Aeneas Coffey and his Patent Still

By J. J. Kerr

In dealing with my subject, I must ask your forbearance if at times I seem to be wandering away from it. In the first place, I never could resist the attraction of a byway, and I found that this habit added greatly to my knowledge of Old Dublin; as well, I think it is necessary to tell you something about distillation, so that you may see how far-reaching and important was the invention which is the subject of this paper. Lots of people know nothing about whiskey except that it is a liquid that some take when they are hot in order to cool themselves, and some to warm them when they are cold; some take it because they are merry, and some because they are sad; some take another drink in order to maintain a balanced outlook, and a third because a stool cannot stand on two legs. In fact, the most remarkable thing about drinking is that you hardly ever meet a man who says he drinks whiskey because he likes it. After this paper you will be able to give scientific and National reasons why you should drink Irish Whiskey.

That the knowledge of the properties of wine as a beverage goes back to the very beginning of the human race is easily understood when we consider how refreshing grapes must have been in a hot climate. It was a simple step to express the juice as a beverage, and as grapes carry on the fruit an "enzyme," or agent producing fermentation, fermentation must necessarily have followed, the fermented juice having properties differing very materially from those of the fresh juice, as Father Noah discovered to his cost.

The fermentation of grain must have come much later. Probably someone discovered that sprouted grain had a sweet taste; he may have tried to make drink by boiling it with water, and, fermentation setting in, he discovered a new intoxicant. We are, however, not concerned here with fermented liquid except insofar as it furnishes the raw material for distillation.

The inventor of the first still is unknown; whether this is due to the accidents of history, or to the oblivion caused by the use of its products, is a matter for speculation. It is said that Zozimus the Panapolite, who lived at the end of the 4th or the beginning of the 5th century, has given some figures of a distillation apparatus, but as far as I can gather this is more accurately described as a *sublimation* apparatus, for distilling *solid* substances, such as sulphur, arsenic, mercury, etc. Speaking of the distilling or sublimation of arsenic, I am sure many of you are familiar

with that well-known landmark, the chimney of the lead smelting works at Ballycorus. You must have noticed the long, covered passage leading up the hillside to the tall chimney. The reason for this is that arsenic was distilled off in the process of refining the lead, and it was, of course, necessary not to let too much of the arsenic escape into the atmosphere.

The scientists of ancient days were the alchemists, and one of the foremost was Geber the Arab, whose books on alchemy were so obscure that the great Dr. Johnson derived from them the word *gibberish*. Alchemists used veiled language, partly to conceal their secrets but mainly to impress the ignorant; quackery and gibberish seem to be firmly linked together. I wonder what the immortal Sam would have said if he read our modern advertisements; I am afraid he would have called them gibberish. The work of the alchemists was a curious mixture of quackery, fraud, and serious attempts at scientific research. The main object of their researches was the "universal alkahest," or solvent, that might prove to be the elixir of life. Another object was the "philosopher's stone," which would transmute base metals into gold. From the dawn of modern chemistry, which dates from the enunciation of the atomic theory by Higgins (but the credit of which was stolen by Dalton), the transmutation of one element into another had been looked on as an absolute impossibility. The fundamental break with this theory came when Becquerel in 1896 discovered the radio-activity of uranium. This caused a new outlook on the constitution of matter, and modern research has proved that one element *can* be converted into another. But even if a process for turning lead into gold were worked out, it would probably take so much energy that it would not be an economic proposition.

The original still was something like the poteen still as used to-day, which some of you may have seen. It consisted of a vessel to contain the alcoholic fermented solution or "wash," a cooling-tube or "worm," and a vessel to contain the worm in water for cooling purposes. A "still-head" is used to prevent foaming, and this is found to help to obtain a stronger spirit; as the vapour passes through the neck of the still it expands and so is cooled, it therefore deposits some of the watery vapour which runs back into the still. The illicit distiller's worm is sometimes a black tin or copper tube, but more often it is a leaden pipe, thus adding the danger of lead-poisoning to the hazards of drinking poteen. Poteen distillers who are the proud possessors of a copper worm, are careful to preserve it. It is their most cherished possession. It is told that some illicit distillers, when the still itself began to wear out, would conceal it on some waste ground, give information to the authorities, and claim the reward which helped them

to buy a new still; but they never willingly surrendered a good worm (the reason they planted the worn-out still on waste ground was that the tenant is responsible for a still found on his land). I remember seeing a still made from an iron milk-churn with an ordinary kettle inverted on it for a still-head; the space between was luted with blue clay. The "pot-still" is in its essentials just the same, except that it is made entirely of copper, is much larger, and generally has some stirring arrangement to keep the contents in motion during the distilling process, so as to prevent charring as far as possible. The spirit produced by the pot-still is weak and has to be redistilled until it attains the strength required.

