



# English Learning for Curious Minds



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## Episode #067

### Five Unorthodox Inventions

### 30 June, 2020



[00:00:05] Hello, hello, hello, and welcome to English Learning for Curious Minds by Leonardo English.

[00:00:11] The show where you can listen to interesting stories, and learn weird and wonderful things about the world at the same time as improving your English.

[00:00:22] I'm Alastair Budge, and today we are going to be looking at the stories of 5 inventions that you probably know, and you may even use yourself.

[00:00:35] But these stories aren't the classic stories of an inventor working away in his or her **laboratory**<sup>1</sup> for years on end, and finally making the discovery they were looking for all along.

[00:00:51] Oh no.

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<sup>1</sup> a room or building with scientific equipment for doing scientific tests or for teaching science, or a place where chemicals or medicines are produced



## Five Unorthodox Inventions

[00:00:52] These stories are quite [unorthodox](#)<sup>2</sup>.

[00:00:55] They are somewhat unconventional.

[00:00:58] They are all stories of how things were discovered either by accident or at least in unexpected ways.

[00:01:07] It's going to be quite an exciting one.

[00:01:10] So let's get started.

[00:01:12] When you imagine something being invented, you probably imagine a [workshop](#)<sup>3</sup>, with someone searching day and night, adding things, taking things away, experimenting, until they finally discover what they had been looking for all along.

[00:01:32] The discovery of many of our greatest inventions happened in this way - they were the result of years and years of testing and improving stuff, where the person knew what they were looking for, they were just experimenting with different ways of getting there.

[00:01:52] From the light bulb to the telephone, these were all things that were 'invented' in this way - people knew what they were trying to achieve, they just needed to keep on testing different ways of actually getting there.

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<sup>2</sup> different from what is usual or expected in behaviour, ideas, methods, etc.

<sup>3</sup> a room or building where things are made or repaired using machines and/or tools



## Five Unorthodox Inventions

[00:02:11] All of these inventions do have interesting stories, but we aren't going to tell them today.

[00:02:18] Instead, we are looking at some things that were discovered almost by accident, or at least, in very **unorthodox** ways, where there is a real '**Eureka**<sup>4</sup>' moment, a moment where someone does something by accident, and discovers something that ends up being mass-produced and used by hundreds of millions of people all over the world.

[00:02:44] **Without further ado**<sup>5</sup>, our first example is probably more of a discovery than an invention, but certainly has an interesting story to it.

[00:02:56] And it is Brandy, the strong alcoholic drink that is produced by **distilling**<sup>6</sup> wine.

[00:03:04] Almost since the **dawn**<sup>7</sup> of history, people have enjoyed drinking wine.

[00:03:11] It was normally produced relatively locally, and because it was mainly water, it was quite difficult to transport in large quantities.

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<sup>4</sup> used to show that you have been successful in something you were trying to do

<sup>5</sup> without wasting more time

<sup>6</sup> to make a liquid stronger or purer by heating it until it changes to a gas and then cooling it so that it changes back into a liquid

<sup>7</sup> the period in the day when light from the sun begins to appear in the sky, the start of



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[00:03:24] As global trade, or at least European trade started to really grow, in the 16th century a Dutchman was looking for a way to be able to transport more wine in his ships.

[00:03:41] He knew that wine contained a large amount of water so he figured that if he could remove the water from the wine, then pack this into his ship, the wine with the water removed, and then add water to the **concentrated**<sup>8</sup> wine at his destination, then he could get more wine into his ship, and he could sell more wine, and make more money.

[00:04:08] Sounds like a good idea, right?

[00:04:11] Well, for the purposes of transporting wine, it wasn't a very good idea.

[00:04:17] It turns out that if you just add water to your **concentrated** wine, it is not very nice to drink.

[00:04:25] But what he did discover is that the **concentrated**, the burnt wine, was actually quite tasty, quite tasty indeed.

[00:04:36] It was called 'brandewijn' in Dutch, and given the name 'Brandy' in English.

[00:04:44] So he was looking to achieve something completely different, but he just **stumbled across**<sup>9</sup> brandy.

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<sup>8</sup> using a lot of effort to succeed at one particular thing

<sup>9</sup>



## Five Unorthodox Inventions

[00:04:52] And the rest is, as they say, history - brandy is a drink that is now enjoyed by hundreds of millions of people all over the world, and it was discovered completely by accident.

[00:05:06] Our second invention is the microwave oven, the special little box that might sit in your kitchen that manages to heat up food at the press of a button.

[00:05:20] Now, the story of the microwave oven is quite a special one.

[00:05:24] In 1945, just as World War II was ending, there was a self-taught engineer called Percy Spencer.

