the system so certain trays lead to a condenser that goes to the heads receiver, another set of trays can be sent to the hearts receiver, and other trays can be sent to the tails receiver. What flows to the bottom of the column

## THE CONTINUOUS-RUN DESIGN FLAW

*There is an inherent flaw in this design of still. Because the continuous-run still has a constant flow of new wash coming into it at all times, there are always heads and tails present in the column. This is unlike a batch still, which is any of the noncontinuous stills discussed in this text, where the heads are drawn off at the beginning of the run and then they are gone. In a continuous-run operation, all phases are constantly being introduced to the column by the incoming wash. This poses no problem with the tails, because at the trays where the hearts are drawn off, the tails are lower in the column and are therefore not present to be drawn off with the hearts. However, heads are still present at these trays, so no matter how well a continuous-run still is equilibrated there'll always be a small amount of heads in the hearts phase.*

*Having said this, the continuous-run column is a high-separation still that makes very precise separation of the compounds in its column. There is always going to be a trace amount of heads in the hearts, and this amount is still within the allowable limits for potable spirits. In most cases, it is less than the residual heads found in the hearts from commercial batch stills.*

is residue that is sent to the drain.

A possible configuration for bourbon would have the top two trays configured for heads, then the next four configured for hearts, the next five for tails, and the rest of the trays would reflux with no draw off and what reached the bottom would be discarded as residue.

The draw off rates would be set up to maintain a hearts phase with, say, a constant 65 percent ABV. Bourbon that's distilled in a continuous-run column still is usually done in two distillations, both with the hearts drawn off at about 65 percent ABV.

Because a continuous-run still runs for many months at a time,

the wash must be fairly clear with a minimum of solids; otherwise, the buildup of residue in the system would become untenable and the system would need to be shut down to be cleaned. So, there is no process with a continuous-run still whereby the entire mash is distilled. The mash must always be strained or filtered before being placed in the reservoir supplying the still.

The distillery must have a battery of fermenters that are in constant operation at each stage of the fermentation process to keep up with the continuous demand for wash for the stills.



## FRENCH CHARENTAIS ALAMBIC STILL

This type of still is used almost exclusively for making brandy, including cognac, Armagnac, Calvados, and other famous French brandies. It is designed especially to leave a lot of the aromatics and flavor in the distillate, and is therefore one of the lower-separation beverage-alcohol stills. Because of this quality, spirits are usually distilled twice in a French Charentais alambic still.

Whiskey can also be made in this design of still. It is functionally quite similar to the gooseneck still, but it creates a lower level of separation, making a richer and creamier-tasting whiskey, but with a little more fusel alcohol.

The French Charentais alambic still has three major components: the **boiler with helmet**, the **pre-heater**, and the **condenser**. The helmet is the chamber just



*This alambic still was custom-built by Dynamic Alambic by reconfiguring a Grundig beer tank.*

above the boiler, and it serves as an expansion chamber, which works well to hold back a lot of the heavier compounds such as fusel alcohols and furfuroles while allowing the desirable aromatics and flavors to be carried over in the distillate.

The pre-heater, as the name implies, preheats the next batch of wine to be distilled. It is also used as a reservoir to enable a near-continuous distillation process. Some brandy distillers

simply include them as part of the hearts (not the heads). In this way, continuously feeding wine into the boiler is possible. Because there is no workable way to drain the boiler during operation, the continuous feeding of wine must stop when the boiler is too full to take any more.

Prior to a distillation run, the pre-heater is filled with wine to be heated for the next distillation. The pre-heater has the vapor tube from the boiler passing through it on its way to the condenser. This transfers heat from the vapor to the wine before the vapor enters the condenser. This heats the wine in the pre-heater to near boiling during the distillation run and reduces the amount of heat that the condenser has to dissipate, thereby making efficient use of heat and reducing the amount of cooling water used.

The pre-heater has a pipe with a valve leading from it to the



*Alambic still at Jepson Vineyards in Ukiah, California*



*Alambic still installation in France*



*A hole had to be cut in the ceiling to accommodate the column of this pot still at **Tuthilltown Spirits**.*

boiler. When a distillation run is finished and the boiler has been drained, the operator can open the valve and fill the boiler with another charge of wine from the pre-heater that's already at near-boiling temperature. This makes efficient use of heat and significantly reduces the amount of time to bring the next batch of wine to a boil.

The condenser in a French Charentais alambic still, as in most types of stills, consists of the copper coil immersed in a water jacket with cold water circulating around it.

### **BEVERAGES PRODUCED IN ALAMBIC STILLS**

These stills are invariably used to distill wine, or in the case of whiskey, distiller's beer. They are not generally used to distill full mashes with all the solids left in. However, design-wise, the Charentais could be used to distill mashes with solids because its boiler is the same as that of the standard alambic, which is widely used to make grappa and marc from grape pomace. To do this, a sieve tray must be inserted into the boiler to serve as a false bottom to hold the solids above the bottom of the pot and prevent burning.



### **ARTISAN POT STILL**

This type of still is the most versatile of all the stills. Each artisan pot still is nearly made to order, based on a distiller's needs and preferences. Its components include a spherical-shaped **boiler**, a **condenser**, and wide variety of optional components, such as a **steam jacket** or a **direct fire**, an **agitator**, a **helmet**, one or two **columns of bubble-cap trays**, a

**dephlegmator**, and a **catalyzer**.

The spherical-shaped boiler evenly heats the substrate, particularly if there is an agitator. And, an artisan still that's steam heated and has an agitator can be used to distill any wash. Even washes full of fruit pulp or grain mash can be heated in this configuration of boiler without any risk of burning on the bottom of the pot. Also, by constantly agitating the wash throughout the distillation



run, the distillery can save about 20 percent on the heat required to perform the distillation.

The ability to distill the entire wash, including all the solids, purportedly gives a superior flavor to the spirit produced. Apparently, the fruit mashes for making schnapps yield a richer, more complex flavor if they can be distilled with all the fruit pulp in the boiler. Many whiskey distillers contend the same to be true for distilling grain mashes, and a number of the premium brands of American whiskey are distilled with the grain mash in the still.

The helmet component (optional) is technically an expansion

chamber, and it is usually a nearly spherical dome that sits directly on top of the boiler. As vapor rises from the boiler, it passes through a comparatively narrow passage-way into the larger volume of the helmet. This results in a sudden reduction in pressure, which helps hold back higher-boiling compounds while allowing desirable aromatics and flavors to continue up the column. Some distillers say this helmet is key to producing a truly excellent spirit.

From the helmet, the vapor rises into the column. In some artisan pot still configurations, the column is mounted directly on top of the helmet. When there is no helmet, the column is mounted directly on top of the boiler. In other configurations, such as two columns, the column is positioned beside the boiler. The reason for this is the still would stand too high for most facilities if the column were stacked on top of the helmet, or even on top of the boiler.

Within the column are bubble-cap trays. The vapor rises up the tubes under the bubble caps and bubbles out from under the cap and through the standing liquid on each tray. The standing liquid overflows at a certain depth to the next tray below. **Compound separation** takes place by the redistillation that occurs when the heat from the vapor



transfers to the standing liquid. This causes higher-boiling compounds in the vapor to condense and lower-boiling compounds in the liquid to evaporate. The overall effect is to drive the lower-boiling compounds up the column in vapor state and the higher-boiling compounds down the column in liquid state.



Artisan pot still: the shape of the helmet "head" of the still influences the flavor of the distillate.



*The Moor's cap on this alambic still has a distinctive look and gives a unique flavor profile to the distillates.*

### OPTIONAL STILL COMPONENTS

Modern artisan pot stills have an interesting feature that allows the operator to bypass any of the trays to vary the separation level for the column. There are levers on the side of the column connected to each tray, and the operator can position the lever to cause the tray to turn sideways and allow the vapors and liquid to pass by. Or the operator can position the lever the other way to put the tray in place so that it is fully engaged in processing reflux.

The dephlegmator resides above the top bubble-cap tray. It is a chamber at the top of the column with numerous vertical tubes for the vapor to travel through on its way to the condenser. There is a water jacket around the vertical tubes that the operator can flood with cooling water to increase the amount of reflux. The water level in the dephlegmator can be adjusted to give granular control over the amount of reflux.

Having the capability to dial up or down the reflux creates a great deal of control over the compound mix in the finished spirit. For example, if a given spirit had an excellent aroma and flavor profile but a rough finish due to an excess of fusel alcohol, the reflux could be dialed up slightly to hold back the fusel.

The catalyzer is positioned above the dephlegmator and has an array of sacrificial copper. Copper is an important material in a still because the noxious sulfides in the vapor instantly react out upon contact with



copper. However, as this occurs over time, the copper material of the still becomes compromised, and expensive still components require replacing. The idea of the catalyzer is to have a chamber with copper in the vapor path specifically designed to react out the sulfides from the vapor. Over time, this copper erodes from the reaction with the sulfides, but it can be cheaply replaced. In effect, the copper in the catalyzer is being sacrificed to save the copper material of the still.

