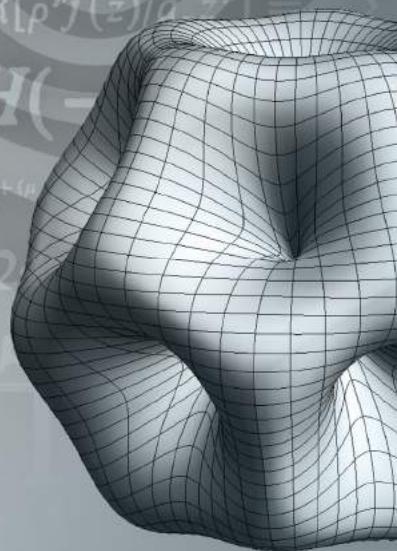


# Recreational Mathematics Magazine



Number 6  
December, 2016



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OPEN



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# Articles

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## WHERE ARE (PSEUDO)SCIENCE FOOL'S HOAX ARTICLES IN APRIL FROM?

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**Abstract:** *In this paper, we discuss in detail what is behind April Fool's Day.*

**Keywords:** April fool's day.

### Introduction

April Fool's Day, sometimes called All Foll's Day, is one of the most light-hearted days of the year. April 1 has long been celebrated as a day to celebrate, well, foolishness to be exact. More specifically, April Fools' Day is about making other people look stupid with practical jokes.

The origin of April Fools' Day is uncertain. Somebody considers it as a celebration related to the turn of the seasons. Ancient cultures, including those of the Romans and Hindus, celebrated New Year's Day on or around April 1. It closely follows the vernal equinox (March 20 or March 21). In medieval times, much of Europe celebrated March 25, the Feast of Annunciation, as the beginning of the new year.

Others believe it stems from the adoption of a new calendar. In 1582, Pope Gregory XIII ordered a new calendar (the Gregorian Calendar) to replace the old Julian Calendar. The new calendar called for New Year's Day to be celebrated January 1. That year, France adopted the reformed calendar and shifted New Year's day to January 1. According to a popular explanation, many people either refused to accept the new date, or did not learn about it, and continued to celebrate New Year's Day on April 1. Other people began to make fun of these traditionalists, sending them on "fool's errands" or trying to trick them into believing something false. Eventually, the practice spread throughout Europe. But we have no direct historical evidence for this explanation, only conjecture.

It is worth noting that many different cultures have had days of foolishness around the start of April, give or take a couple of weeks. The Romans had a festival named Hilaria on March 25, rejoicing in the resurrection of Attis. The Hindu calendar has Holi, and the Jewish calendar has Purim. Perhaps there's something about the time of year, with its turn from winter to spring, that lends itself to lighthearted celebrations. To these days, April Fools' Day is observed throughout the Western world. Practices include sending someone on a "fool's errand", looking for things that don't exist; playing pranks; and trying to get people to believe ridiculous things.

Although it might seem that April has experienced a slight decline of Fame in recent years, April 1 is still a welcome opportunity for usually serious media to banter with impunity. With the April tradition media can go beyond the seriousness and let some sensation to the world. There is nothing more exciting than catching a million people out at a time. If we investigated the influence of the media, we could not forget the date of April 1. In this day, the number of TV and radio stations and newspapers are testing their readers, listeners and viewers when catching their attention on the grotesque reports. The newspaper sensations in the form of serious-looking reports are on a daily basis.

Even the smallest local newspaper tries to cheat their readers by informing them about the blast of the chimney in the local factory, saving the collapsing bridge or the unexpected arrival of a celebrity in the local discos. People attracted by these sensational titbits are gathering in front of the screens to find out soon that they were just taken in by the bunch of journalists who are more than happy to report how many people fell for their bait in the following issue.

We must also be vigilant following days. Although the first in a joking occupy mainly daily periodicals, including Internet, some journals do not want to be left behind and publish the April issue. The readers have to be alert only April 1 but basically the throughout month.

And they grip on not only but also in the choice of hoaxes. The most success jokes will go down the history of April hoaxes. Their international rankings can be found on the website of The Museum of Hoaxes. In the first place there is a report of the British BBC television from 1975. Contribution in the transmission informed viewers that Swiss farmers grew spaghetti on trees due to warm weather and had a record harvest this year. Although it may seem highly improbable, many viewers believed it.



Figure 1: The Swiss Spaghetti Harvest.