The art of distillation was for centuries purely empiric. Distillers found by trial-and-error methods that by making the wash in a certain way from certain materials, and distilling according to certain methods, they obtained a product that suited their requirements, even though they might not have been able to give scientific reasons for the steps taken. They were satisfied to know that they knew the way to make a good product. Ireland generally, and Dublin in particular, built up a reputation for good whiskey due to the experience of our distillers. Up to the year 1832 all distillers used the pot-still, and it is interesting to note that to-day the pot-still is the only still used in Dublin.

The raw material used in Dublin is malt; grain (generally barley) is sprouted, and when it sprouts the starch in the grain is converted into a variety of sugar known as "maltose." This malt is dried in a kiln and ground before use. Sometimes the husks are removed and sometimes not; this affects the finished whiskey, as the effect of yeast on the husks is to produce an impurity called "furfural." The ground malt is mashed with hot water, and fermented with yeast. The class and purity of the yeast is a very important matter, and great care is taken to avoid using "wild" yeasts. It is often built up from a single cell so as to keep it true to type. The wash made by distillers is different from that made by the brewer. The brewer wants his product to contain unaltered sugars so as to give flavour and body to the liquor, while the distiller wants to convert the sugars into alcohol as far as possible. Whiskey produced in a pot-still contains, as well as alcohol, certain other products, which when first distilled make it unsuitable as a beverage. When, however, it is kept in casks for a period of years, these substances become converted into flavouring materials, and give the characteristic taste appreciated by connoisseurs of good whiskey.

Now, it is obvious that the pot-still in the simple form I have described makes its product in a series of "charges," between which it is cooled down and emptied of the residues. The principle

was obviously wasteful of time and fuel, and inconvenient; for a long time distillers had sought a method of distilling that would make it a continuous process, and the "Henry Ford" of distillation proved to be a Dublin citizen named Aeneas Coffey.

The homeland of the O'Cobthaigh (anglicised Coffey) is *Corca Luighe*, now the Barony of Barryroe in West Cork. The name Aeneas was that of their ancestor, a son of Lewy, the 113th monarch of Ireland, who was also the ancestor of the O'Driscoll family. The name appears among the merchants and traders of 18th century Dublin.

Aeneas Coffey is believed to have been born at Calais. His mother was a Miss Ryan, a daughter of the Captain Ryan who died of wounds received at the arrest of Lord Edward Fitzgerald. Calais was a favourite place of residence for people with moderate or small pensions, which may account for the residence of the Ryans there. Coffey was brought up in France and I have been unable to discover when he came to Ireland. In 1789 we find that J. Coffey was one of the hearth-money collectors for South County Dublin; possibly this was the father of Aeneas.

In 1808 we find that a marriage licence was issued to Aeneas Coffey and Susana Logie; we will come across further mention of this name. In 1815 we find Aeneas Coffey was surveyor of Excise for Clonmel and Co. Wicklow. In 1816 he appears as Surveyor of Excise at Cork (at this time one Andrew Coffey was City Water Engineer in Dublin).

A pamphlet was published by Aeneas Coffey (described as "Acting Inspector General of Excise") in 1818, *Observations on the Rev. Edward Chichester's pamphlet entitled Oppressions and Cruelties of Irish Revenue Officers.* Coffey in his reply to the reverend gentleman indignantly repudiates his charges, but I am not particularly impressed by his protestations. In the first place, the Revd. Mr. Chichester was a member of one of the noble ruling families in Ulster, who would not be likely to attack government servants without very good cause. In the second place, the Revenue officers were very badly paid, and it is axiomatic that a badly-paid Civil Service will be a corrupt Civil Service.

From this pamphlet we learn that the principal revenue from liquor was derived from a tax on malt. Anyone could start a distillery, and the number of stills in Donegal, particularly in Innishowen, was astonishing. That is, of course, the legal distilleries; the illegal distilleries were estimated to produce at least as much whiskey as the legal distilleries.