In summary, artisan pot stills can be superb stills and are well known for making quality spirits.

### COLUMN CONFIGURATION

*The number of bubble-cap trays in the column depends on the intended use of the artisan pot still, and it is therefore optional. Some artisan pot stills are used to make vodka and have two tall columns with a total of twenty bubble-cap trays. An excellent configuration for making whiskey, however, would be a still with a helmet, a column with four trays, a dephlegmator, and a catalyzer.*

Unfortunately, their throughput is comparatively slow, and distilleries are often put in the position of having to opt for larger throughput stills, such as the continuous-run column, to meet the demands of their markets.



*Artisan pot still*



# THE BATCH-STILL PROCESS OF DISTILLATION

**T**HE DISTILLATION process is operationally the same for all four batch stills discussed previously: the moonshine still, the gooseneck still, the French Charentais, and the artisan pot still. The continuous-run column still has a different regimen, and it is described in the section that follows.

## HEADS, HEARTS, TAILS

In distilling parlance, the compounds in the wash that are not ethanol or water are called **congeners**. Some congeners, such as acetaldehyde, methanol, and certain esters and aldehydes, have lower boiling points than

ethanol; certain other esters, the higher alcohols (fusel alcohols), and water have higher boiling points than ethanol. This means the lower-boiling congeners come out in high concentration at the beginning of a batch distillation run, and the higher-boiling ones come out in high concentration toward the end of the run, leaving the ethanol and the most desirable compounds as the most abundant components during the middle of the run.

When distillation takes place in a batch still, the distillate that comes out is divided into three phases called **heads, hearts, and tails**.

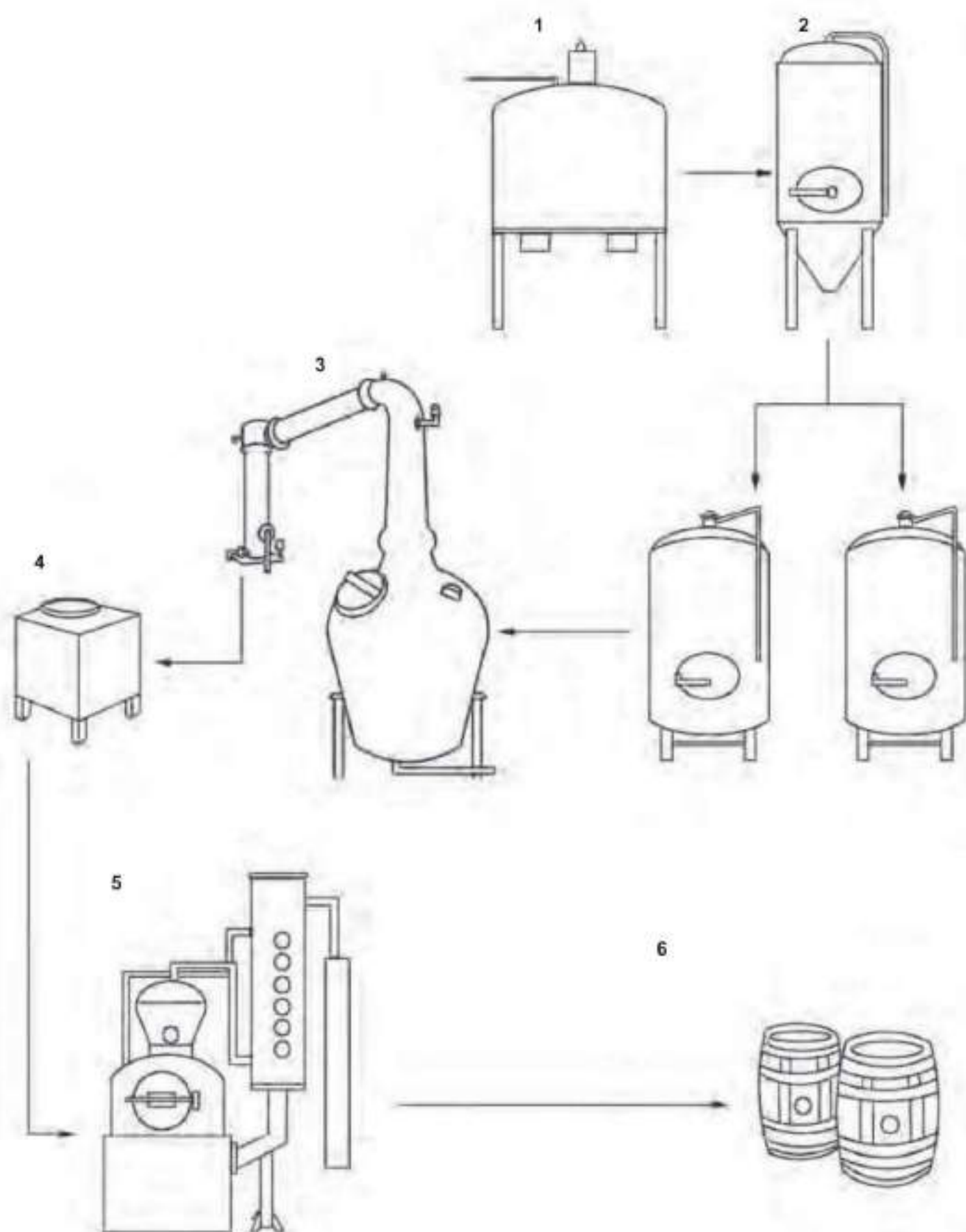
- The heads contain the unwanted lower-boiling congeners that come out at the beginning of the run.
- The tails contain the unwanted higher-boiling congeners that come out at the end of the run.
- The hearts are the desired spirit in the middle.

Because whiskey is not distilled at a high-separation level, it means that each phase bleeds into the adjacent phase. That is to say,

*At left, the major steps from barley to barrel.*

1. Mash Tun: Used to convert barley grain starches to sugars
2. Fermentation of the wash
3. Stripping of the wash to remove water
4. Collection of "low wine" spirits
5. Redistilling the spirits to produce final spirits for barreling
6. Barreling or aging of spirits

## The Process of Distillation: An Overview





there is a considerable amount of ethanol in the heads phase, and there are late-heads congeners at the beginning of the hearts phase. Similarly, there is a significant amount of early-tails congeners at the end of the hearts, and there is a considerable amount of ethanol in the tails phase. The whiskey, comprised mostly of ethanol and water, has a delicate balance of late-heads and early-tails congeners that make up the flavor profile of the whiskey.

There are literally thousands of these congeners, or chemical flavor compounds, created during the distilling process, all of which have the potential of adding or subtracting to the desired final flavor profile of the distilled spirit. Part of the art (as opposed to the science) of distilling is knowing when these congeners are created, and when to add or remove them. In flavor-specific spirits, such as brandy and whiskey, it is desirable to carry over selected congeners into the finished spirit. However, in flavor-neutral spirits, such as vodka, the goal is to remove as many congeners as possible to end up with a spirit that has a clean, nonspecific palate.

Because both the heads and the tails contain a lot of ethanol and residual desirable flavor, they are mixed together and saved for future recovery. The heads and tails when mixed together are called **feints**. Feints can be distilled separately to produce another whiskey run, or they can be mixed in with a future spirit run, where their ethanol and flavors are recovered as

a part of that run. However, each subsequent distillation produces its own set of heads, hearts, and tails, and the feints from those runs are also saved for future recovery.

## TWO-RUN DISTILLATION

When whiskey is made, it is usually done in two distillation runs: a beer-stripping run and a spirit run.

- *The beer-stripping run is generally done in a larger, high-volume pot still called a **beer stripper**. The beer stripper is used to distill the fermented wash and concentrate the ethanol and all the impurities into a distillate of about 25 percent ethanol, called **low wine**.*
- *The spirit run is done in a smaller whiskey still, such as a gooseneck or an artisan reflux still, called a **spirit still**. The spirit still is used to distill the low wine and refine it into the finished spirit. There are the two outputs retained from the spirit run: the finished spirit and the feints.*

For a beer-stripping run, the fermented wash, which is typically about 8 percent ABV, is loaded into the beer stripper, and the contents are brought to a boil. Because this run is just a primary distillation, the heads, hearts, and tails are not separated out. The entire output from this run is collected in a single lot, and the run

is continued until the aggregate percent alcohol is down to 25 percent ABV. This distillate is the low wine, which is the input to the spirit run.

To produce the finished whiskey, the spirit still is filled with the low wine from the beer-stripping run, and often a measure of feints from previous spirit runs. The spirit still is then brought to a boil.

It is with the spirit run that the distiller adjusts the boil-up rate to achieve a gentle, slow flow of distillate and carefully separates out the heads, hearts, and tails.





## SINGLE-RUN DISTILLATION

Some whiskey distilleries produce their whiskey in a single distillation. They do a spirit run directly from the wash. The artisan reflux stills discussed previously are well suited to this type of whiskey distillation, but it is labor-intensive and the distiller must pay a lot of attention to numerous smaller runs rather than one larger run.

