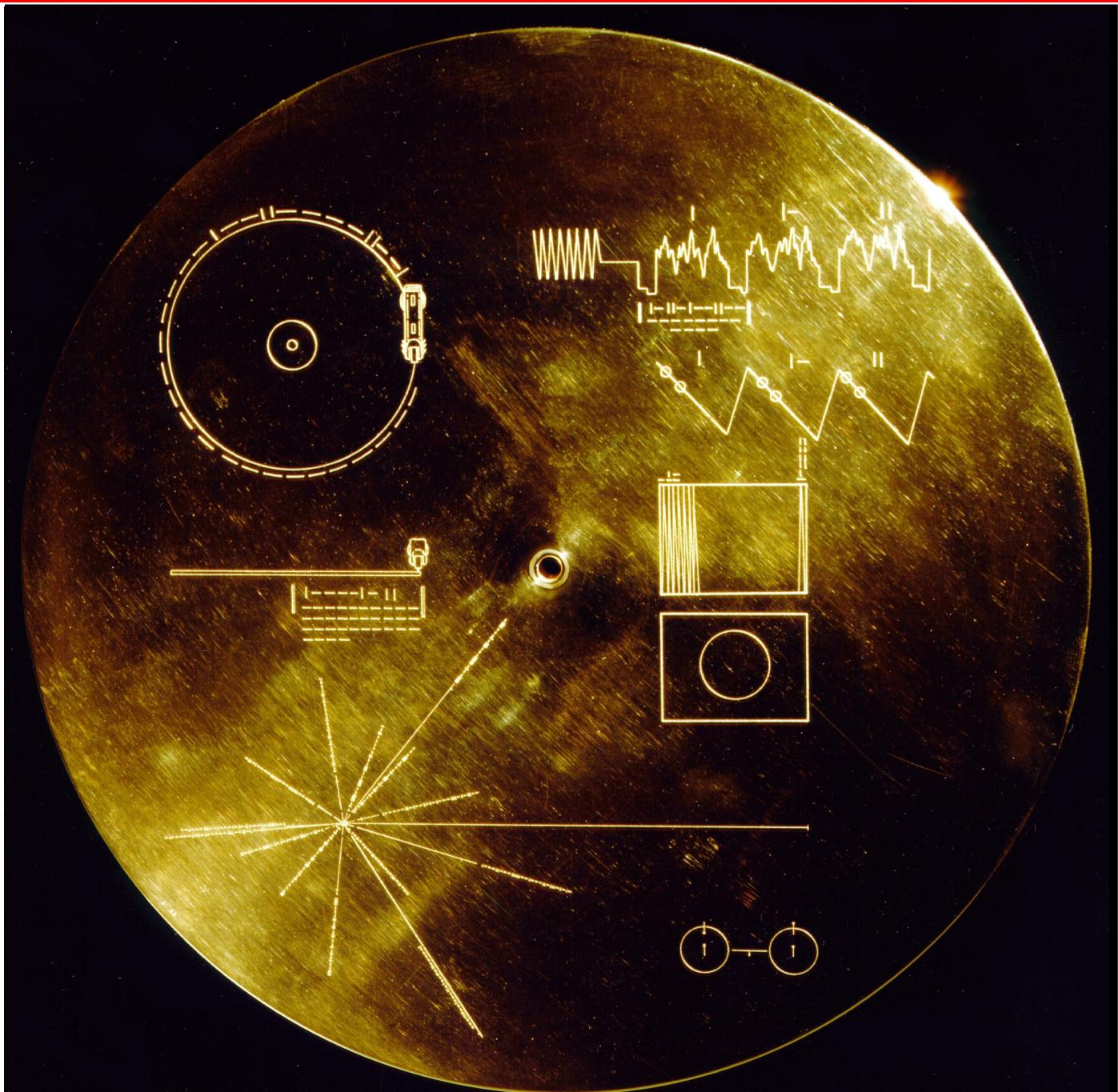


FASCINATING FACTS

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VOYAGER—THE GOLDEN DISC IN SPACE



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Fascinating Facts is a free monthly private circulation e– magazine of personal, historic and military interest.

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Welcome to this issue of **Fascinating Facts**. Now retired, with a background of journalism, literature production, international public relations, and ex editor of a leading industry publications, I now have the time to combine my abilities and share my interests in historic facts, especially in connection with military matters. While I have written most of the articles in the Scarletman I am happy to accept ideas and contributions from readers; giving them credit for their work. The Scarletman is free issue e-magazine therefore if you would like to circulate copies further then I am happy for you to create a wider readership of those with a similar interest to mine.

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IN SUPPORT OF UKRAINE

Some April thoughts

April might start with pranks, jokes, and humor. But it is also an excellent time to spread kindness when things cool down.

Spring gives the world a makeover. And it's the perfect time to do the same for yourself. Refresh your mind with gratitude, kindness, motivation, and love. And it will set a positive tone for the rest of the year.

It's through the ups and downs that we learn to be resilient. It's through gratitude that we value the truly important things. Every day is different and beautiful. So make the most out of each day in April!

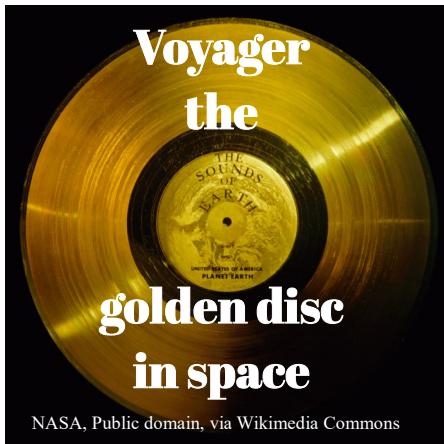
Start the day with a smile on your face and a positive mind. The world has so many beautiful things waiting for you to discover

April is the first whole month of spring, and the weather is neither too cold nor too hot. It gives us more time to spend outdoors with people we love. If the cold has been keeping you in the house, now is the perfect time to enjoy spring fun with a loved one.