Aeneas Coffey, having become an "Inspector General of Excise," was apparently regarded as well-versed in his profession, for he was called on from time to time to give evidence on matters connected with distilling. Thus, in 1821, he and two other

Inspectors made a report to the Board of Excise concerning some experiments made at Thompson's distillery at Carrickfergus, about the proper degree of attenuation of the wash (their recommendations were accepted by the Board in 1824). In the same year an important report was made, signed by James Taylor, Daniel Logie, and Aeneas Coffey, describing some trials carried out at the same distillery with an invention of Thomas Pottinger to enable the distiller to examine the strength of the distillate without having access to the spirit safe. The invention did not appear to answer its purpose, and Coffey set himself to devise another apparatus "of a different and simpler description," which was in due course reported on. This is the first instance we have, of Aeneas Coffey's inventive spirit.

The Logie who signed this report, and was Coffey's fellow-officer, was, I think, a relation of Mrs. Coffey. Pottinger is a well-known Belfast family, from whom Mountpottinger is named.

In 1822 Aeneas Coffey gave evidence before a Parliamentary Commission of Inquiry into the Revenue arising in Ireland, and in the same year we find him giving evidence of the conditions under which distilling is carried on. On 15th April of the same year he makes a report concerning the boycott of Irish distilleries by the English rectifiers, and upholds the cause of the distillers. In October, 1823, he gave evidence regarding the duty on malt.

The next trace of him that I have been able to find is an entry in the Dublin Directory of 1828—Aeneas Coffey & Co., Distillery Office and Stores, 27 South King Street. Apparently he had now retired from the Civil Service. His salary as Inspector General was only £300. Incidental allowances brought this up to £679 3s. 3d., and I notice that the Treasury Officials were always protesting against the system of allowances. It is an old trick of Governments when they wanted to (apparently) minimise expenditure.

There is no entry in the Directory for the years 1829–1833, but in 1834 we find Aeneas Coffey & Co., Dock Distillery, Grand Canal Street. The distillery does not seem to have proved successful. In the 1837 Directory "Aeneas Coffey, patent still manufacturer" has an address in Barrow Street; in 1838 the same entry occurs, but in 1839 it is changed to "Aeneas Coffey, esq., junior." The distillery premises, after lying idle for some time, were sold in 1840 to the Dublin & Kingstown Railway Company, who removed the distillery apparatus, and fitted up the buildings as workshops; they were used for this purpose until 1925.

I have tried hard to discover the date of Aeneas Coffey's death, and where it took place, but so far I have been unsuccessful. In searches of this nature, one finds oneself up against the fact that there was no state Registry at that date, and also against

the blank wall caused by the destruction of the Record Office in the Four Courts.

And now we come to his great invention. In 1830 he patented a cooling apparatus for wort. This was of no importance, but in the same year he took out a patent for a distilling apparatus that would be continuous in action. Curiously enough, he did not seem to realise how great an invention he had discovered, and I am perfectly sure he never even dreamed that his still would be used far more for purposes outside the production of alcohol than for the production of cheap spirit.

The great Irish scientist, Lord Kelvin, laid down the principle of the "degradation of energy," *viz.*, that energy tends to become degraded into heat. One of the greatest tasks in manufacturing industry is to prevent this loss. In cooling the worm of the pot-still the heat is wasted. Coffey reversed the lay-out so that the wash acted as the cooler for the spirit, and the heat of the spirit helped to warm the wash. In other words, there was an *exchange* of heat instead of a loss of heat.

The wash enters at one end of the still where it also acts as a cooling agent and gathers heat in the process, until it meets the steam which gradually brings it to boiling point, and loses all its spirit. The spirit is carried over and is rectified and cooled by the incoming wash.

The advantages of the Coffey still are:

(1) A highly rectified (about 90 per cent. alcohol) and practically pure, though flavourless, spirit is produced in one continuous operation as against two, three, and sometimes four operations in a pot-still.

(2) Saving in fuel, as the latent heat of the vapour is used to heat the incoming wash.

(3) Saving of time, and, of course, "time is money."

(4) Rectification is part of the process. In pot-still distillation this can only be effected by repeated distillations, filterings, etc.

(5) Valuable by-products are recovered in the process.

Until the last three decades the by-products from the patent-still were looked on as so much waste. Fusel oil was used in slush-lamps as a substitute for paraffin; to-day it is made into flavouring essences, *e.g.*, the well known essence of jargonelle pear, or banana oil, that is used as a flavour for confectionery, and is also used as a solvent for certain plastics.

Furfural, another impurity, is used in the making of plastics. It comes from the husk of the grain. It is manufactured in large quantities from the husks that were formerly waste material in the preparation of breakfast foods from oats, and a modified Coffey still is used in the process.