Some people find the whiskey from a single-distillation run to be richer and have a more natural flavor, while others find it to be harsh and unrefined. In the following text, the more common double-distillation method is used.

### MAKING THE CUTS

Probably the most elusive part of the distilling process for making whiskey is making the cuts from heads to hearts and then to tails. **Making a cut** from one phase to the next is the point where the distiller switches the output so that it is collected in a different receiver than the previous phase. At the end of the spirit run, the heads will be in one container, the hearts in another, and the tails in a third one. The question is, when do you switch from one phase to the next?

Experienced distillers do this by taste. Even though there are measurable parameters such as still-head temperature and percent alcohol of the incoming spirit that can be used to judge when to make the cuts, taste and smell still

remain the most reliable methods for determining them.

Here are the empirical parameters for judging the cuts.

- *The percent alcohol of the spirit that is flowing out of the still (i.e., the incoming spirit)*
- *The still-head temperature*

These vary from one still to the next, and they vary based on the properties of the low wine (e.g., percent alcohol and quantity). It is possible to develop a consistent process using the same still and the same quantity and formulation of low wine, such that the parameters remain the same for each run.

For example, in a spirit run in an artisan reflux still with low wine that is 25 percent ABV:

Begin-cut (i.e., the cut from heads to hearts) is usually done when the evolving distillate is at about 80 percent and when the still-head temperature is about 180°F (82°C).

End-cut (i.e., the cut from hearts to tails) is often done at about 65 percent and when the still-head temperature is about 201°F (94°C).

However, a spirit distilled from a straight malt wash can often be end-cut as low as 60 percent. Also, a gooseneck still distilling the very

same wash may begin-cut at 72 percent and end-cut at 59 percent. Therefore, it is because of these nuances that smell and taste become the only truly reliable indicators of when to make the cuts.

### BEGIN-CUT

When making the begin-cut, the taste characteristics that the distiller is looking for are as follows. When a spirit run comes to boil and the first distillate starts flowing from the still, this is the beginning of the heads phase. The distiller can collect a small sample of the distillate on a spoon or in a wineglass and smell it. At this stage, the distillate will have the sickening smell of solvents (such as nail-polish remover or paint-brush cleaner). However, before long this solvent smell diminishes, and even when a sample is tasted, these compounds will be very faint. As the solvent character disappears completely, the distillate will start to take on a hint of whiskey. This flavor will increase until it becomes very pronounced and highly concentrated. It is when this flavor is clearly evident but is still increasing in intensity that the distiller cuts to the hearts phase.

### END-CUT

To make the end-cut, the distiller needs to monitor the flavor of



# THE CONTINUOUS-RUN PROCESS OF DISTILLATION

changes in taste. At the beginning of the hearts phase, the intensity of the whiskey flavor will still be increasing, and it will continue to do so until it becomes very strong. However, as the hearts continue, the intense whiskey flavor will fade into a smooth, sweet, pleasant flavor that will persist for most of the hearts. The flavor will change slightly as the hearts progress, but it will remain sweet and pleasant. Toward the end of the hearts, the flavor will start losing its sweetness, and a trace of harsh bitterness will begin to appear in the flavor. This harsh, bitter flavor is the onset of the tails. Although a small amount of this bitterness is considered to contribute to the “bite” character of the whiskey, the distiller should cut to the tails receiver before much of it is allowed to enter the hearts.

The tails can be collected until the evolving distillate is down to about 10 percent, and the still-head temperature is about 206°F or 208°F (97°C or 98°C). The reason for doing this is to render all the residual alcohol that is left in the still at the end of the hearts phase. This alcohol can then be recovered in a future spirit run.

The tails phase starts out bitter, and the bitterness becomes more intense as the tails continue, but as the tails progress, the bitterness subsides and gives way to a sweet-tasting water. This sweet water is called **backins**.

**I**N a continuous-run distillation process, wash is constantly entering the column, so all three phases (heads, hearts, and tails) are present in the column at all times. This means there can't be a discrete cut where the heads are drawn off and the hearts begin, or that the hearts end and the tails begin. All three phases must be drawn off at the same time.

A continuous-run column is a high-separation fractionating still that separates the compounds very well, so once the still is equilibrated and functioning in its steady state of operation, the distillers can determine which families of compounds are at each tray. For example, they might determine that the compounds coming out of the top two trays are heads compounds and route those two trays to the heads receiver.

Similarly, they might observe that the compounds coming out of the next four trays down are hearts. Then they might determine that the five trays below the hearts trays are producing tails and route them to the tails receiver. Below the tails trays just water would be coming out, and the valves would be closed, so it would be left to flow to the bottom of the column and then to a drain.

Because this type of still is not intermittent in its operation, it must be set up to constantly draw the three phases of distillate at all times. Although this is difficult to set up, it can produce very large quantities of spirit twenty-four hours a day for a long time.



*Continuous run still at Four Roses Distillery.*



*“Always carry a flagon of whiskey in case of snakebite, and furthermore, always carry a small snake.”*

— W.C. Fields, American actor and world-class drinker

# WHISKEY



*Very Fine Whiskey  
Bottle, circa 19xx. This  
vintage bottle was ac-  
quired at a flea market,  
then filled with Old  
Forrester*

**T**HIS chapter introduces the process of distilling a world's worth of whiskies, including North American styles of bourbon, Tennessee, rye, blended American, corn, and Canadian, and on to Scotch and Irish whiskies from Europe.

Of all of the basic categories of spirits, whiskey has spread the most across the world, achieving a geographic and stylistic diversity that is unmatched by any other type of distilled spirit. From the basic grain-based distilled spirits of ninth-century Ireland, Scotland, and northern Europe have evolved the classic whiskies of Scotland and Ireland. These spirits, in turn, served as the models for distillers in the newly settled North American colonies to produce what came to be first modern rye whiskey, and then in rapid succession, corn, bourbon, blended American, and Canadian whiskies.

All of these now classic styles of whiskey have, in recent decades, served as the stylistic inspiration for myriad new whiskies throughout the world, from Germany to Australia, and Nepal in between. Some of these new whiskies are based on existing styles. Japanese whisky distillers, for example, have generally taken their inspiration (and malt, and sometimes even their water) from Scotland. Others are boldly going forth in new directions, particularly among the new generation of American craft distillers.

*Stranahan's Colorado Whiskey*



# THE HISTORY OF BOURBON WHISKEY

**I**N the early 1700s, a combination of bad economic times and religious unrest against the Anglican Church in Great Britain set off a wave of emigration from Scotland and Ireland. These Scots, Irish, and so-called “Scotch-Irish” (Protestants from the northern Irish county of Ulster) brought to North America their religion, their distrust of government control, and their skill at distilling whiskey.

This rush, augmented by German immigrants of a similar religious and cultural persuasion, passed through the seaboard colonies and settled initially in Pennsylvania, Maryland, and western Virginia. Mostly small farmers, they quickly adapted to growing rye because of its hardiness and, in the western counties, Native American corn because of its high yields. Grain was awkward to ship to East Coast markets because of the poor roads, so many farmers turned to distilling their crops



*Whiskey barrels on display*

into whiskey. In Pennsylvania, these were primarily rye whiskeys; farther to the west and south corn whiskeys predominated. By

the end of the American War of Independence in 1784, the first commercial distilleries had been established in what was then the western Virginia county of Kentucky. From the start, they produced corn-based whiskeys.

In 1794, the cash-strapped federal government imposed the first federal excise tax on distillers. The farmer-distillers of western Pennsylvania responded violently. Federal tax agents were assaulted and killed by angry mobs. Order was finally restored when the federal government sent in an army of 15,000 militiamen, led by George Washington, to put down the revolt. The ringleaders were convicted and sentenced to be hanged. But cooler heads prevailed, and after jail time they

## **NOT-SO-TRIVIAL PURSUIT**

*The first waves of British settlers in North America were a thirsty lot. It is recorded that the Pilgrims chose to make final landfall in Massachusetts, even though their original destination was Virginia, primarily because they were almost out of beer.*

*The first locally made alcoholic beverage was beer, although the limited supply of barley malt was frequently supplemented by everything from spruce tips to pumpkin. Distilled spirits soon followed, with rum made from imported Caribbean molasses dominating in the northern colonies and an assortment of fruit brandies in the South.*





Label for *Hudson Baby Bourbon* by *Tuthilltown Spirits*

were pardoned and released.

This situation did provoke a new migration of settlers through the Cumberland Gap and into the then-western frontier lands of Kentucky and Tennessee. In these new states, farmers found ideal corn-growing country and smooth limestone-filtered water, two of the basic ingredients of bourbon whiskey.