For the best-rated newspaper sensation is considered an article about incredible rookie baseball Mets's player which was published in Sports Illustrated Magazine, in 1985. The boy named Sidd Finch could reportedly pitch a baseball about 65 mph faster than previously recorded speed for a pitch. But this was not all, Finch had "learned the art of the pitch" in Tibet where he learned the teachings of the "great poet-saint Lama Milaraspa". Mets's fans were amazed by this rumor and clamored for more information. However, to their great disappointment, they read in the next issue of the magazine, they were victims of April fools hoax.



New Mets's player.

Basically, we can divide the journalistic April fool's hoax into several categories: seriously conceived message, which you can hardly see through; report with a clear overstatement, in which you can just having fun with the adaptation or

absolutely humorous messages that can be true, just they do not have any place in the current edition. There are no reliable “rules of April” how we can recognize a hoax report. Everything depends on the sophistication of journalists and presence of mind of the reader. Sometimes we can use some tools such as print text upside down or using apparently fiction names and titles, but the author of the hoax article throw such a lifebuoy exceptionally. Every day, we are witness of events that we do not dare to believe for many reasons, even if they are sometimes true. So how we can know what is true and what is not? The chapter itself is, when scientific journals make fun of us; for example, reports of breakthroughs and inventions.

In a time, in which we live, the science become more progressive every day. Media constantly spewing on us messages about new scientific results. But how we can distinguish that discovery is crucial or extremely stupid? And do we have the ability to do it?

There are plentiful of pranks or hoaxes. In the following chapters, we will gradually trade the April fool's hoaxes from mathematicians of physicists. We will show some examples of such scientific April hoax articles. You can also read where the authors draw inspiration and what happens when readers take such a discovery seriously.

## The great Moon hoax

After reading the introductory chapter, we have idea how an April fool's hoax article might look like. In this chapter, we introduce the first ever article which passed into history and triggered an avalanche of newspaper sensation.

Historically, the first false news sensation, which went down in history, is associated with the New York daily press *The Sun*<sup>1</sup>. In August 1835 *The Sun* published a series of briefings on astronomical observation of Sir John Frederick William Herschel that took the newspaper and scientific worlds by the ears.

The first angle of the plot appeared on *The Sun* on August 21, 1835. The report was allegedly taken from the English magazine *Edinburgh Courant* [27]: “*We have just learnt from an eminent publisher in this city that Sir John Herschel, at the Cape of Good Hope, has made some astronomical discoveries of the most wonderful description, by means of an immense telescope of an entirely new principle.*”

This announcement only serve as an initial report to the much more complicated series of articles that began appearing in the newspaper four days later. Everyday news brought readers news of astronomical observations. All

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<sup>1</sup>*The Sun* was a New York newspaper that was published from 1833 until 1950. The founder and first editor of the newspaper was Benjamin Day. He came up with the idea of daily newspapers with an extremely low price, so he decided to create and fund his press based on the results from the sale of individual issues. Profit from each issue had to cover production costs. To newspapers sold well, spreadsheet content to offer simple and fun to read. Day emphasis on sensational news reports about crimes, sex and so on [21].

articles cited the results published in a supplement to the English scientific magazine.



Front page of daily New York *The Sun*: August 25, 1835.

Articles describing the landscape of the Moon, which seemed to telescope observers in the same similarities, as a viewer on Earth offering distance less than a hundred meters. The continuation of the story focused not only on the lunar landscape, but also for animals and creatures that lived on the Moon. It talked about different life forms on the moon, including such fantastic animals as unicorns, two-legged beavers and furry, winged humanoids resembling bats. The articles also offered vivid description of the moon's geography, complete with massive craters, enormous amethyst crystals, rushing rivers and lush vegetation. Then, suddenly, it followed a short statement that further discoveries failure prevented the telescope. This story ended.



Figure showing beings from the Moon.

Exotic landscapes, flora and fauna of the Moon has issued the first article became a sensation overshadowing reports in other newspapers. People all over New York to discuss whether the story is true. Readers were completely taken in by the story, however, and failed to recognize it as satire. A number of New York newspapers reprinted article, or at least its excerpts in order to they did not lose their readers (see [27]):

*The Daily Advertiser* wrote that: “No article has appeared for years that will command so general a perusal and publication. Sir John has added a stock of knowledge to the present age that will immortalize his name and place it high on the page of science.”

*The Times* said that everything in the *The Sun* story was probable and plausible, and had an “air of intense verisimilitude”.