If April showers should come your way, they bring the flowers that bloom in May.

With the days getting longer, sunny days, new hope, and a new you are awaiting. Are you ready to welcome April?

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Ever since humans have inhabited this lump of rock, spinning in space, there has always been the question of where and why. Where did we come from and why are we here. The ancients worshiped many gods. Now today most humans believe in one God. But there is still the question of what is out there. The suggestion has been we should try and contact, if there is any, other life forms called planetary habitability. So far the Kepler mission, identified over 2,800 confirmed exoplanets, with several thousand more candidates waiting to be confirmed. So far, researchers have identified several hundred planets in the habitable zone of the star in Kepler data. It could take time to find 300 million!

GENEALOGY OF HUMANS

The discs are a form of basic genealogy of the human race. But contact with other planets could be dangerous. What if they are more advanced and force us into submission to their ways and technology? The Voyager Golden Records are two identical records included on both Voyager space craft which were launched in 1977. They carry the story of Earth far into deep space. The 12 inch gold-plated copper discs contain greetings in 60 languages, samples of music from different cultures and eras, and natural and man-made sounds from Earth. They also contain electronic information that an advanced civilisation could convert into diagrams and photographs.

GOLD PLATED DISC

The gold plated aluminium case is designed to protect the record from micrometeorite bombardment. It also provides the finder a key to playing the record. The explanatory diagram appears on both the inner and outer surfaces of the cover, as the outer diagram will be eroded in time.

Currently, both Voyager probes are sailing adrift in the black sea of interplanetary space, having left our solar system years ago. Neither Voyager spacecraft is heading toward any particular star, but will pass within 1.6 light-years' distance of the star Gliese 445, currently in the constellation Camelopardalis, in about 40,000 earth years! The 12 inch records are made from gold-plated copper disc encased in an aluminium cover electroplated with an ultra-pure sample of the isotope uranium-238 which has a half-life of 4.468 billion years.

DETERMINE RECORD AGE

This makes it possible for a civilisation that encounters the record to be able to use the ratio of remaining uranium to determine the age of the record. Each record has the inscription "To the makers of music – all worlds, all times" etched on its surface. The inscription is located in an area of between the label and playable surface.

The contents of the record were selected for NASA by a committee chaired by Carl Sagan of Cornell University. It included 115 images in analogue form, and a selection of natural sounds, such as surf, wind and thunder, birds, whales, and other animals. To this they added musical selections from different cultures and eras, and spoken greetings from Earth-people in fifty-five languages. As well as a message from President Carter and U.N. Secretary General Waldheim. Also in symbolic language, there was an explanation of the origin of the spacecraft and instruction of how the record should be played.

55 LANGUAGES

The remainder of the record is in audio, designed to be played at 16-2/3 revolutions per minute. It contains the spoken greetings, in 55 languages, beginning with Akkadian, which was spoken in Sumer about six thousand years ago, and ending with Wu, a modern Chinese dialect. Following the section on the sounds of Earth, there is an eclectic 90-minute selection of music, including both Eastern and Western classics and a variety of ethnic music. Voyager 1 and Voyager 2, were launched within 15 days of each other in the summer

of 1977. After nearly 45 years in space, they are still functioning, sending data back to Earth daily from beyond the solar system's most distant known planets. They have travelled farther and lasted longer than any other spacecraft in history.

INTERSTELLAR SPACE

They have crossed into interstellar space, which, according to the best understanding is the boundary between the sun's sphere of influence and the rest of the galaxy. They are the first human-made objects to do so. Not a bad record, considering the Voyager missions, launched 46 years ago, were originally planned to last just four years and they are still performing well, or at least until their power units fail.

Since their travels, four decades ago, the Voyagers have given astonishing first close-up views of the moons of Jupiter and Saturn, revealing the existence of active volcanoes and fissured ice fields on what the worlds astronomers had thought would be inert and crater-pocked as our own moon.

CONFOUNDING THEORISTS

In 1986 Voyager 2 became the first spacecraft to fly past Uranus; three years later it passed Neptune. So far it is the only spacecraft to have made such journeys. Now, as pioneering interstellar probes more than 12 billion miles from Earth, they're simultaneously delighting and confounding theorists with a series of unexpected discoveries about that uncharted region