The name *bourbon* comes from a county in eastern Kentucky, which in turn was named for the Bourbon kings of France, who had aided the American rebels in the Revolu-

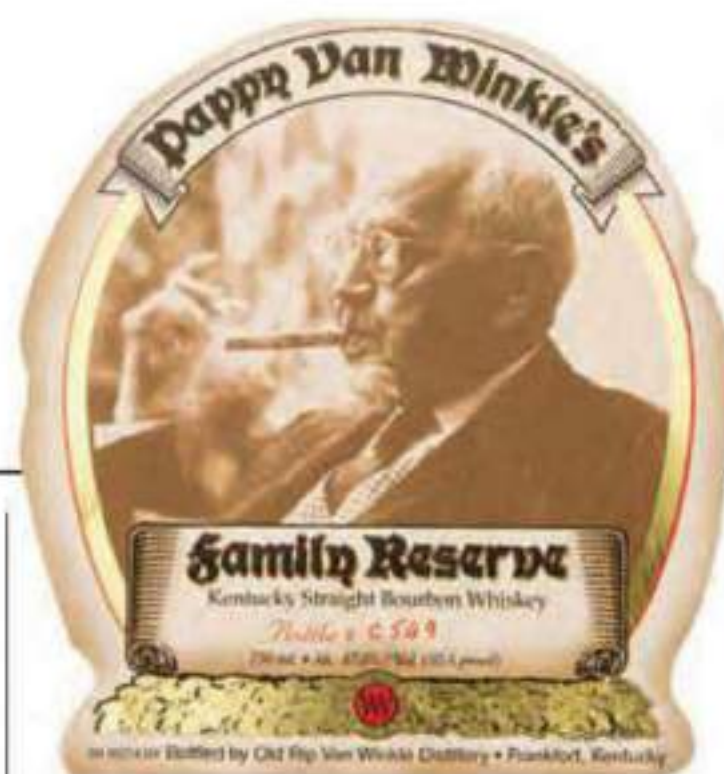


*Benjamin Prichard's Double Barreled Bourbon* from *Prichard's Distillery*

tionary War. Bourbon County was in the early nineteenth century a center of whiskey production and transshipping. (Ironically, at the present time, it is a “dry” county.)

The local whiskey, made primarily from corn, soon gained a reputation for being particularly smooth because the local distillers aged their products in charred oak casks. The adoption of the “sour mash” grain conversion technique further distinguished bourbon from other whiskey styles.

By the 1840s, bourbon was recognized and marketed



Label for *Pappy Van Winkle's Family Reserve Kentucky Straight Bourbon Whiskey*

as a distinctive American style of whiskey, although not as a regionally specific spirit. Bourbon came to be produced in Kentucky, Tennessee, Indiana, Illinois, Ohio, Missouri, Pennsylvania, North Carolina, and Georgia, although the only legal requirement for calling a whiskey “bourbon” is that it be produced in the United States. Nowadays, bourbon production is slowly expanding to other states as new craft whiskey distillers come online. Initially bourbon was made in pot stills, but as the century progressed the new column still technology was increasingly adopted. The last old-line pot still plant closed in Pennsylvania in 1992, but the technique was revived in Kentucky in 1995 when the historic Labrot & Graham Distillery was renovated and reopened with a set of new, Scottish-built copper pot stills. More recently, most of the new generation of craft whiskey distillers use pot stills.

The late nineteenth century saw the rise of the temperance movement, a social phenomenon driven by a potent combination of religious and women’s groups. Temperance societies, such as the Women’s Christian Temper-

## REVIVAL OF THE FITTEST

*It may seem odd, but Scotch whisky may be bourbon’s inspiration for long-term revival. The steady growth in sales of single malt and high-quality Scotch whiskies has not gone unnoticed in bourbon country. All of the Kentucky and Tennessee whiskey distilleries are now marketing high-end “single cask” and “small batch” whiskies that have found great success among upscale consumers. More than thirty craft whiskey distilleries have opened in the past few years across the United States to cater to this increasing demand for quality over quantity. The United States may yet, in the words of one commentator, “turn away from foreign potions and return to its native spirit.”*





Label for **Blanton's Single Barrel Kentucky Straight Bourbon Whiskey** by **Buffalo Trace Distillery**

ance Union and the Anti-Saloon League, operated nationally, but they were particularly active in the Southern states. The notion of temperance soon gave way to a stated desire for outright prohibition, and throughout the rest of the century an assortment of states and counties adopted prohibition for varying lengths of time and degrees of severity. This muddle of legal restrictions played havoc in the bourbon industry, because it interfered with the production and aging of stocks of whiskey.

National Prohibition in 1919 had effects on the bourbon industry beyond shutting down most of the distilleries. Drinking did not stop, of course, and the United States was soon awash in illegal alcohol, much of it of dubious



Souvenir bottle of **Evan Williams Kentucky Straight Bourbon Whiskey** by **Heaven Hill Distilleries**

quality. What did change was the American taste in whiskey. Illicit moonshine and imported Canadian whiskeys were lighter in taste and body than bourbon and rye. The corresponding increase in popularity of white spirits such as gin and vodka further altered the marketplace. When Repeal came in 1933, a number of the old distilleries didn't reopen, and the industry began a slow consolidation that lasted into the early 1990s, at which time there were only ten distilleries in Kentucky and two in Tennessee.

Bottle of **Four Roses Distillery's Single Barrel Kentucky Straight Bourbon Whiskey**



Middle: **Elijah Craig 18-year-old Kentucky Straight Bourbon Whiskey** by **Heaven Hill Distilleries**

Right: **Buffalo Trace Distillery's Kentucky Straight Bourbon Whiskey**



*A bottle of Templeton Prohibition Era  
Recipe Small Batch Rye Whiskey  
from Templeton Rye*



*Below: The hand-blown bottle of **Rendezvous Rye Whiskey** casts a wavy amber shadow on a gift box*



## TENNESSEE WHISKEY

Tennessee whiskey is a first cousin of bourbon, with virtually an identical history. The same sort of people used the same sort of grains and the same sort of production techniques to produce a style of whiskey that, remarkably, is noticeably different. The early whiskey distillers in Tennessee, for reasons that are lost to history, added a final step to their production process when they began filtering their whiskey through thick beds of sugar-maple char-

coal. This filtration removes some of the congeners (flavor elements) in the spirit and creates a smooth, mellow palate. The two remaining whiskey distillers in the state continue this tradition, which a distiller at the Jack Daniel's Distillery once described as being "same church, different pew."

## RYE WHISKEY

The Scotch-Irish immigrant distillers had some exposure to using rye in whiskey production, but for their German immigrant neighbors, rye had been the primary grain used in the production of schnapps and vodka back in northern Europe. They continued this distilling practice, particularly in Pennsylvania and Maryland, where rye whiskey, with its distinctive hard-edged, grainy palate, remained the dominant whiskey type well into the twentieth century.

Rye whiskey was more adversely affected by National Prohibition than bourbon was. A generation of consumers weaned on light-bodied and relatively delicate white spirits turned away from the pungent, full-bodied straight rye whiskies. Production of rye whiskies had vanished altogether from the Mid-Atlantic states by the 1980s. A handful of modern rye whiskies are currently being made by bourbon distilleries in Kentucky and Indiana. The United States's first indigenous whiskey style is today only barely surviving in the marketplace. Its primary use is for blending to give other



*Hudson Manhattan Rye Whiskey by  
Tuthilltown Spirits*





Label for  
Rye Whiskey  
from the  
Isaiah Morgan  
Distillery

A bottle of **Mellow Corn,  
Kentucky Straight Corn  
Whiskey** by Medley Company

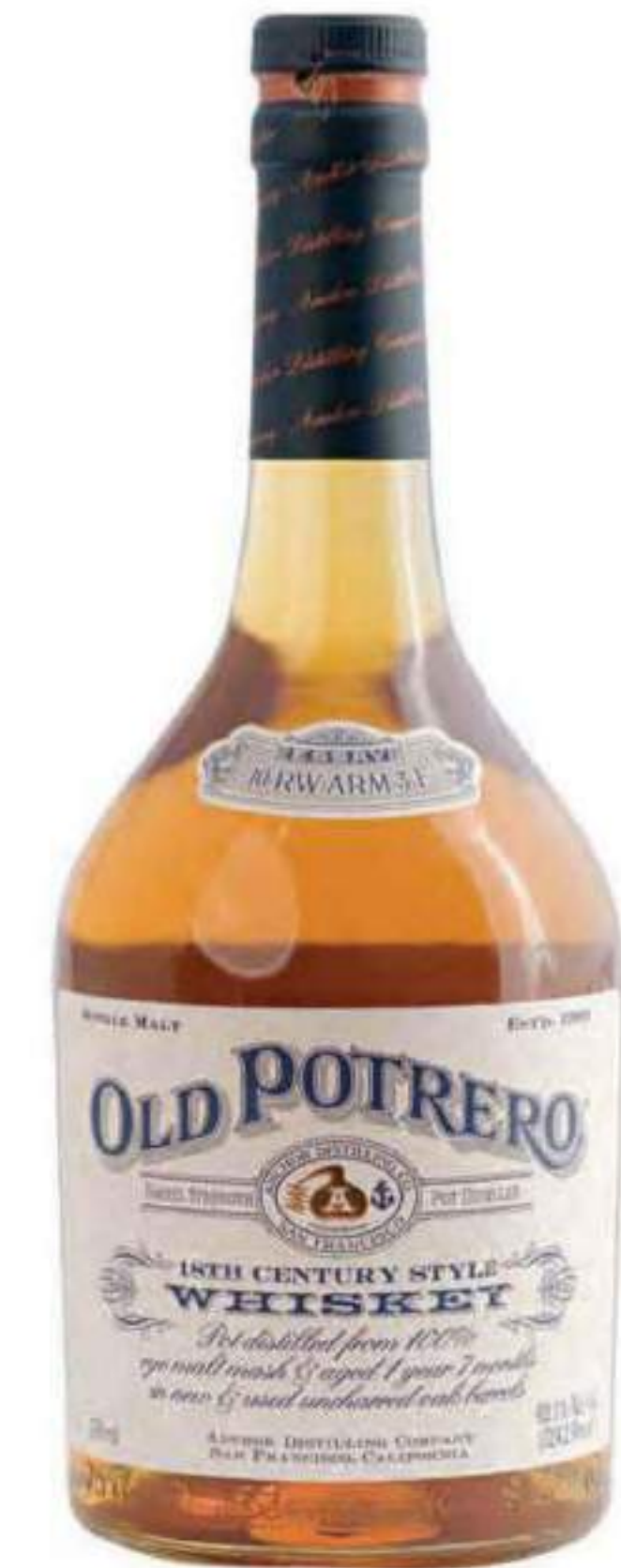
whiskies more character and backbone, although a small but vocal group of rye whisky enthusiasts continue to champion it, and a number of new craft distillers are again producing their interpretations of this classic American whiskey style.