*The New York Sunday New* advised the incredulous to be patient: “Our doubts and incredulity may be a wrong to the learned astronomer, and the circumstances of this wonderful discovery may be correct”.

The craze over Herschel's supposed discoveries even fooled a committee of Yale University scientists, who traveled to New York in search of the *Edinburgh Journal* articles.

The articles were an elaborate hoax. It was a perfect mystification, which succumbed not only readers, but newspapers and some scientists. The only thing on the whole stunt was real, was the figure of John Herschel. Sir John Frederick William Herschel was the greatest astronomer of his time, moreover he was the son of the celebrated astronomer Sir William Herschel. In truth, in January 1834, he went to South Africa and established an observatory near Cape Town, with the intention of completing his survey of the sidereal heavens by examining the southern skies as he had swept the northern, thus to make the first telescopic survey of the whole surface of the visible heavens. Nevertheless Herschel had not really observed life on the moon, nor and he accomplished any of the other astronomical breakthroughs credited to him in the article. In fact, Herschel was not even aware what it was happening in New York. That the such discoveries had been attributed to him, he found out until much later. At first he was rather amused, and only complained that his own observations, sadly, never will nor half as entertaining as they are described in the paper. Later, however, he was much annoyed because he had to constantly face questions from people who thought that the articles are true [35]: “*I have been pestered from all quarters with that ridiculous hoax about the Moon – In English, French, Italian and German!!*”

The author of this newspaper stunt was reportedly reporter Richard A. Locke<sup>2</sup>, who in August of that year began working for the newspaper *The Sun*. There are persistent rumors that Locke confessed to his friend Finn authorship of articles in a weak moment. Reveal the secrets of a friend who works in a

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<sup>2</sup>Richard Adam Locke (1800–1871) was an English journalist, writer and later editor of *Somerset paper*. In 1835, he first met with the editor Benjamin Day and began working for *The Sun* [35].

competing newspaper, was proved a poor choice. The next day, the newspaper *Journal of Commerce* published the news that a series of monthly articles about discoveries is a hoax, and Locke identified the author as a fiddle. There are also speculations that by writing articles involving more people. In connection with the mentioned articles is most often named yet one man: Jean-Nicolas Nicollet<sup>3</sup>, French astronomer passengers at the time in America. However, there is no specific evidence about who was the real author of those sensational articles, and even Locke never publicly admit authorship.

Regarding the intention of the entire newspaper fiddle, assumptions are somewhat nebulous. The first option is entirely pragmatic: Locke's aim could be to create a sensational story that would increase the sales of *The Sun*. Another reason could be targeted ridicule from some rather extravagant astronomical theories, which were published at that time. It comes into consideration also the option that Locke was inspired by a story by Edgar Allan Poe<sup>4</sup> about similar inhabitants of the moon called *The Unparalleled Adventure of One Hans Pfaall*.

Whatever the intentions of any of Locke, his hoax sparked sharp criticism from the other New York newspapers. For the “robust” newspapers of that time, which came from the Enlightenment concept of the press as a medium of education for the “common people”, it was similar to the stigma content “relegation” task newspaper. Despite the fact that the New York newspaper condemned all competition from fraud, *The Sun* for a long time he was not ready to disappoint their readers and confess. Until September 16, 1835, more than two weeks after the conclusion of the story, was imprinted long article on the topic of authenticity discoveries. At the end of this article *The Sun* the whole affair has concluded that although the articles about discoveries on the moon initially written as a satire to entertain readers, later unexpectedly encountered new circumstances, which may confirm the authenticity of some breakthroughs, and therefore it is necessary explore everything properly again. This statement apparently after previous experience nobody believed, but because readers and most newspapers fell for a ruse, it is better not to pursue the case further too and take the whole affair rather humorously. “That the public were misled, even fop an instant” Poe declared in his critical essay on Locke's writings [27], “merely proves the gross ignorance which, ten or twelve years ago, was so prevalent on astronomical topics.”

However, it is clear that gambling confidently readers did not erode sales of the newspaper *The Sun*, quite the contrary. Thanks to a sensational articles, the number of his prints has increased dramatically and even after the discovery of fraud had not fallen. *The Sun* every day began to publish more or less fanciful reports about various attractions, stories and tidbits from the world of crime, sex and so on. Over the next year cost of *The Sun* several times higher than

<sup>3</sup>Jean-Nicolas Nicollet (1786–1843), also known as Joseph Nicolas Nicollet, the French geographer, astronomer and mathematician who is most notable thanks to the mapping of the upper stream Mississippi in 1830 [18].