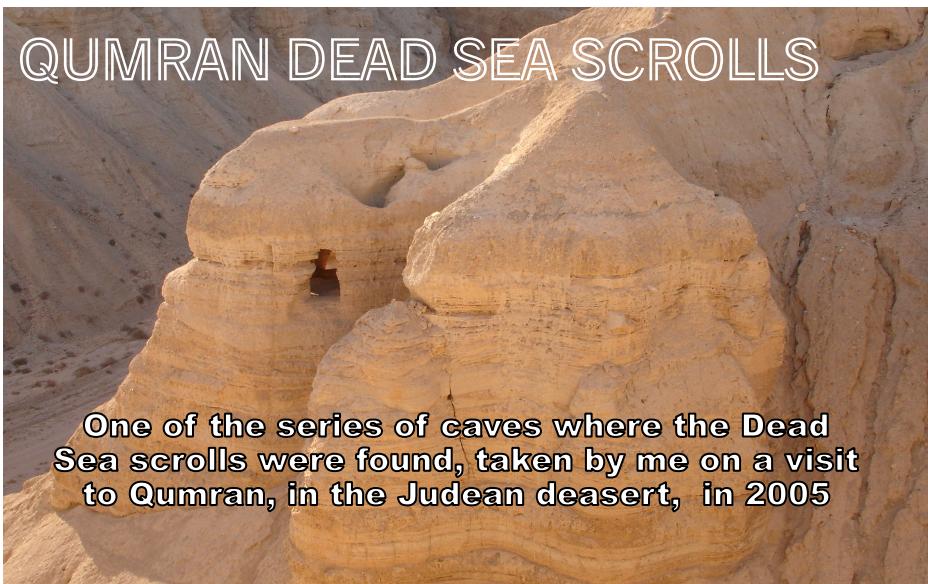
HOW FAR WILL THEY GO

Once the Voyager spacecraft leaves our solar system, they will find themselves in empty space. They will still be flying at 670,616,629 mph but it will take forty thousand years before they make a close approach to any other planetary system when they will drift within 1.6 light-years (9.3 trillion miles) of AC+79 3888, a star in the constellation of Camelopardalis which is heading toward the constellation.

INFORMATION/CONVERSION

As defined by the International Astronomical Union (IAU), a light-year is the distance that light travels in a vacuum in one year. Therefore light year would equate to 5,875,000,000,000, earth miles.

QUMRAN DEAD SEA SCROLLS



One of the series of caves where the Dead Sea scrolls were found, taken by me on a visit to Qumran, in the Judean deasert, in 2005

In late 1946 a Bedouin boy of the Ta'amireh tribe, found a cave while searching for a lost animal. When he entered the first cave he found the scrolls dating back two thousand years. The scrolls were taken back to their encampment and eventually shown to Mar Samuel of the Monastery of Saint Mark in April 1947. This was the discovery of the Dead Sea Scrolls. But the location of the cave was not revealed for another 18 months and eventually a joint investigation of the cave site took place in 1949.

Interest in the scrolls, with the hope of money from their sale, initiated a long area-wide search by a local tribe to find more such scrolls.

FOUR MORE CAVES

This resulted in the discovery of four caves in Wadi Murabba'at some 15 kilometers south of Qumran in 1951. Another cave was discovered, in February 1952. However, only a few fragments were found in the cave. Fear of the destruction of archaeological evidence with the dis-

covery of caves a campaign was launched by the French and American Schools to explore all other caves to find any remaining scrolls. Although 230 natural caves, crevices and other possible hiding places were examined in an 8-kilometre area along the cliffs near Qumran, only 40 contained any artifacts and one alone, produced more texts, the most unusual being the Copper Scroll.

MANY MORE SCROLLS

Another cave was discovered in September 1952 by the Ta'amireh. De Vaux, The Bedouin had discovered caves very near the Qumran ruins. One of which contained around three-quarters of all the scrolls found in the immediate Qumran area. In 1955 a survey of a terrace brought to light a staircase leading to the remains of three more artificial caves, at the end of the Qumran esplanade, all of which had collapsed and eroded, plus a fourth cave. The last cave containing scrolls to be found, once again was by the Ta'amireh tribe in early 1956. Among its contents were the Paleo-

Hebrew Leviticus scroll, the Great Psalms Scroll, and the Temple Scroll, though the latter had been spirited away and its recovery was to prove long and complex. In February 2017, another cave was found, the contents of which included completely broken storage jars and scroll fragments, but no scrolls. Iron pick-axe heads from the 1950s indicated looting. But archaeologists found flint blades pottery, arrowheads, and a carnelian seal from the Chalcolithic and Neolithic periods.

INTRIGUING MANUSCRIPT

The most intriguing manuscript from Qumran is the Copper Scroll, an ancient treasure map listing dozens of gold and silver caches. While the other texts are written in ink on parchment or animal skins, this document features Hebrew and Greek letters chiselled onto metal sheets—perhaps, as some have theorized, to better withstand the passage of time. Using an unconventional vocabulary and odd spelling, the Copper Scroll describes 64 underground hiding places around Israel that purportedly contain riches stashed for safekeeping. None have been recovered.

NATIONAL HERITAGE SITE

Israel Nature and Parks Authority took over the site following the end of the 1967 war, when Israel occupied the West Bank and seized Qumran. Israel has since invested heavily in the area to establish the Qumran caves as a site of "uniquely Israeli Jewish heritage". The caves are recognised in Israel as a National Heritage Site, despite the caves being in occupied Palestinian territories; as such, the designation has drawn international criticism.

The Great Isaiah Scroll, the best preserved of the biblical scrolls found at Qumran. It contains the entire Book of Isaiah in Hebrew, apart from some small damaged parts. This manuscript was probably written by a scribe of the Jewish sect of the Essenes around the second century BC. It is therefore over a thousand years older than the oldest Masoretic manuscripts



Photographs by Ardon Bar Hama, author of original document is unknown., Public domain, via Wikimedia Commons

CRISPS

A CHIP FROM THE OLD POTATO

The first known reference to a food similar to the modern crisp was in 1817 in a recipe book, *The Cook's Oracle*, by William Kitchiner which referred to "Potatoes fried in Slices or Shavings". Sprinkled with "a very little salt. Kitchiner's book was a best-seller and during the following decade, his recipe was referenced in many recipe books. He became a celebrity chef of his day.

CAVIAR CRISPS

Crisps were first produced commercially in America in 1910 by the Mikesell's Potato Chips. But Smith's company, founded in London in 1920, spiced up the market by adding seasoning to their crisps. This was followed 30 years later when flavoured crisps first appeared but did not gain popularity until the 1960's and 1970's. Salt was added in time and flavours were introduced in the early 1950s. Since around 1990, there has been a surge in flavours – from Lamington to Baked Bean and from Curry to Caviar. Crisps now form a large part of the snack and convenience food market in Western countries.