## BLENDED AMERICAN WHISKEY

Blended whiskies date from the early nineteenth century when the invention of the column still made possible the production of neutral spirits. Distillers blended one or more straight whiskies (bourbon and rye) with these neutral spirits in varying proportions to create their own branded blend. The taste and quality of these whiskies, then as now, varies according to the ratio of straight whiskey to neutral grain spirit. Early blends were frequently flavored with everything from sherry to plug tobacco. Compared to straight whiskies, they were inexpensive and bland. Modern blends utilize dozens of different straight whiskies to ensure a consistent flavor profile. Blended American whiskies had a great sales boost during and just after World War II, when distillers promoted them as a way of stretching their limited supply of straight whiskey. Blended whiskies were considered to be too bland by bourbon and rye drinkers, and consumers with a taste for lighter spirits soon migrated over to vodka and gin.

## CORN WHISKEY

Corn whiskey, an unaged, clear spirit, was the first truly American whiskey, and the precursor to bourbon. Scotch-Irish farmers produced it in their stills for family consumption or to trade for store goods. When state and federal excise taxes were permanently



**Old Potrero 18th Century Style Rye Whiskey** by Anchor Distilling





A bottle of **Platte Valley Straight Corn Whiskey** by **McCormick Distilling Co.**

introduced during the Civil War, most of the production of corn whiskey went underground to become moonshine, where it has remained ever since. A modest amount of commercial corn whiskey is still produced and consumed in the South, while an increasing number of craft whiskey distilleries are now experimenting with this more interesting alternative to vodka.

## CANADIAN WHISKY

Canadian whiskies, as with their American cousins, originated on the farm. These early whiskies were made primarily from rye, though over time Canadian distillers turned to corn, wheat, and other grains. Canadians continue to refer to their whisky as “rye,” even though the mash bill is now predominantly a mix of corn, wheat, and barley. Several of the new generation of Canadian craft distillers are, however, marketing both all-malt and “true” rye whiskies.



Above:  
A bottle of **Snake River Stampede Blended Canadian Whisky**

Left:  
**Forty Creek Small Batch Reserve Whisky (Canadian)** by **Kittling Ridge Estate Wines & Spirits**



# THE BASIS OF NORTH AMERICAN WHISKIES



Whiskey barrels on display on an antique truck



A cooper shoots air into a charring barrel to stoke the flames.



A cooper forms a barrel before attaching hoops around the outside.

**N**ORTH American whiskies are all-grain spirits that have been produced from a mash bill that usually mixes together corn, rye, wheat, barley, and other grains in different proportions, and then is aged for an extended period of time in wooden barrels. These barrels may be new or used, and charred or uncharred on the inside, depending on the type of whiskey being made.

Most non-craft North American whiskies are made in column stills. The United States government requires that all whiskies:

- *Be made from a grain mash.*
- *Be distilled at 90 percent ABV or less.*
- *Be reduced to no more than 62.5 percent ABV (125° proof) before being aged in oak barrels (except for corn whiskey, which does not have to be aged in wood).*
- *Have the aroma, taste, and characteristics that are generally attributed to whiskey.*
- *Be bottled at no less than 40 percent ABV (80° proof).*



# CLASSIFICATIONS OF NORTH AMERICAN WHISKIES

**N**ORTH AMERICAN whiskies are essentially classified by the type or variety of grains in the mash bill, the percentage or proof of alcohol at which they are distilled, and the duration and manner of their aging.



*A stirring paddle sits over a moonshine wash.*

STYLE	DEFINITION	HOWEVER...
<b>Bourbon Whiskey</b>	Must contain a minimum of 51 percent corn, be produced in the United States, be distilled at less than 80 percent ABV (160° proof), and be aged for a minimum of two years in new charred barrels	In practice, virtually all straight whiskies are aged for at least four years. Any bourbon—or any other domestic or imported whiskey—that is aged less than four years must contain an age statement on the label.
<b>Small Batch Bourbon</b>	Bourbons that are bottled from a small group of specially selected barrels that are blended together	The choice of barrels is purely subjective on the part of the master blender.
<b>Single Barrel Bourbon</b>	Bourbon from one specific cask	The choice of the barrel is purely subjective on the part of the master blender.
<b>Tennessee Whiskey</b>	Must contain a minimum of 51 percent corn, be distilled at less than 80 percent ABV (160° proof), be filtered through a bed of sugar-maple charcoal, and be aged for a minimum of two years in new charred barrels	In recent years, as the sales volume of Tennessee whiskies has increased, the aging on many of the major brands beyond the required minimum of two years has decreased. You have been warned.
<b>Rye Whiskey</b>	Must contain a minimum of 51 percent rye grain, be distilled at less than 80 percent ABV (160° proof), and be aged for a minimum of two years in new charred barrels	Rye whiskey's dry, peppery, astringent character requires at least four years of aging to soften its otherwise hard edge.
<b>Blended American Whiskey</b>	Must contain at least 20 percent straight whiskey, with the balance being unaged neutral spirit or, in a few cases, high-proof light whiskey	It has a general whiskey flavor profile (most closely resembling bourbon), but lacks any defining taste characteristic.





*Barley growing in a field in Washington State*

<b>STYLE</b>	<b>DEFINITION</b>	<b>HOWEVER...</b>
<b>Corn Whiskey</b>	This commercial product must contain at least 80 percent corn, be distilled at less than 80 percent ABV (160° proof), and be aged for a minimum of two years in new or used uncharred barrels.	Corn whiskey is the exception to the rule that requires whiskey to be aged to reach its full flavor potential. Well-made corn whiskey has a bright, fruity, almost sweet palate that fades with time.
<b>Moonshine Whiskey</b> (aka white lightning, corn likker, white dog)	Distilled from a mix of corn and sugar and aged in Mason jars and jugs	It is aged for the length of time that it takes the customers to get home or the Dukes of Hazzard to make a delivery in the General Lee.
<b>Canadian Whisky</b>	Made primarily from corn or wheat, with a supplement of rye, barley, or barley malt. There are no Canadian government requirements for the percentages of grains used in the mash bill. They are aged, primarily in used oak barrels, for a minimum of three years, with most brands being aged for four to six years.	Virtually all Canadian whiskies (except the pot-distilled malt whiskies of Glenora in Nova Scotia) are blended from different grain whiskies of different ages.
<b>Bulk Canadian Whiskies</b>	Usually shipped in barrels to their destination country, where they are bottled. These bulk whiskies are usually bottled at 40 percent ABV (80° proof) and are usually no more than four years old.	Additional aging statements on the labels of some of these whiskies should be treated with deep skepticism.
<b>Bottled in Canada Whiskies</b>	Generally have older whiskies in their blends and are bottled at 43.4 percent ABV (86.8° proof)	Age, in this context, is still a relative thing. Ten-year-old Canadian whisky is considered a really, really old whisky.





*Peregrine Rock Single Malt Whiskey by St. James Spirits*

## **NORTH AMERICAN WHISKEY REGIONS**

North America's variations of whiskey are as nuanced and distinct as the continent's regions. Most are aged in new wood barrels, but beyond that there has been much experimenting in recent years.

## **UNITED STATES**

Kentucky produces all types of North American whiskeys except for Tennessee and Canadian. It currently has the largest concentration of whiskey distilleries on the continent, but may soon cede that claim to Michigan, Colorado, or one of the Pacific Northwest states as new craft distilleries continue to open.