[00:05:34] He was working with [radar](#)<sup>10</sup> technology for the Allies, and one day, as he was working with a [radar](#), he reached down into his pocket, and found that the peanut candy bar that he had there had completely [melted](#)<sup>11</sup>.

[00:05:53] The temperature of the room wasn't hot enough to have [melted](#) it, and this bar had completely [melted](#).

[00:06:01] Spencer realised that it must have been the radar that did it.

[00:06:06] The radar machine must have [emitted](#)<sup>12</sup> microwaves that had the effect of heating substances.

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<sup>10</sup> a system that uses radio waves to find the position of objects that cannot be seen

<sup>11</sup> having turned soft or into a liquid

<sup>12</sup> sent out (a noise, or signal)



## Five Unorthodox Inventions

[00:06:17] So, [the legend goes](#)<sup>13</sup>, Spencer immediately went away with some corn, and then put it next to the radar, and the corn started [popping](#)<sup>14</sup>, much like you see in popcorn machines.

[00:06:33] The next day, he came back with an egg, and he put it next to the radar to see what would happen.

[00:06:41] And if you have ever put an egg in a microwave, you will know what happened.

[00:06:47] It exploded in his face.

[00:06:50] So he had discovered the microwave oven.

[00:06:55] Shortly after this, he went and [filed](#)<sup>15</sup> a [patent](#)<sup>16</sup> for it.

[00:06:56] And then two years later, the first commercial microwave oven came on sale.

[00:07:03] It was a little different to the one that you and I would recognise now though - it was almost 2 metres tall, and cost today's equivalent of around \$50,000.

[00:07:17] So it wasn't an immediate success.

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<sup>13</sup> according to the story

<sup>14</sup> exploding

<sup>15</sup> to officially record something

<sup>16</sup> the official legal right to make or sell an invention for a particular number of years



**Five Unorthodox Inventions**

[00:07:20] However, as the technology improved, the boxes became smaller and smaller, and they were soon affordable to the growing American middle class.

[00:07:30] And within a few years, it was being sold into households all over America.

[00:07:37] And to think, if he hadn't put his hand into his pocket that day, well, perhaps the story of the microwave would have been slightly different.

[00:07:48] Next up is Viagra.

[00:07:52] Now, Viagra, which I think is the same word in almost every language. Is now a name that's known all over the world.

[00:08:03] Viagra is just the brand name given to the drug.

[00:08:07] The name of the actual medication is Sildenafil, and it was first made in a [laboratory](#) in the south of England in 1992.

[00:08:21] But its original purpose wasn't for, how can I say 'bedroom' use?

[00:08:28] It was actually to treat high blood pressure and chest pain.

[00:08:34] It was created in a laboratory, and various tests were run with a small group of people.



## Five Unorthodox Inventions

[00:08:41] They wanted to test whether this drug was going to be a [miracle<sup>17</sup>](#) cure for high blood pressure and chest pain.

[00:08:49] Unfortunately, the drug didn't have the [desired<sup>18</sup>](#) effect - it didn't seem to do anything to help high blood pressure.

[00:08:59] So, the drug was almost [abandoned<sup>19</sup>](#), but then the men who took part in the [pilot<sup>20</sup>](#) reported another, unexpected [side-effect<sup>21</sup>](#) - the side-effect for which the drug is now famous.

[00:09:14] The story goes that the people that took part in the test were quite [reluctant<sup>22</sup>](#) to give up this new medicine, with its unexpected [side-effect](#).

[00:09:27] So the scientists took it back to the laboratory, and conducted some more tests.

[00:09:34] Bingo, they hadn't found a cure for high blood pressure, but they had perhaps [stumbled across](#) something much more valuable.

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<sup>17</sup> an unusual and mysterious event that is thought to have been caused by a god because it does not follow the usual laws of nature

<sup>18</sup> that is wanted

<sup>19</sup> left in a particular place or condition, usually forever

<sup>20</sup> to test a new product before it is sold

<sup>21</sup> an unpleasant effect of a drug that happens in addition to the main effect

<sup>22</sup> not willing to do something and therefore slow to do it



## Five Unorthodox Inventions

[00:09:45] Viagra was born and since its founding over \$10 billion worth of the drug has been sold.

[00:09:53] Interestingly enough, though, the [patent](#) for Viagra is running out this year, meaning that lots of generic, cheaper versions of the drug are able to be sold.

[00:10:11] But the fascinating world of [patents](#), and how they work is definitely a subject for another episode.

[00:10:17] Our [penultimate](#)<sup>23</sup> invention is something called velcro.