GEORGE CRUM

Another claim to the creation of potato chips was in Saratoga Springs, New York. By the late nineteenth century, a popular version of the story attributed the dish to George Crum, a cook at Moon's Lake House who was trying to appease an unhappy customer on August 24, 1853. The customer kept sending back his French-fried potatoes, complaining that they were too thick, too "soggy", or not salted enough. Frustrated, Crum sliced several potatoes extremely thin, fried them to a crisp, and seasoned them with extra salt.

WELL LOVED

To his surprise, the customer loved them. They soon came to be called "Saratoga Chips", a name that persisted into the mid-twentieth century. A version of this story was popularised in a 1973 national advertis-

ing campaign by St. Regis Paper Company which manufactured packaging for chips, claiming that Crum's customer was Cornelius Vanderbilt. In 1860 Crum and he owned a lakeside restaurant which they called Crum's House. The "Saratoga Chips" brand name still exists today.

GLOBAL MARKET

In the year preceding July 14, 2019, approximately 139.900 tonnes of crisps were sold in Britain. The global potato chip and crisps market was estimated to be worth £29,359,210,000. Forecasts suggest it will be worth £36,562,000,000 by the end of 2025, a growth rate of 4.3 per cent per annum.

Today, worldwide, there are over 1,000 separate crisp and chip flavours. The Museum of Crisps in Belgium aims to be the leading global crisp museum and only includes varieties whose base ingredient are an unadulterated slice of potato, either flat or crinkle cut. To qualify for inclusion in the database, the flavour must have been on sale in a retailer or through a vending machine.

OLDEST PRODUCER ?

A snack, side dish, lunch accompaniment or appetiser. Occasionally they feature as an ingredient in recipes, such as Tuna Crisp Bake. Originally, crisps were served unseasoned. Mikesell's Potato Chip Company claims to be the oldest crisp producer, having commenced industrial production in Dayton, Ohio in 1910. A decade later, in the UK, the Smiths Potato Crisps Company introduced a twist of salt with its crisps, which were sold around London in greaseproof pa-

per bags. The crisp remained otherwise unseasoned until an innovation by Joe 'Spud' Murphy, owner of the Irish crisps company Tayto, who, in the 1950s, developed the technology to add seasoning during manufacture. This resulted in the world's first seasoned chips.

Cheese and Onion, was launched in 1954. Companies worldwide sought to buy the rights to Tayto's technique. Salt Vinegar crisps followed a few years later. Polling consistently points to cheese and onion and salt and vinegar being the most popular flavours.

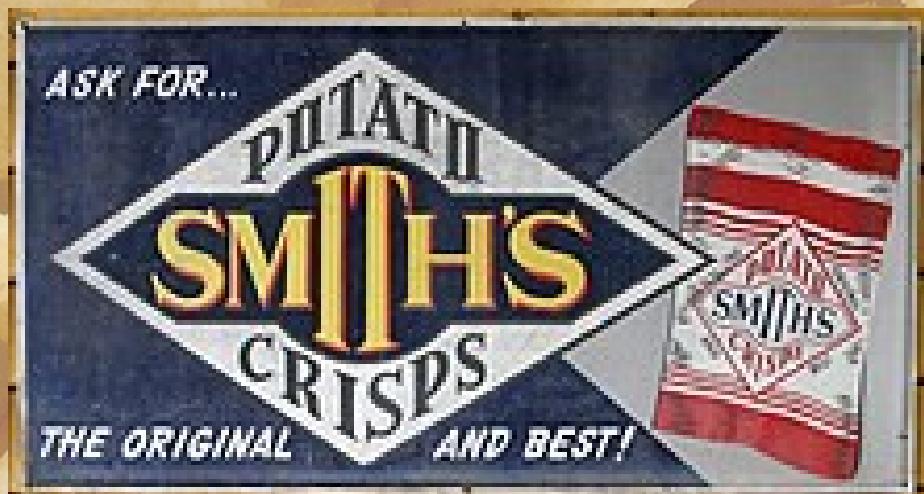
GLOBAL CRISP AWARDS

The first flavoured crisps in the United States, barbecue flavour, were manufactured and sold by the mid-1950's. No other flavour, apart from original plain crisps, emerged in the US market until the 1970s. Every August, the Global Crisp Awards, single out the flavours and innovations that contribute to making crisps one of the most creative and dynamic industries in the world. Another form of crisp like Pringles is made by extruding or pressing a dehydrated potato flour dough into the desired shape before frying. This makes a uniform product which can be stacked and packaged in rigid cardboard or plastic canisters.

CHIPS OR CRISPS?

While Pringles are officially branded as "potato crisps" in the US and termed "potato chips" in Britain they do not meet the definition or standard of identity for potato chips. Munchos, is another brand that uses the term "potato crisps", which has deep air pockets in its chips that give it a curved shape, though the chips themselves resem-

fir0002 flagstaffots [at] gmail.com Canon 20D+ Tamron 28-75mm f/2.8, GFDL 1.2
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THE MYSTERY OF THE VOYNICH MANUSCRIPT

An illustrated manuscript the Voynich Manuscript is an illustrated hand written codex in 'Voynichese'. The vellum on which it is written has been carbon-dated to between 1404–1438 while the stylistic analysis indicates it may have been composed in Italy during the Italian Renaissance. The origins, authorship, and purpose of the manuscript is debatable with various suggestions which suggest that it is an otherwise unrecorded script for a natural language or constructed language; an unread code, cypher, or other form of cryptography; or simply a meaningless hoax.

It consists of around 240 pages, but there is evidence that there some are missing. Most of the pages contain fantastical illustrations or diagrams, some crudely coloured, with sections of the manuscript showing people, fictitious plants, astrological symbols, etc. The text is written from left to right.