*Barrels of bourbon aging at the Woodford Reserve Distillery*



*Most  
Wanted  
Kansas  
Whiskey  
by High  
Plains Inc.*



Tennessee started out as bourbon country, but today its two remaining whiskey distilleries specialize in the distinctive Tennessee style of whiskey.

Other states—primarily Indiana, Illinois, Virginia, and Missouri—have large distilleries that produce straight whiskeys, although some of these plants are currently mothballed.

#### **CANADA**

Ontario has the largest concentration of whisky distilleries in Canada, with three. Alberta has two, and Manitoba, Quebec, and Nova Scotia each have one. With the exception of Glenora in Nova Scotia and Kittling Ridge in Ontario, all of the other current Canadian whisky distilleries produce only blended Canadian whisky, although a number of new craft whisky distilleries are listed in the index.



## **REGIONAL FLAVORS**

*There are now more than thirty craft distilleries in at least seventeen states that are producing such standard whiskey styles as bourbon, corn, and rye, as well as many experimental variations. One example is Wasmund's Single Malt Whiskey from the Copper Fox Distillery of Sperryville, Virginia. This distillery has its own floor maltings and soaks its aging spirit in apple-wood chips. This sort of production twist, which has its roots in craft brewing, is increasingly becoming a distinctive feature of American craft distilling.*

*Additionally, there are a number of distilling plants scattered around the country that rectify (redistill), process, and bottle spirits that were originally distilled elsewhere. These distilleries, in addition to sometimes bottling bourbon that has been*



*Rick Wasmund malts barley by hand at the Copper Fox Distillery.*

*shipped to them in bulk, may also create their own blended whiskeys. These whiskeys tend to be relatively inexpensive “well” brands that are sold mainly to taverns and bars for making mixed drinks.*



## A WHISKEY LEXICON

**Bonded whiskey** is bourbon from a single distillery that was produced in a single “season” and then aged for at least four years in a government-supervised “bonded” warehouse. Distillers originally did this to avoid having to pay the excise tax until the whiskey was aged and ready for market. Consumers came to (erroneously) regard the “bottled in bond” designation as a statement of quality. Bonded whiskeys are not much of a factor in today’s market, although they still exist.

**The mash** is the mix of crushed grain (including some malt that contains enzymes to break down grain starches into sugars) and hot water from which the distiller draws a liquid extract called wort. The wort is fermented into a simple beer called the wash, which is then distilled.

**Sour mash** is the fermentation process by which a percentage of a previous fermentation is added to a new batch as a “starter” to get the fermentation going and maintain a level of consistency from batch to batch. A sweet mash means that only fresh yeast is added to a new batch to start fermentation.

**Straight whiskey** is unblended whiskey that contains no neutral spirit. Bourbon, Tennessee, rye, and corn whiskeys are straight whiskeys. There is also a spirit, simply called “straight whiskey,” that is made from a mixture of grains, none of which accounts for 51 percent of the mash bill.



In this whiskey barrel storage building, a black mold and rust thrive on the “angel’s share” of evaporated alcohol and the Kentucky humidity.



Wash being made in the mash tun



Bubbles rise during a grain fermentation.



# SCOTCH WHISKY, IRISH WHISKEY, AND OTHER WHISKIES OF THE WORLD

**W**HISKY is defined, in its most basic sense, as a spirit that is distilled from grain. Sometimes the grain has been malted, sometimes not. What distinguishes whisky from vodka, gin, aquavit, and other grain-based spirits is that it is aged, often for long periods of time, in wooden barrels (usually oak). This barrel aging smooths the rough palate of the raw spirit, adding aromatic and flavoring nuances along with the base amber hue that sets whiskies apart from white grain spirits.

## THE HISTORY OF SCOTCH WHISKY

The basis of Scotch whisky is the heather-flavored ales made from barley malt that the Picts and their prehistoric ancestors brewed. Archeologists have found evidence of such brewing dating back to at least 2000 BCE. This ale, still produced today by at least one Scottish microbrewer, was low in alcohol and not very stable.

Starting in the ninth century, Irish monks arrived in Scotland to Christianize their Celtic brethren. They brought along the first primitive stills, which they had picked up during their proselytizing visits to mainland Europe during the Dark Ages. The local Picts soon found that they could create a stable alcoholic beverage by distilling heather ale. Simple stills came to be found in most rural homesteads, and homemade whisky became an integral part of Gaelic culture.



*Forsyth stills at the **Penderyn Whisky Distillery** in Wales*



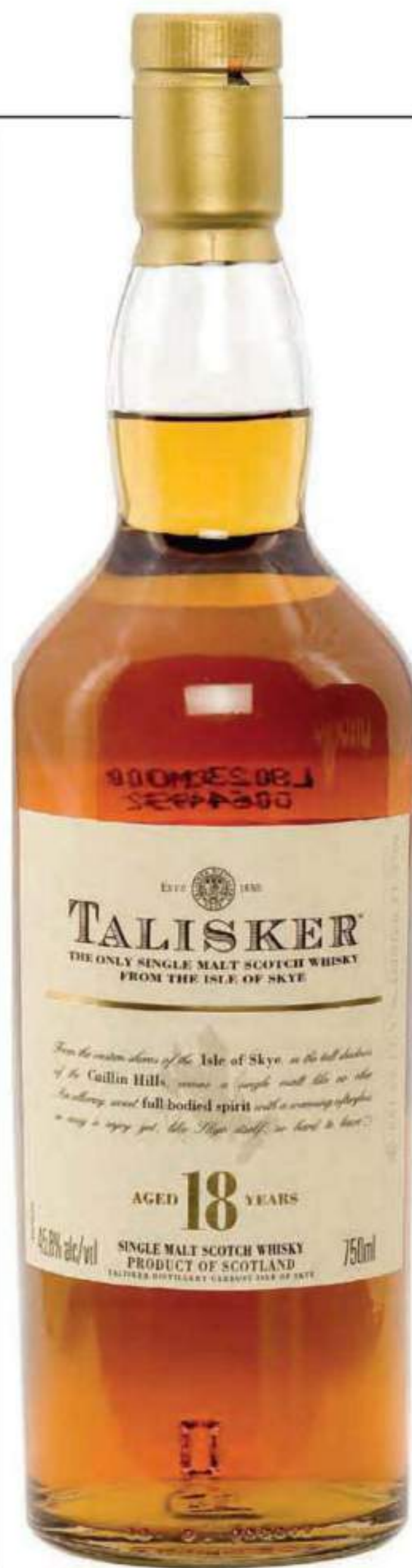
*Laphroaig 10-year-old  
Single Malt Scotch Whisky  
from the Island of Islay*



### **WHY BLENDED SCOTCH WHISKY IS A GOOD THING, EVEN IF YOU PREFER SINGLE MALTS**

*It is a truism of religion that converts frequently become the most zealous of believers. Among freshly minted modern-day enthusiasts of Scotch malt whiskies, it is a frequently heard refrain that malt whiskies are superior to the blended article, and that the latter are just not worth bothering with. Personal taste is ultimately subjective, of course. But single malt drinkers should raise their hats in salute whenever a Dewar's or Johnnie Walker delivery truck drives by, because without these blended brands most of the remaining malt distilleries would not exist. Blended Scotch whiskies require a blend of dozens of different malt whiskies to be combined with the grain whisky to create the desired blend. The individual percentages of each malt whisky may be small, but each contributes its unique character to the blend. A blender will thus need to buy or produce a large amount of different malt whiskies to maintain the consistency of the blend. Thus, for a malt whisky distillery, the single malt may get all of the glory, but the blends ultimately pay the bills.*

*Talisker 18-year-old Single  
Malt Scotch Whisky*





*Highland Park 12-year-old  
Single Malt Scotch Whisky*



As long as Scottish kings ruled the country from Edinburgh the status quo of whisky as just another farm product was more or less maintained. But the Act of Union in 1707 that combined England, Wales, and Scotland into the United Kingdom altered the Scotch whisky scene forever. The London government soon levied excise taxes on Scottish-made whisky (while at the same time cutting the taxes on English gin). The result was a predictable boom in illicit distilling. In 1790s Edinburgh it was estimated that more than 400 illegal stills competed with

just eight licensed distilleries. A number of present-day Scottish distilleries, particularly in the Highlands, have their origins in such illicit operations.

The Excise Act of 1823 reduced taxes on Scotch whisky tolerably. This act coincided with the dawn of the industrial revolution, and entrepreneurs were soon building new, state-of-the-art distilleries. The local moonshiners (called smugglers) did not go quietly. Some of the first licensed distillers in rural locations were threatened by their illicit peers. But in the end, production efficiencies and the rule of law won out. The whisky that came from these distilleries was made exclusively from malted barley that had been kiln dried over peat fires. The smoke from these peat fires gave the malt a distinctive tang that made the Scottish product instantly identifiable by whisky drinkers all over the world.

The nineteenth century brought a rush of changes to the Scotch whisky industry. The introduction of column stills early in the 1830s led to the creation of grain whisky, which in turn led to blended Scotch whisky in the late 1860s. The smooth blandness of the grain whisky toned down the assertive smoky character of the malt whiskies.