[00:10:22] Now, velcro, in case you don't know what it is, is the material that you often find to fasten two things together, to attach two things together.

[00:10:34] Often children's shoes use this to [tighten](#)<sup>24</sup> the shoes without using [laces](#)<sup>25</sup> - it is normally black, and one side is [fluffy](#)<sup>26</sup>, it's hairy, and the other side is full of tiny little [hooks](#)<sup>27</sup>.

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<sup>23</sup> second from the last

<sup>24</sup> to become tighter or to make something become tighter, firmer, or less easy to move

<sup>25</sup> a string that you use to fasten openings, especially in shoes, by putting it through two lines of small holes and tying the ends together

<sup>26</sup> soft and like wool or fur

<sup>27</sup> a curved device used for catching or holding things, especially one attached to a surface for hanging things on



## Five Unorthodox Inventions

[00:10:51] But how Velcro came into existence is an interesting story, and the heroes of our story are a man and a dog.

[00:11:02] Now, those of you that have dogs, especially dogs with lots of hair, will know that if they run in long grass, they tend to return with lots of little things stuck to them, which can be difficult to remove, depending on how hairy your dog is.

[00:11:22] A Swiss engineer, a man called George de Mestral was out walking with his dog, and he noticed that these little things kept sticking to his dog's hair.

[00:11:36] He was curious about how that actually worked, and so, being a curious mind, he looked under the microscope back in his [laboratory](#), and saw that each of these little things that was stuck to his dog had tiny, tiny, little [hooks](#) that had caught in his dog's hair, in his dog's [fur](#)<sup>28</sup>.

[00:12:00] He thought, well, if I can create this artificially, using [synthetic](#)<sup>29</sup> material, that would be great - it would be another way of [fastening](#)<sup>30</sup> two things together.

[00:12:14] He created the first version of velcro - one side was [fluffy](#), and the other side was full of thousands of tiny little [hooks](#).

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<sup>28</sup> the thick hair that covers the bodies of some animals, or the hair-covered skin(s) of animals, removed from their bodies

<sup>29</sup> Synthetic products are made from artificial substances, often copying a natural product

<sup>30</sup> fixing something together



## Five Unorthodox Inventions

[00:12:23] So when they were pressed together, they stuck. You had to pull hard to remove one from the other.

[00:12:31] Velcro was born.

[00:12:33] However, it wasn't an immediate [hit](#)<sup>31</sup>, and it took years until it actually became popular.

[00:12:42] Interestingly enough, one of the first really popular uses of Velcro, or at least one of the ways in which Velcro became known around the world was through [astronauts](#)<sup>32</sup> - for [astronauts](#) it was a very easy way to attach things when they were wearing these large space suits, so they couldn't really use their hands.

[00:13:08] Our final invention story is of the stethoscope, the device that doctors use to listen to the beating of your heart, the device that's essentially a long tube with a metal piece that is pressed against your chest, and the tube divides into two parts that go into the doctor's ear.

[00:13:31] Got it?

[00:13:32] Great.

[00:13:34] Now, this story takes us back to the year 1816, to France, to the doctor's surgery of a man called René Laennec.

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<sup>31</sup> success

<sup>32</sup> people who have been trained for travelling in space



## Five Unorthodox Inventions

[00:13:44] In his clinic was a young woman who was quite overweight, she was a bit fat.

[00:13:52] The normal thing that a doctor would have done would have been to check her heart just by placing his or her ear over the chest of the patient, however there were two problems with this particular woman.

[00:14:09] The first problem was that she was a young woman, and it would have been embarrassing for a male doctor to have put his ear directly to her **bare**<sup>33</sup> chest.

[00:14:22] So he didn't want to put her in an **awkward**<sup>34</sup> position, he didn't want to embarrass her.

[00:14:29] The second problem was that she was overweight, and it would have been difficult to accurately hear her heartbeat.

[00:14:38] So our hero, the inventor of the stethoscope, Dr Laennec had an idea.

[00:14:46] He had previously seen school children playing a game where they used a **hollow**<sup>35</sup> stick, a stick with a hole through the middle.

[00:14:56] In this game, one child put their ear on one end of the stick, and the other child **scratched**<sup>36</sup> the other end with a pin, so they made a noise at the other end,

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<sup>33</sup> without any clothes or not covered by anything

<sup>34</sup> difficult to use, do, or deal with, embarrassing

<sup>35</sup> having a hole or empty space inside

<sup>36</sup> to cut or damage a surface or your skin slightly with or on something sharp or rough



## Five Unorthodox Inventions

[00:15:10] Dr Laennec thought, well, it seems like I might be able to hear more clearly, and cause this patient less embarrassment if I do a similar thing, and so he went and found some paper, rolled it up into a cylinder, and pressed one end to the young woman's chest, and the other end to his ear.