STUDIED IN DEPTH

Named after Wilfrid Voynich, a Polish-Lithuanian book dealer who purchased it in 1912 but since 1969, it has been held in Yale University's Beinecke Rare Book and Manuscript Library. It has been studied by many professional and amateur cryptographers, and code-breakers but has never been demonstrably deciphered. Also none of the many hypotheses proposed over the

last hundred years have been independently verified. The mystery of its meaning and origin has excited the popular imagination, making it the subject of much study and speculation.

In 2020, Yale University published the manuscript online in its entirety; 225 pages, in their digital collections library.

While the total number of pages is around 240, using numerals consistent with the 1400's, in the top righthand corner of each righthand page it seems likely that it had at least 272 pages.

HISTORICALLY CORRECT

Samples from the manuscript were radiocarbon dated at the University of Arizona in 2009 which indicated a date for the parchment between 1404 and 1438. Protein testing in 2014 revealed that the parchment was made from calf skin, and multispectral analysis showed that it had not been written on before the manuscript was created. The quality of the parchment is average and has deficiencies, such as holes and tears, common in parchment codices, but was prepared with considerable care. The parchment was prepared from about fifteen entire calfskins.

The goat skin binding and covers are not original to the book, but date to its possession by the Collegio Romano. Insect holes are present on the first and last folios of the manuscript which suggests that a wooden cover was present before the later covers.

FULL SCIENTIFIC TESTING

Many pages contain substantial painted drawings or charts. Based on modern analysis using polarised light microscopy (PLM), it has been determined that a quill pen and iron gall ink were used for the text and figure outlines. The ink of the drawings, text, and page and quire numbers have similar microscopic characteristics. In 2009, energy dispersive X-ray spectroscopy (EDS) revealed that the inks contained major amounts of carbon, iron, sulphur, potassium, and calcium with trace amounts of copper and occasionally zinc. EDS did not show the presence of lead, while X-ray diffraction (XRD) identified potassium lead oxide,



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potassium hydrogen sulphate, and syngenite in one of the samples tested. The similarity between the drawing inks and text inks suggested a contemporaneous origin.

ELIZABETH'S SPY MASTER

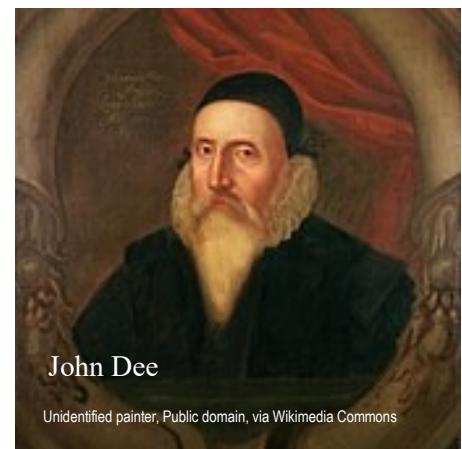
Various assumptions by Voynich led him to conclude that John Dee a mathematician, spy and astrologer at the court of Queen Elizabeth I of England who was known to have owned a large collection of Bacon's manuscripts may have been involved. See Fascinating Facts January 2023 issue.

Dee lived in Bohemia for several years, where he had hoped to sell his services to the emperor. However, this sale seems quite unlikely, according to John Schuster, because Dee's meticulously kept diaries do not mention it.

Because the manuscript has defied decipherment it has led scholars to propose that it may be a medieval hoax. Although some have claimed the text appears to be too sophisticated to be a hoax



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John Dee

Unidentified painter, Public domain, via Wikimedia Commons



OBERAMMERGAU PASSION PLAY SINCE 1680 THE LONGEST RUNNING PLAY WITH ONLY 42 PERFORMANCES



I have seen the Oberammergau Passion play, which covers the short final period of Jesus's life, from his final visit to Jerusalem, to his crucifixion, twice. It takes place in a specially built wooden structure, where the stage is open and one can see the mountains beyond. The theatre accommodates an audience of 4,700 people. One thing that struck me was the simple way the hall complied with fire regulations. The solution was a platform at the rear on each side on which stood a fireman with a powerful water cannon! With a new audience every day the traffic system worked fantastically well with no traffic problems.

FIVE HOUR PERFORMANCE

The five hour performance of the 16 act play is in two parts. Afternoon performance, then tea break and evening performance. The running time has varied over the years from 5 hours, to 7 hours. It is staged for 102 days to audiences from all over the world, often on package tours, the first in 1870. Admission fees were first charged in 1790. Since 1930, the number of visitors has ranged from 420,000 to 530,000. per year. The performance is so powerful and all performed by local amateur residents.

OBERAMMERGAU RESIDENT
Although the performance was in German it was easy to follow using the English translation book. The production involves approximately half of the population of Oberammergau. There are over 2,000 locals actors, over 100 choristers, 55 musicians plus stage technicians. The music is based on compositions of Rochus Dedler (1779 – 1822), who graduated from music studies in Munich. His role models were Mozart and Hayden. To perform in the play one must have either been born in Oberammergau or lived there for twenty years. Because everyone does the play as an adjunct to their normal work many, like the leading

19 roles, have two people. But everyone considers it an honour; and with no remuneration.

The performers take their participation very seriously, as does the Community Council. Each Ash Wednesday, of the preceding year, the hair and beard decree goes into effect. All the performers must let their hair grow and men start growing beards.