The resulting blended whisky was milder and more acceptable to foreign consumers, particularly the English, who turned to Scotch whisky in the 1870s when a phylloxera infestation (an insect pest that destroys grape vines) in



*Barrels aging at the Penderyn Whisky Distillery in Wales*





**Keith Tench**, visitor centre manager, poses with distiller **Gillian Howell** at the **Penderyn Whisky Distillery** in Wales.

the vineyards of Europe disrupted supplies of cognac and port, two of the mainstays of civilized living. Malt whisky distilleries were bought up by blending companies, and their output was blended with grain whiskies to create the great blended brands that have come to dominate the market. The malt whisky distilleries took a backseat to these brands and sold most or, in some cases, all of their production to the blenders. The recent popular revival of malt whiskies has led most of the distilleries to come out with bottlings of their own products.

By the 1970s, international liquor companies owned most of the malt whisky distilleries, a situation that continues to this day.

## THE HISTORY OF IRISH WHISKEY

The Scots most likely learned about distilling from the Irish (though they are loath to admit it). The Irish in turn learned about it, according to the Irish at least, from missionary monks who arrived in Ireland in the seventh century. The actual details are a bit sketchy for the next 700 years or so, but it does seem that monks in various monasteries were distilling *aqua vitae* ("water of life"), primarily for making medical compounds. These first distillates were probably grape or fruit brandy rather than grain spirit. Barley-based whiskey (the word derives from *uisce beatha*, the Gaelic interpretation of *aqua vitae*) first appears in the historical

record in the mid-1500s, when the Tudor kings began to consolidate English control in Ireland. Queen Elizabeth I was said to be fond of it and had casks shipped to London regularly.

The imposition of an excise tax in 1661 had the same effect as it did in Scotland, with the immediate commencement of the production of *poteen* (the Irish version of moonshine). This did not, however, slow the growth of the distilling industry, and by the end of the eighteenth century there were more than 2,000 stills in operation.

Under British rule, Ireland was export oriented, and Irish distillers produced large quantities of pot-distilled whiskey for export into the expanding British Empire (along with grains and assorted



Distiller **Lance Winters** leads a group of other distillers on a tour of **St. George Spirits/Hangar One Vodka**. Here they are marveling at the gleaming column stills.



<b>DISTILLING TIMELINE</b>			
<b>SPIRIT TYPE</b>	<b>FERMENTATION</b>	<b>MIN. AGING</b>	<b>MAX. AGING</b>
<b>BRANDIES</b>			
Brandy V.S.	3 weeks	2 years	5 years
Brandy VSOP	3 weeks	4 years	15 years
Brandy X.O.	3 weeks	6 years	20–30 years
Grappa	1 week	1 month	3 years
Apple Brandy	3 weeks	2 years	20 years
Fruit Brandy	3 weeks	4–6 months	4 years
<b>WHISKIES</b>			
Scotch	1 week	3 years	30 years
Irish	1 week	3 years	10 years
Bourbon	1 week	2 years	20 years
Tennessee	1 week	2 years	6 years
Rye	1 week	2 years	25 years
Corn	4 days	2 years	2 years
Canadian	1 week	3 years	10 years
Moonshine	4 days	1 week	1 week
<b>RUMS</b>			
White	3 days	2 months	2 years
Golden	3 days	1 year	3 years
Dark	1 week	1 year	4 years
Añejo/Aged	1 week	5 years	30 years
<b>TEQUILAS</b>			
Blanco	1 week	None	2 months
Reposado	1 week	3 months	9 months
Añejo/Aged	1 week	1 year	4 years
<b>VODKAS</b>			
All	3 days	None	3 months
<b>GINS</b>			
Dry	3 days	None	None
Genever	1 week	1 year	3 years

foodstuffs). In the late nineteenth century, more than 400 brands of Irish whiskey were being exported and sold in the United States.

This happy state of affairs lasted into the early twentieth century, when the market began to change. The Irish pot still users were slow to respond to the rise of blended Scotch whisky with its column-distilled, smooth-grain-whisky component. When National Prohibition in the United States closed off their largest export market, many of the smaller distilleries closed. The remaining distilleries then failed to anticipate the coming of Repeal (unlike the Scotch distillers) and were caught short when it came. The Great Depression, trade embargoes between the newly independent Irish Republic and the United Kingdom, and World War II caused further havoc among the distillers.

In 1966, the three remaining distilling companies in the Republic of Ireland—Powers, Jameson, and Cork Distilleries—merged into a single company, Irish Distillers Company (IDC). In





**Yamazaki Distillery**  
Shimamoto, Osaka,  
Japan  
**12-year-old  
Single Malt Whisky  
(Japan)**

1972, Bushmills, the last distillery in Northern Ireland, joined IDC. In 1975, IDC opened a new mammoth distillery at Midleton near Cork, and all of the other distilleries in the republic were closed down with the production of their brands being transferred to Midleton. For a fourteen-year period, the Midleton plant and Bushmills in Northern Ireland were the only distilleries in Ireland.

This sad state of affairs ended

in 1989, when a potato-peel ethanol plant in Dundalk was converted into a whiskey distillery. The new Cooley Distillery began to produce malt and grain whiskeys, with the first three-year-old bottlings released in 1992.

## THE HISTORY OF JAPANESE WHISKY

The modern Japanese whisky industry can trace its beginnings back to one man, Masataka Taketsura. The son of a sake brewer, Taketsura went to Scotland in 1918 and spent two years studying chemistry at Glasgow University and working at a Scotch whisky distillery in Rothes in the Highlands. He returned to Japan in 1920 with a Scottish bride and a determination to change the Japanese distilling industry.

The Japanese were then, as they are now, major consumers of Scotch whisky. Locally produced spirits, however, were limited to the fiery sorghum- or sweet-potato-based shochu, and a handful of dubious “whiskies” that were little more than neutral spirits colored with caramel. Taketsura convinced the owners of what became the Suntory Company to begin production of barley malt and grain whiskies based on the Scottish model. These whiskies, some of which are made from imported peat-smoked Scottish malt, became very successful in the Japanese market. Other distilleries followed Suntory’s lead, and these whiskies, based on Scotch whisky models (and later bourbon whis-

**Karuizawa Number  
One Single Cask  
Whisky (Japan).** The  
distillery is located in the  
foothills of Mount Asama,  
an active volcano.



key), soon dominated the market.

Modern Japanese distillers (including the Nikka Whisky Distillery, which was founded by Taketsura in 1934) have followed this trend and nowadays produce and market a full range of malt and blended whiskies.



<b>STYLE</b>	<b>DEFINITION</b>	<b>HOWEVER...</b>
<b>Single Malt Scotch Whisky</b>	Malt whisky that has been produced at one distillery. It may be a mix of malt whiskies from different years. The barley malt for Scotch whisky is first dried over fires that have been stoked with dried peat. The peat smoke adds a distinctive smoky tang.	If it contains a mix of whiskies from different years, the age statement on the bottle label gives the age of the youngest spirit in the mix.
<b>Vatted Malt Scotch Whisky</b>	Blend of malt whiskies from different Scottish distilleries	A much underrated style, for no good reason. The term blended malt whisky means the same thing.
<b>Scotch Grain Whisky</b>	Made from wheat or corn with a small percentage of barley and barley malt	Rarely bottled, but well-aged examples can be delicate drams.
<b>Blended Scotch Whisky</b>	Blend of grain whiskey and malt whiskey	The ratio of malt whisky to grain whisky in the blend can vary considerably among brands. And the number of malt whiskies in the malt whisky component can range from a handful to dozens.
<b>Irish Pot Still Whiskey</b>	Unless labeled as such, Irish whiskeys are a mix of pot- and column-distilled whiskeys.	Once upon a time, all Irish whiskies were pot distilled. Column stills were for Scots.
<b>Irish Malt Whiskey</b>	Can be pot distilled, column distilled, or a mixture of both	Irish malts have made a welcome comeback in recent years.
<b>Irish Whiskey</b>	A blend of malt and grain whiskies	The ratio of malt to grain whiskey can vary widely, which is not necessarily reflected in the price.
<b>Japanese Malt Whisky</b>	Produced in pot stills from lightly peated barley malt	Broadly modeled on Scottish Highland Malt Whiskies, and in some cases done very well indeed.
<b>Japanese Whisky</b>	A blend of malt whisky (Japanese or Scotch) and domestically produced grain whisky	Not to be confused with Shochu, native Japanese whisky, which is made from rice, sorghum, or barley, and is a very different earthy sort of spirit.
<b>New Zealand Single Malt Whisky</b>	Pot-distilled malt whisky	New Zealand whisky distilleries open and close with the frequency of rugby sports bars, so good luck finding any.
<b>New Zealand Blended Whisky</b>	A mix of domestic malt and grain whiskies	Occasionally it may even have some domestically made whisky in it.
<b>Australian Whisky</b>	All currently produced Australian whiskies are pot-distilled malt whiskies	Tasmania is the center of the new generation of Australian whisky distilling.