<sup>4</sup>Edgar Allan Poe (1809–1849) was an American Romantic poet, novelist, literary theorist and essayist. He was the author usually fantastic and mystical stories and founder of the detective genre [4].

the average cost of a conventional printed in the USA. No wonder then that this convincing success prompted several attempts to infiltrate into the same area newspaper market.

## The Indian rope trick

Another in a series of successful newspaper sensation came from *Chicago Daily Tribune*<sup>5</sup>. On August 9, 1890 the newspaper published a report describing the breathtaking illusionist performances of the Indian fakir [34].

The story is narrated by a young amateur photographer Frederick S. Ellmore, who traveled to India with his friend George Lessing. During his stay in Gaya he attended a performance of a local snake charmer. The performance was stunning. The young travelers were most attracted by a rope trick. The fakir took a ball of gray twine in a hand. Taking the loose end between his teeth he with a quick upward motion, tossed the ball into the air. Instead of coming back to him it kept on going up and up until out of sight and there remained only the long swaying end. At the same moment a young boy appeared beside the fakir. He began climbing it and vanished in clouds. A moment later the twine disappeared.

The story was also added to the pictures. While the fakir was going through his performances Lessing was to make a rapid pencil sketch of what he saw while Ellmore at the same moment would take the photographs with kodak. Strangeness was that the scene outlined in Lessing's sketches did not agree with the Ellmore's photographs. Despite the fact that the sketch showed the boy climbing the twine, the camera said there was no boy and no twine. Therefore Ellmore concluded that the fakir had hypnotized the crowd into believing the trick had been performed(see [5]): "...his eyes were remarkable both for their brilliancy and their intense depth, if I may so term it. They seemed to be almost jet black and were set unusually deep in his head. When we stepped into the little circle about him those eyes took us in from sole to crown...I'm compelled believed that my theory is absolutely correct - that Mr. Fakir had simply hypnotized the entire crowd, but couldn't hypnotize the camera." In the conclusion of the article he promised to sent the copies of the pictures to the London Society for Psychical Research to closer investigation.

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<sup>5</sup>*Chicago Daily Tribune* is a major daily newspaper based in Chicago, Illinois, United States. It was founded in 1847 and formerly self-styled as the "World's Greatest Newspaper". In the year 1854–1901 Joseph Medill was a managing editor of the newspaper.



Picture from *Chicago Daily Tribune* with Lessing's sketch and Ellmore's photograph.

Both readers and other newspapers believed the article. The story quickly spread and gained credibility, first in the United States, then in Great Britain and very soon it was translated into many European languages. Over the next four months this article provoked so much debate that the editor *Daily Tribune* decided to clarify the whole affair and admit that the story was completely fabricated. On December 6, 1890 the short notice was published at the bottom of a *Queries and Answers* column (see [37]): “The article on hypnotism referred to in the above query was written for the purpose of presenting a theory in an entertaining form... The principal character was Mr. F. S. Ellmore (sell-more), and the writer considered that the name would suggest to a careful reader that it was a ‘sell’.” How many reader devoted attention to the confession, it is hard to estimate. Although press transfers the messages better than other media, simultaneously it allows people the disclaimer to just skip. Whatever the readers may read the disclaimer or not, the story about the Indian rope trick definitely did not fit.

Over the ensuing decades, this trick has inspired much controversy in magic and psychical research circles. Other eyewitness accounts to the trick were presented, but finally, they collapsed under investigation. Despite all the statements of the witnesses were false, with every repetition the story became more real and realistic not only rumor<sup>6</sup>. Magicians and illusionists bet among themselves who will perform the air-open show as the first. In 1930’s, Lt Col Elliot of the London Magic Circle, when offering a substantial reward for an outdoor performance, found it necessary to define the trick. He demanded that (see wiki):“the rope must be thrown into the air and defy the force of gravity, while someone climbs it and disappears.” Challenges to perform the trick in the open air, not on a stage, were taken up but never met by magicians.