OLDEST SURVIVOR

Based on four distinct manuscripts dating from the 15th and 16th centuries the play, is the oldest continuous survivor of the age of Christian religious vernacular drama. Performed every 10th year, ending in 0, since 1680 (with a few historic exceptions) where the stage is open to the elements. There are many legends regarding the start of the passion play but the basic facts are that while other villages in the early 1600's were decimated Oberammergau remained plague free. No one knows if this was because they went into

The Oberammergau Passion Play Theatre is now considered a "monument" by the Bavarian State Office for Monument Conservation.

The Oberammergau Passion Play is listed as intangible heritage of the Federal Republic of Germany on the UNESCO World Cultural Heritage List.

voluntary quarantine. The village remained plague-free until a serious outbreak of bubonic plague following the return of one person from the local fair which caused the death of 80 people. On 28 October 1633, the villagers met in the church and vowed to God that if he spared them from the plague, they would perform a passion play every ten years depicting the life and death of Jesus. Following that vow no more died and the villagers kept their word by performing the passion play for the first time in 1634. The scenes are the basis for the interrelationship between the Old and New Testaments.

A JEWISH JESUS

Because it was considered anti-semitic in 2010, a radically new scene was introduced: Jesus lifting a Torah as hundreds sang the central Jewish prayer, "Shema Yisrael." It is now a highlight of the play. Modifications accelerated dramatically under the leadership of Christian Stückl, a four-time director of the decennial play that is seen by a half million people and emulated by Passion Plays around the world. In addition to ridding the play of many of the most flagrant anti-Jewish abuses, Stückl introduced a Jewish Jesus who teaches Torah, pursues social justice, and leads his community in prayer.



Photo: Andreas Praefcke CC BY-SA 3.0 via Wikimedia Commons

DR EDWARD JENNER THE FATHER OF VACCINATION

Edward Jenner's dream was for the world wide eradication of smallpox. A dream which became reality 56 years after his death, when the World Health Organisation declared smallpox an eradicated disease. But his legacy is more than that. He was the father of vaccination which was not a medical procedure before his ground breaking concept which he proved by vaccinating 8 year old James Phipps with cow pox on May 14th 1796. The son of a vicar he was born in 1749 and became an English physician and scientist who pioneered the concept of vaccination which is now a common medical treatment. A word derived from Variolae vaccinae ('pustules of the cow'), the term devised by Jenner to denote cowpox.

FATHER OF IMMUNOLOGY
Often referred to as the father of immunology his work is said to have saved "more lives than any other man". His vaccine laid the foundation for contemporary discoveries in immunology. In 2002, Jenner was named in the BBC's list of the 100 Greatest Britons following a UK-wide vote. He was commemorated on postage stamps by the Royal Mail, in 1999 and featured in their World Changers issue along with Charles Darwin, Michael Faraday and Alan Turing. The lunar crater Jenner is named in his honour. Worldwide there are many monuments to him.

PHYSICIAN TO THE KING
In Jenner's time, smallpox killed around 10% of global population, being as high as 20% in towns and cities. In 1821, he was appointed physician to King George IV, and

was also made mayor of Berkley Gloucestershire. He was also a justice of the peace, member of the Royal Society and Freemason of Lodge of Faith and Friendship. In the field of zoology, he was among the first modern scholars to describe the brood parasitism of the cuckoo.

HIS STUDY YEARS

At the age of 14, Jenner was apprenticed for 7 years to a surgeon in South Gloucestershire which he followed up when 21 in 1770 with a 3 year apprenticeship at St. George's hospital. After his apprenticeship, he returned to Berkeley and set up practice as a successful family doctor and surgeon earning his MD in 1792 from the University of St. Andrews. Inoculation (or variolation) for small pox was already common England, but was eventually banned in 1840 as it had been proven to be ineffective and dangerous.

Jenner followed up information gathered in 1765 by Dr. John Fewster that cowpox had the ability to prevent small pox. Jenner said the pus blisters milkmaids caught from cowpox protected them from small pox.

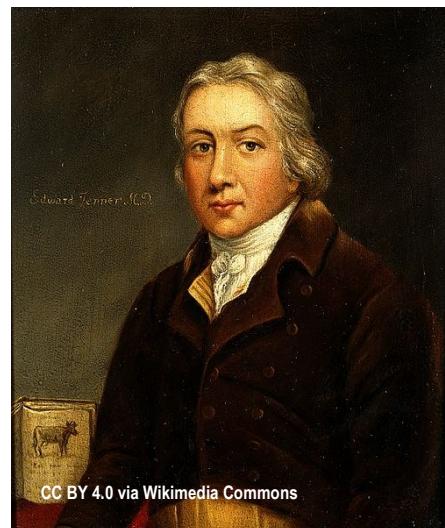
YOUNG BOY INOCULATED

In 1796 Jenner put this to the test by inoculating an 8 year old boy in both arms with the cowpox, which produced mild symptoms. Unlike previous investigators, Jenner followed up with additional experiments to infect the boy with small pox but no symptoms occurred.

Jenner's work on vaccination prevented him from continuing his ordinary medical practice but he was supported by his colleagues.

KING'S PETITION

The King petitioned Parliament and he was granted £10,000 (£771,500 in 2023) in 1802 for his work on vaccination. In 1807, he was granted another £20,000 (£1,543,000 in 2023) after the Royal College of Physicians confirmed the efficacy of vaccination. The British government supported his research, and between 1802 and 1807 they gave Jenner £30,000 (£2,375,999 in 2023) to keep his research going. It was the first time the government had supported a



medical idea which gave it credibility backing. The government made the vaccine compulsory in 1852 which led to a rapid change in the prevention of smallpox.

Jenner's unique contribution was not that he inoculated a few persons with cowpox, but that he then proved that this made them immune to smallpox. Moreover, he demonstrated that the protective cowpox pus could be effectively inoculated from person to person, not just directly from cattle.