Thousands of barrels stacked  
outside a cooperage

## THE HISTORY OF NEW ZEALAND AND AUSTRALIAN WHISKY

Scottish emigrants brought their whisky-making skills to New Zealand in the 1840s. A thriving whisky industry soon developed and operated until 1875, when new, excessively high excise taxes and heavy competition from imported British whiskies forced the local commercial distilleries to shut down. A new, almost commercial-sized moonshine trade quickly replaced them, a situation that continued for almost a century.

In 1968 a new whisky distillery opened in Dunedin. It produces a range of malt and grain whiskies, broadly in the Scottish style, from locally grown grain. Even the barley malt is kilned and smoked using local peat.

Australian whisky production has experienced a similar varied history, with assorted nineteenth-century producers popping up in the various states, only to be driven out of business by British imports. Abortive attempts in the 1990s to revive whisky production have been followed more recently by a new generation of more successful craft whisky distillers, particularly on the island of Tasmania.



## THE BASIS OF SCOTCH WHISKY, IRISH WHISKEY, JAPANESE WHISKY, AND NEW ZEALAND AND AUSTRALIAN WHISKY

All of these whiskey styles, while very different in taste and style, are based on malted barley as the dominant source of flavor and character.

### SCOTLAND

There are two basic categories of Scotch whisky: malt whisky, which is made exclusively from malted barley that has been dried over smoking peat fires, and grain whisky, which is made from unmalted wheat or corn. These whiskies are aged in used wooden bourbon or sherry barrels for a minimum of three years, although five to ten years is the general practice.

### IRELAND

There are two basic categories of Irish whiskey: malt whiskey, which is made exclusively from malted barley that has been kiln-dried, but *not* over peat fires, and

grain whiskey, which is made from unmalted wheat or corn. These whiskeys are aged in used wooden bourbon or sherry barrels for a minimum of three years, although five to eight years is the norm.

### JAPAN

Japanese whiskies, both malt and blended, are broadly based on Scotch whiskies, with some top brands even being made with imported Scottish water and peat-smoked barley malt. The peat-smoke character of Japanese whiskies is generally more subtle and delicate than their Scottish counterparts. Japanese whiskies may be aged in both new and used (usually bourbon) wooden barrels, which may be either charred or uncharred.

### NEW ZEALAND AND AUSTRALIA

New Zealand and Australian whiskies both draw on Scottish, Irish, and American traditions in a cheerfully mixed manner, using both peated and unpeated locally-grown barley malt to produce mostly pot-distilled malt whiskies that are aged in used bourbon and wine barrels for a theoretical, if not always absolute, minimum of six years for malt whisky.



*Detail of fermenting barley wash for making whiskey*



## **THE DISTILLATION OF SCOTCH WHISKY, IRISH WHISKEY, JAPANESE WHISKY, AND NEW ZEALAND AND AUSTRALIAN WHISKY**

Double- and even triple-distillation is the norm for this family of barley malt-based whiskies.

### **SCOTLAND**

All Scotch malt whiskies are double distilled in pot stills, whereas Scotch grain whiskies are made in column stills.

### **IRELAND**

Irish whiskeys, both blended and malt, are usually triple distilled through both column and pot stills, although there are a few exclusively pot-distilled brands.

### **JAPAN**

Japanese whiskies follow the Scottish tradition, with malt whiskies being double distilled in pot stills and grain whiskies in column stills.

### **NEW ZEALAND AND AUSTRALIA**

Both New Zealand and Australian malt and grain whiskies are double distilled in pot stills, with some Tasmanian distilleries reportedly experimenting with triple distillation.

## **SCOTCH WHISKY, IRISH WHISKEY, JAPANESE WHISKY, AND NEW ZEALAND AND AUSTRALIAN WHISKY REGIONS**

### **SCOTLAND**

The Highlands consist of the portion of Scotland north of a line from Dundee on the North Sea coast in the east to Greenock on the Irish Sea in the west, including all of the islands off the mainland except for Islay. Highland malt whiskies cover a broad spectrum of styles. They are generally considered aromatic, smooth, and medium bodied, with palates that range from lush complexity to floral delicacy. The subregions of the Highlands include Speyside; the North, East, and West Highlands; the Orkney Isles; and the Western Islands (Jura, Mull, and Skye).

The Lowlands encompass the entire Scottish mainland south of the Highlands except the Kintyre Peninsula where Campbeltown is located. Lowland malt whiskies are light bodied, relatively sweet, and delicate.

Islay is an island off the west coast. Traditional Islay malt whiskies are intensely smoky and pungent in character with a distinctive iodine or medicinal tang that is

said to come from sea salt permeating the local peat that is used to dry the barley malt.

Campbeltown is a port located on the tip of the Kintyre Peninsula on the southwest coast that has its own distinctive spicy and salt-tinged malt whiskies.

### **IRELAND**

A series of corporate consolidations and resulting plant closures have left the island with only three distilleries, one in County Antrim at the northern tip of Ulster, and two in the Republic of Ireland to the south. Several new and revived distilleries are, however, currently under construction.

### **JAPAN**

The whisky distilleries of Japan are scattered throughout Honshu and Hokkaido, the two main northern islands of Japan, with the malt whisky distilleries located for the most part in mountainous regions where there are good water supplies.

### **NEW ZEALAND AND AUSTRALIA**

New Zealand currently only has one operating whisky distillery in Dunedin, South Island. At press time, Australia had one operating whisky distillery in western Australia and three in Tasmania.



## WHISKY COCKTAILS

### SAZERAC

In a short glass combine:

- 2 ounces (60 ml) rye whiskey
- 1 teaspoon (5 g) sugar

Stir to blend, then add:

- Dash Peychaud's bitters
- Dash Angostura bitters
- ½ ounce (15 ml) Pernod
- 2 ice cubes

Stir to blend. Garnish with lemon twist.

### DEPTH CHARGE

Fill a tall glass three-quarters full of beer. Pour 1 ½ ounces (45 ml) Canadian whiskey into a shot glass. Drop the shot glass into the glass of beer and drink them together.

### WHISKEY SOUR

Fill a short glass with ice. In a shaker combine:

- 1 ½ ounces (45 ml) blended whiskey
- 1 ounce (30 ml) lemon juice
- 1 tablespoon (15 g) sugar
- Crushed ice (half full)

Shake and strain into the glass.

### MANHATTAN

In a shaker combine:

- 1 ½ ounces (45 ml) bourbon
- ¾ ounce (23 ml) sweet vermouth
- Ice

Stir and strain into a martini (cocktail) glass or a short glass. Garnish with a maraschino cherry.

### RUSTY NAIL

Fill a short glass with ice cubes. Add:

- 1 ounce (30 ml) Scotch whisky
- ½ ounce (15 ml) Drambuie liqueur

Stir and serve.

Sazerac Rye Whiskey



Label for Old Gristmill Authentic American Corn Whiskey by Tuthilltown Spirits



# JOHN HENRY

PipeLine Brand Agents, New York, New York



**S**UDDENLY, it is time to open the doors. You bought your still, got your license, built your distillery, sourced your raw products, decided what to make, and actually made some. The most important step is still ahead—you've got to convince people to buy what you're selling. Enter John Henry of PipeLine Brand Agents, a brand builder and market developer.

The task of reaching customers is daunting. Giant corporations can fly beavies of representatives around the world and ply retailers and restaurants with promotional wares, but the small distiller more often than not finds himself driving around in his own car with a case or two in the trunk. PipeLine's team of brand agents and market ambassadors are "dedicated to properly representing high-quality, artisanal spirits" (according to their website) and they work hard to build strong, supportive, mutually beneficial relationships.

"I tell the stories," said Henry. "Whether it is the history of a centuries-old brewery, the soil composition, the site and terroir of a sugarcane field or vineyard, or a cherished family recipe that goes back fourteen generations, I want to get out on the street and tell people about it."

Henry understands that a small distiller's product is a work of passion, and he wants to instill that passion in the marketplace and forge the sort of loyalty that can only be commanded by a craft product.

"I know the personalities, the history, and the drama. What's better than that? No corporate-created brand like 10 Cane has this history and rooted story."

Henry cuts a striking figure. He is a graduate of West Point and a former Army intelligence officer, but he left all that behind to ride his bicycle through the streets of New York, bottles clinking in his backpack.

"The bike is king. It's a story unto itself. It's green, it's street, it's artisanal, it moves. It's a hand-delivered, hand-sold way to do business, and I wouldn't have it any other way. I paraphrase Orwell: 'When I see a grown man on a bike, I have hope for the future.'"

Henry likes to say that he "farms relationships on the street—organically." In doing so, the hardest part of the job is also what makes it possible.

"What's most difficult about representing the more boutique, crafted brands is that you have to continually tell the story from scratch. The bigger brands bombard the consumer with images—think Vincent Gallo for Belvedere. With the smaller brands, you have to make the connection one on one as if you were the distiller, telling his story. That's what makes them stand out as brands and as distillers. I am as much a brand storyteller as I am a street-based brand builder. I look at my job as part Johnny Appleseed and part Johnny Carson."