We must admit that this newspaper sensation was really successful. Many people (including scientists) did not want to believe that the story was not

<sup>6</sup>Rumor is a tall tale of explanations of events circulating from person to person and pertaining to an object, event, or issue in public concern. It contains nothing from which we could assess the veracity (see [20]).

inspired by a reality and so they traveling to India inquired about the trick and helped to spread the legend there; soon Indians were defending their trick against claims it had originated centuries prior in China. In 1996 Peter Lamont<sup>7</sup> a historian and performer of magic dealt with the origin of the trick and concluded that there were no known references to the trick predating 1890, and later stage magic performances of the trick were inspired by article. By now the rumor about the Indian rope trick lived its own life and with time diverse accounts of the trick began to appear in print which differ in the degree of theatricality displayed by the magician and his helper<sup>8</sup>. According to the version of the story, the tricks they used to be attributed to various Indian or Moroccan fakirs.

The question still is, how did we discover the identity of the story's anonymous author? In 1891 Andrew Stewart, the editor of a popular British weekly *People's Friend*, had read various copies of the original story and sent a letter to the *Daily Tribune* seeking more information of the rope trick. One John E. Wilkie<sup>9</sup> responded to his letter (see [24]): "I am led to believe...that the little story attracted more attention than I dreamed it could, and that many accepted it as perfectly true. I am sorry that any one should have been deluded." And the letter was signed, with no obvious sense of irony, "sincerely yours, John E. Wilkie". Richard Hodgson of the American Society for Psychical Research has on the question of authorship a different opinion. R. Hodgson did not credit Wilkie either, but instead and noted that (see [24]): "[t]he story of the boy climbing the rope and disappearing is, in one form or another, very old". This would be another reason why Wilkie would not be remembered as the man who launched the legend. For while he was responsible for making the story famous, the story itself was not entirely original. There had been, for centuries, many stories of ropes, cords, chains and the like rising into the air, of humans and animals climbing to the top and disappearing. Such stories, in fact, can be found in the mythologies and folklore of several cultures, not only in India but in Europe and China, in North America and Australia.

And even if we knew the real author of this hoax, today we can only guess, what was the main impetus for the writing this hoax. For example, Lamont believes Wilkie's ruse was inspired by debates at the time about conjurors and psychic phenomena.

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<sup>7</sup>Peter Karl Lamont is a research fellow at Edinburgh University. He is also historian and performer of magic (see [29]) In 1996, he pulls off a neat trick himself in making 264 pages appear on so slim a topic. Moreover, his book contains the names the alleged hoaxter and follows the tricky caroms the legend took over the years [24].

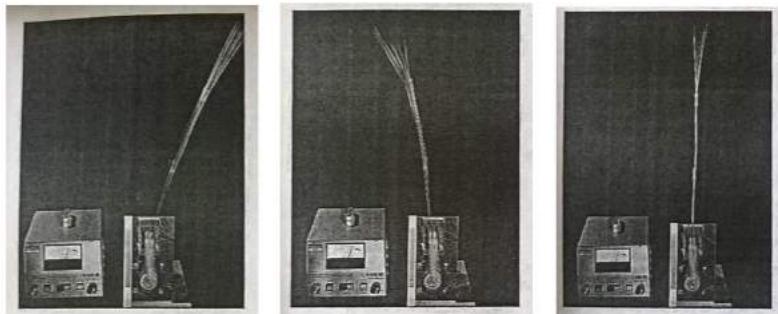
<sup>8</sup>One of them threw a rope into the air which hitched itself up to apparently nothing in the sky above; one could see the rope going straight up as far as one could see anything... A small boy then swarmed up this rope, becoming smaller and smaller, till he likewise vanished from sight, and a few minutes later bits of his (apparently mangled) remains fell from the sky, first an arm, then a leg, and so on till all his component parts had descended; these the juggler covered with a cloth, mumbled something or other, made a pass or two and behold! there was the boy smiling and whole before us (see [24]).

<sup>9</sup>John Elbert Wilkie (1860–1934) was an American journalist and Director of the United States Secret Service from 1898 to 1911. His father, Franc B. Wilkie, was an editorial writer at the newspaper; the two traveled to Europe and served as the *Chicago Times'* European correspondents. In 1911 John E. Wilkie joined the staff of the *Chicago Tribune*, where he initially served as financial editor and later city editor (viz [17]).

Very curiously is that although Wilkie have dreamed trick which the magician have not succeeded in doing it till now, but it does not mean that it is totally unrealistic. When Wilkie unleash his imagination, surely he did not know that one hundred years later, something similar will realize through scientific and technological methods.