GLOS MEDICAL SOCIETY

With others he formed the Fleece Medical Society or Gloucestershire Medical Society, which met in the Fleece Inn, Rodborough, Gloucestershire. Members dined and read papers on medical subjects. Jenner contributed papers on angina pectoris, ophthalmia, and cardiac valvular disease and commented on cowpox. He also belonged to a similar society which met in Alveston, near Bristol.

FREEMASON

Edward Jenner was made a Master Mason on December 30, 1802 at Lodge of Faith and Friendship No. 449, in Berkeley, Gloucestershire. 10 years later, Jenner became Worshipful Master of his lodge.

Jenner married Catherine Kingscote (who died in 1815 from tuberculosis) in March 1788 due to his interest in ballooning when he descended into Kingscote Park, Gloucestershire, owned by Catherine's father. They had three children: Edward Robert, Robert Fitzharding and Catherine. Jenner died on January 26th, 1823. Many buildings, monuments, and hospitals world wide have been named after him.



Jenner vaccinating 8 year old James Phipps with cow pox on May 14th 1796

INTERNATIONAL LOAD LINE, PLIMSOLL LINE & WATER LINE

It was through my maternal grandfather, who was a waterman and had worked all his life on tugs and barges on the River Thames, that I first heard the explanation of the term Plimsoll line on ships. In fact I can trace my ancestors, on that side of the family back to the mid 1700's working on the river. The plimsol line was compulsory on all merchant ships under Lloyds Shipping register in 1894.

Applied to merchant ships the mark on the hull indicates the limit of the quantity of cargo so that the ship is not overloaded. Used world wide the Plimsoll line is now officially referred to as the International load line. Every type of ship has a different level of floatation and the position of the Plimsoll line on a ship varies from depending on the type of vessel.

VENICE SINE 1255

The Plimsoll line is not new as the first such loading regulations appeared in Venice in 1255 making it illegal to exceed the draught, marked on each ship by a cross. Similar provisions were to be found in Cagliari and Pisa at the same period, and also in Barcelona, in the decree issued by Iago de Aragon in 1258, also in the maritime statutes of Marseilles in 1284. The most elaborate regulations appeared in the 14th-century Genoese statutes. In Venice, an official mark



Mr Samuel Plimsoll MP

was placed on the outside of the hull, and the ship was inspected before it sailed. If the mark was found to be more than a specified depth below the water-line, the excess cargo was removed by the authorities and the owners heavily fined. Foreshadowing not only use of a of Plimsoll style mark but one of the classification of all shipping.

MEASURE GROSS WEIGHT

Technically, a certain portion of the ship is always immersed in the seawater and the level of submerging is decided by the gross weight of the respective ship. The Plimsoll line indicates the draft of the ship which is the legal limit to which a ship may be loaded for specific water types and temperatures in order to safely maintain buoyancy, particularly with regard to the hazard of waves that may arise. Varying water temperatures will affect a ship's draft, because warm water is less dense than cold water, providing less buoyancy.

In the same way, fresh water is less dense than seawater with a similar lessening effect upon buoyancy and can also play a key role in deciding the height the ship rides in the water. Sometimes even the oceanic regions and changing seasons affect the Plimsoll mark.

So why is it called the Plimsoll line? The first 19th-century loading recommendations were introduced by Lloyds Register in 1835.

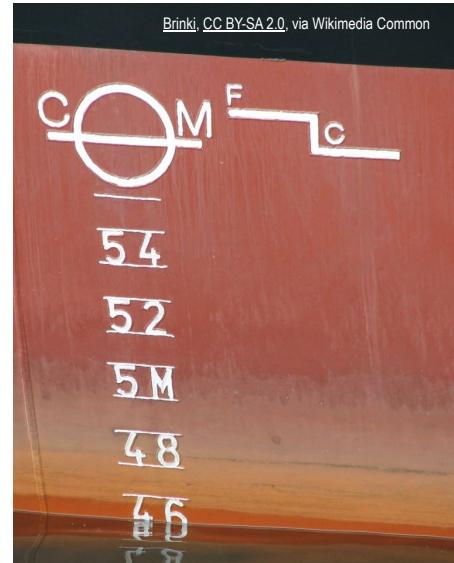
LLOYD'S RULE

Following discussions among shipowners, shippers and underwriters. Lloyd's recommended freeboards as a function of the depth of the hold (three inches per foot of depth). These recommendations, used extensively until 1880, became known as "Lloyd's Rule".

In the 1860s, after increased loss of ships due to overloading, Samuel Plimsoll, MP. took up the cause against strong opposition. A Royal Commission on unseaworthy ships was established in 1872, and in 1876 the United Kingdom Merchant Shipping Act made the load line mark compulsory.

Nevertheless the positioning of the mark was not fixed by law until 1894. It became semi international when in 1906, laws were passed requiring foreign ships visiting British ports to be marked with a load line. It was not until Load Line Convention in 1930

Brink, CC BY-SA 2.0, via Wikimedia Commons



The original "Plimsoll mark" was a circle with a horizontal line through it to show the maximum draft of a ship. Additional marks have been added over the years, allowing for different water densities and expected sea conditions.

that there was international agreement for universal application of load line regulations.

The symbol is permanently marked, so that if the paint wears off it remains visible. The load line makes it easy for anyone to visually determine if a ship has been overloaded. The exact location of the load line is calculated and verified by a classification society and that society issues the relevant certificates. Born in Bristol he left school at an early age, to be a clerk at Rawson's Brewery, rising to manager. In 1853, he failed in his attempt to become a London coal merchant and was reduced to destitution.

This experience helped him sympathise with the poor, many who were seamen. So when his good fortune returned, he resolved to devote his time to improving their condition.