The advantages of the Coffey still have been mentioned;

now for the disadvantages. In my opinion—and as a total abstainer I claim to be an impartial witness—patent-still spirit is not whiskey at all. The product is practically pure alcohol without any flavour whatever; "Silent Spirit," it is called by the trade. The still would have been more or less of a failure had it not been for the commercial acuteness of the Scottish distillers. They produced a mixture of pot-still whiskey blended with patent-still spirit, which they put on the market as blended Scotch whiskey. Between good advertising and the effeminate palates of the English, which were not robust enough to appreciate really good whiskey like the Irish, this type of whiskey captured the English market and still holds it to an undeserved extent.

Perhaps you will not be surprised to hear that the North of Ireland distillers were just as astute as the Scots—perhaps even a little more so. There were and are a great number of patent-stills in the North—Dunville's, Avoniel, and the Royal Irish Distillery in Belfast, and Watt's in Derry.

Dunville's, the firm on which were founded the fortunes of the Craig family, made both patent and pot-still and they put a blended Irish whiskey on the Market. They went one better—they imported some Scotch pot-still whiskey, and put on the market Dunville's blended Scotch whiskey.

Patent-still spirit is practically unsaleable as whiskey by itself. It must be mixed or blended with something else. Giving evidence before a Royal Commission in 1908 to consider the question "What is Whiskey," Sir James Talbot Power said that his firm sold pot-still whiskey at 4s. per gallon, whereas patent-still spirit was sold at from 10½d. to 1s. 4d. per gallon. The Irish distillers tried to get a decision that only pot-still was whiskey, but the big battalions were on the other side and they were not successful.

Aeneas Coffey had one son who was also Aeneas. He went to manage a patent-still distillery in South Africa. He married there and his wife died there without issue. The distillery was taken over by the Government at the outbreak of the Boer War. Coffey Junr. returned to England and settled in the town of Richmond in Surrey, where he died.

You may say after hearing all this that the still was only a modified success. That is so, as far as producing whiskey is concerned, but with the rise of large-scale modern industrial chemistry in this century, Coffey's still has become very important, and wherever fractional distillation is part of an industrial process, there you will have some modification of his patent-still. The manufacture of industrial alcohol, the distillation of petroleum products, even the distillation of liquid air into its constituents, owe much to the genius of this almost forgotten citizen of Dublin.

I would like to express my deep obligations to Miss Kathleen Meredith,

who is connected with the Coffey family; Mr. Kevin Murray for very helpful hints as to likely places to obtain information; Revd. W. Hawkes, C.C., and Mr. Wyatt for information about the Clan Coffey; and last, but not least, the patient and enduring staffs of T.C.D. and National Libraries, who were as helpful as Old Dubliners always find them.

Mr. William J. Wyatt, Chief Distiller to Messrs. Power's distillery in Thomas Street, tells me that his father assisted Aeneas Coffey in the erection of the first patent-still distillery, in Lewisham, London. This distillery afterwards became bankrupt in the following curious circumstances. At that time duty was not paid daily as it is now. The Secretary of the Company arranged for a very large release of spirits from bond. He presented the cheque at the tail-end of a Directors' meeting; he pretended hurry, had the cheque filled in for the necessary amount, but had not filled in the payee's name. The Directors signed their names. The Secretary filled in his own name as payee, cashed the cheque, and was never seen again.

Mr. Wyatt's father and grandfather were also distillers, and it might interest the ladies to know that his late sister, Mrs. Coney, was the first woman in Ireland to become qualified as a pharmaceutical chemist.

As I have remarked above, I was unable to discover where Aeneas Coffey died and was buried. If any reader who comes across his name when searching in old church records of the period will send a note to the Editor of the RECORD for publication, it will add to our knowledge of this forgotten Dublin inventor.

Miscellanea

THE LIMERICK WATERCOURSE

THE present City Basin, lying a little to the west of the Grand Canal Harbour near James's Street, was constructed in 1721. Its purpose was to store the water brought by the City Watercourse from the River Poddle *via* Dolphin's Barn and St. James's Walk.

Previous to the construction of this Basin, the City Watercourse discharged into a smaller reservoir known as the Great Cistern of the City. This cistern was located outside St. James's Gate at the western extremity of Thomas Street. To reach this cistern the Watercourse from St. James's Walk continued northerly across the site of the present Basin to the rear of the premises on the south side of James's Street, then turning due east by these premises, crossed Echlin Street and through ground now occupied by portion of Messrs. Guinness's Brewery, to St. James's Gate.