[00:15:34] Ta-da, he could hear her heartbeat distinctly, and the first-ever stethoscope had been invented.

[00:15:43] It has of course [evolved](#)<sup>37</sup> a bit since then, but the principle, from an [acoustic](#)<sup>38</sup> point of view, at least is the same - create a tube, and you can hear a sound more clearly if you listen through the tube than if you just put your ear directly at the end.

[00:16:03] Amazing, right?

[00:16:05] A [device](#)<sup>39</sup> that is now used by millions of doctors all over the world, and no doubt has saved millions of lives, was discovered almost by accident after a doctor saw some children playing a game with a tube.

[00:16:21] I, for one, think that is a pretty fun story.

[00:16:26] OK then, that is it for today's episode on Five Unorthodox Inventions.

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<sup>37</sup> having changed

<sup>38</sup> relating to sound or hearing

<sup>39</sup> an object or machine that has been invented for a particular purpose



Five Unorthodox Inventions

[00:16:32] For all of the huge [laboratories](#) that exist and massive companies working to find new and fantastic inventions, spending billions of dollars on research and development, it is nice to think of the times when individual people just [stumble](#) across them, completely by accident, or at least, they arrive at the invention through very [unconventional](#)<sup>40</sup> means.

[00:16:58] As always, I would love to know what you thought of this episode. You can email hi - hi@leonardoenglish.com.

[00:17:07] You've been listening to English Learning for Curious Minds by Leonardo English

[00:17:12] I'm Alastair Budge. You stay safe and I'll catch you in the next episode.

[END OF PODCAST]

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<sup>40</sup> different from what is usual or from the way most people do things



## Key vocabulary

<b>Word</b>	<b>Definition</b>
<b>Laboratory</b>	a room or building with scientific equipment for doing scientific tests or for teaching science, or a place where chemicals or medicines are produced
<b>Unorthodox</b>	different from what is usual or expected in behaviour, ideas, methods, etc.
<b>Workshop</b>	a room or building where things are made or repaired using machines and/or tools
<b>Eureka</b>	used to show that you have been successful in something you were trying to do
<b>Without further ado</b>	without wasting more time
<b>Distilling</b>	to make a liquid stronger or purer by heating it until it changes to a gas and then cooling it so that it changes back into a liquid
<b>Dawn</b>	the period in the day when light from the sun begins to appear in the sky, the start of
<b>Concentrated</b>	using a lot of effort to succeed at one particular thing
<b>Stumbled across</b>	to discover or find something or someone by chance
<b>Radar</b>	a system that uses radio waves to find the position of objects that cannot be



## Five Unorthodox Inventions

seen

### Melted

having turned soft or into a liquid

### Emitted

sent out (a noise, or signal)

### The legend goes

according to the story

### Popping

exploding

### Filed

to officially record something

### Patent

the official legal right to make or sell an invention for a particular number of years

### Miracle

an unusual and mysterious event that is thought to have been caused by a god because it does not follow the usual laws of nature

### Desired

that is wanted

### Abandoned

left in a particular place or condition, usually forever

### Pilot

to test a new product before it is sold

### Side-effect

an unpleasant effect of a drug that happens in addition to the main effect

### Reluctant

not willing to do something and therefore slow to do it

### Penultimate

second from the last



## Five Unorthodox Inventions

**Tighten** to become tighter or to make something become tighter, firmer, or less easy to move

**Laces** a string that you use to fasten openings, especially in shoes, by putting it through two lines of small holes and tying the ends together

**Fluffy** soft and like wool or fur

**Hooks** a curved device used for catching or holding things, especially one attached to a surface for hanging things on

**Fur** the thick hair that covers the bodies of some animals, or the hair-covered skin(s) of animals, removed from their bodies

**Synthetic** Synthetic products are made from artificial substances, often copying a natural product

**Fastening** fixing something together

**Hit** success

**Astronauts** people who have been trained for travelling in space

**Bare** without any clothes or not covered by anything

**Awkward** difficult to use, do, or deal with, embarrassing

**Hollow** having a hole or empty space inside



**Five Unorthodox Inventions**

<b>Scatched</b>	to cut or damage a surface or your skin slightly with or on something sharp or rough
<b>Evolved</b>	having changed
<b>Acoustic</b>	relating to sound or hearing
<b>Device</b>	an object or machine that has been invented for a particular purpose
<b>Unconventional</b>	different from what is usual or from the way most people do things

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*What did you like? What could we do better?*

*What did you struggle to understand?*

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