COFFIN SHIPS

His efforts were directed especially against what were known as "coffin ships": unseaworthy and overloaded vessels, often heavily insured, in which unscrupulous owners risked the lives of their crews. 0- In 1867, he was elected as the Liberal Member of Parliament for Derby and, against a number of powerful ship-owning MPs in Parliament tried to pass a bill dealing with the subject of a safe load line on ships. He died in Folkestone on 3 June 1898.

SCHWERER GUSTAV & DORA THE WORLD'S LARGEST GUNS

Schwerer Gustav - Heavy Gustav was a German 80-centimetre railway gun developed in the late 1930's by Krupp as siege artillery for destroying the forts of the French Maginot Line. The fully assembled gun weighed 1,350 tons and fired 7 ton shells, as below, a distance of 29 miles.

GUN DESTROYED

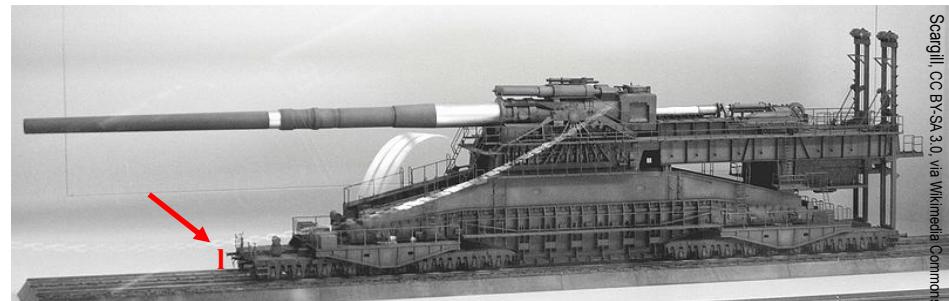
Designed in preparation for the Battle of France, it was not ready when that battle began, and the Blitzkrieg offensive rapidly outflanked the Maginot Line's static defences. Gustav was later deployed to the Soviet Union during the Battle of Sevastopol, part of Operation Barbarossa, where it destroyed a munitions depot 98 ft below ground. It was then transported to Leningrad, for the Warsaw Uprising, but the uprising was crushed before it could be fired. The Germans destroyed the gun to avoid it falling into Soviet hands.

It was the largest calibre rifled weapon ever used in combat as well as being the heaviest mobile artillery piece ever built. It fired the heaviest shells of any artillery piece.

FANTASTIC PENETRATION

The German Army High Command commissioned Krupp to design a gun with shells capable of penetrating seven metres of reinforced concrete or one full metre of steel armour plate. Krupp engineer Erich Müller calculated that the task would require a weapon with a 31 in. calibre firing a projectile weighing 7 tons from a 98 ft long barrel. It would weigh over 1,000 tonnes which meant that to be movable it would need to be supported on twin sets of railway tracks.

As with other railway guns, the only barrel movement would be elevation. To traverse would require a curved section of railway line. Eventually on March 1936, following a visit to Essen by Adolf Hitler design work began on an 80 cm model. Fabrication of the first gun started in mid-1937, but technical complications in the forging such massive pieces of steel meant that the original completion



To give an idea of scale the arrowed small red I in front represents a person !

date of early 1940 could not be met. A test model was sent to the Hillersleben proving ground for testing in 1939. Firing at high elevation, the 15,700 lb shell was able to penetrate the specified seven metres of concrete and the one metre armour plate. Following the completion of the tests in mid-1940 the complex carriage was developed. Following formal acceptance trials of the Gustav Gun in early 1941 two guns were ordered.

A RANGE OF 23 MILES

The first round was test-fired from the commissioned gun barrel on 10 September 1941 from a makeshift gun carriage at Hillersleben. In November 1941, the barrel was taken to Rügenwalde Poland, where eight further firing tests were carried out using the 15,700 lb armour-piercing shells to a range of 23.12 miles. For combat, the gun was mounted on a specially designed chassis, supported by eight bogies on two parallel railway tracks. Each of the bogies had five axles, giving a total of 40 axles with 80 wheels. Krupp named the gun Schwerer Gustav (Heavy Gustav) after the senior director of the firm, Gustav Krupp von Bohlen und Halbach. The gun

could fire a heavy concrete-piercing shell and a lighter high-explosive shell. An extremely long-range rocket projectile was also planned with a range of 93 miles, that would require the barrel being extended to 276 ft. - 2.8 times original length!

In keeping with the tradition of the Krupp no payment was asked for the first gun. They charged seven million Reichsark (approx 24 million USD in 2015) for the second gun, Dora, named after the senior engineer's wife.

In February 1942, Schwerer Gustav began its long ride to Crimea. The train carrying the gun was 25 cars with a total length of 0.9 miles. It reached the Perekop Isthmus in early March.

SPECIAL RAILWAY SPUR

A special 9.9 mile railway spur line ending in four semi-circular tracks were built for the Gustav to traverse. Outer tracks were required for the cranes that assembled Gustav. The siege of Sevastopol was the gun's first combat test. It took 4,000 men 1 month to assemble and 500 men to operate.

Sevastopol lay in ruins, and 30,000 tons of artillery ammunition had been fired. Gustav had fired 47 rounds and worn out its original barrel, which had already fired around 250 rounds during testing and development. The gun was fitted with the spare barrel and the original was sent back to Krupp's factory in Essen for relining.

BOMBED BY RAF

The Langer Gustav was a longer cannon with 20.5 in calibre and a 141 ft barrel. It was intended to fire super-long-range rocket projectiles weighing 680 kilograms to a range of 118 miles. This gave it the range to hit London from Calais, France. It was never completed after being damaged during construction by one of the many RAF bombing raids on Essen.