Very similar analogy is described by the Swiss mathematician Daniel Bernoulli. In 1738 he published the article on pendulum motion. Bernoulli was interested in multiple pendulums that means  $N$  pendulums suspended from one another. He discovered that this system can oscillate at any one of  $N$  different natural frequencies  $f_1, \dots, f_N$ , where  $f_1$  denotes the smallest and  $f_N$  the largest. In the lowest-frequency mode the pendulums swing to and more or less together, much as if they formed one long, single pendulum. The other way around, in the highest-frequency mode, adjacent pendulums swing in opposite directions at any given moment.

In 1992 a mathematician David Acheson and a physics Tom Mullin began to study more closely the Indian rope trick. They turned everything upside-down and discovered that it is possible to take  $N$  linked pendulums, turn them upside-down, so that they are all precariously balanced on top of one another, and then stabilize them in this position by vibrating the pivot up and down. They conclusion said that (viz [2]): “the trick can always be done, so long as the pivot is vibrated up and down by a small enough amount and at a high enough frequency.” By the experiment they even discovered, that with a 50 cm inverted triple pendulum, for example, the pivot was vibrating up and down through 2 cm or so at a frequency of about cycles per second. Moreover the inverted state is quite stable because when they push them over by as much as 40 degrees or so and they would still gradually wobble back to the upward vertical.



The upside-down pendulum

In 1993 they published their results in *Nature* magazine and two years later they made a brief appearance, with the experiment, on the British BBC television on the TV programme *Tomorrow's World*. Sometimes, however, fictions and fantasies of journalists seem closer to reality than advances of science. While the *Daily Tribune* was enjoyed greater sales after publishing hoax article, Acheson

and Mullin did not get popularity. After the TV program, the BBC received a telephone call from outraged viewers who claimed that (viz [2]): “[the] balancing act was obviously impossible, and contrary to the laws of physics” and he seemed ”genuinely upset with *Tomorrow's World* for ‘lowering their usually high standards’ and ‘falling prey to two tricksters from Oxford’.

## Gravity nullified

Let's return back to the sensational newspaper articles. Fascination with the power of newspapers keep also subsequent periods. Another newspapers the idea of news sensationalism further developed and promoted it with a far more aggressive. Over time heals completely withdrawing from publishing completely fictional reports, as undermining the credibility of the sheet. Newspaper stunts were replaced by sensationalist headlines and graphic illustrations that complement the only real event.

All this has led to the fact that at the beginning of the 20th century, people began to look at the newspaper with a certain disdain due to the lack of objective information and pandering to readers. Efforts to regulate the work of journalists and provide relevant information to readers culminated in the release of the ethical code of journalists<sup>10</sup>. The ethical code serves primarily as ensuring moral support for journalists and their readers and sets a limit on what is good, moral and what is not. Although none of the ethical code has legal force, but its compliance is mandatory and violations can be punished. Penalties for violations are different in every country. Generally, a person in violation of the Code may be sued, and the result is a matter of court proceedings - from moral sanctions such as a reprimand, despite the temporary suspension, to the exclusion of professional associations.

This regulation of the press is the reason why today's press, especially if we focus on professional scientific journals to his readers a little more forgiving and canards deleted only once a year, on April. However, in this day readers really need to be alert. A chance to catch their readers from time to time will not miss even reputable scientific journals.

Moreover it is becoming harder and harder to recognize when it is a hoax, and when it is a real discovery. Additionally, if we are not experts in the field and do not understand the issues, we have little chance to detect fraud and not be fooled. On April, Other times, serious scientific journals, often use (or abuse) the reader's ignorance about technical topics.

On April 1927 a German journal *Radio Umschau*<sup>11</sup> publish a report called *Überwindung der Schwerkraft? Ein neuer Erfolg der Quarzkristallforschung* about discovery of antigravity device.

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<sup>10</sup>The first ethical code of journalists was named the *French Charter of the duties of journalists* and it was publish in France in 1918. In 1926 followed the Ethics Code in USA. Furthermore, in 1947, again in USA, it was publish the Hutchins Commission on press freedom and in 1950's *International Federation of Journalists* was founded by journalistic organizations of the USA and Western Europe.

<sup>11</sup>*Radio Umschau*.

The discovery was made in a newly established central laboratory of the Neuuartadline-Werke in Darreskein, Poland, by Krowsky and Frost. While experimenting with piezoelectric properties of quartz crystals they discovered that the constants of very short waves, carried on by means of quartz resonators, a piece of quartz which was used, showed a clearly altered appearance. It means quartz crystal changed the entire structure. Moreover it lost its weight, had become practically negative, and its was able to levitate.

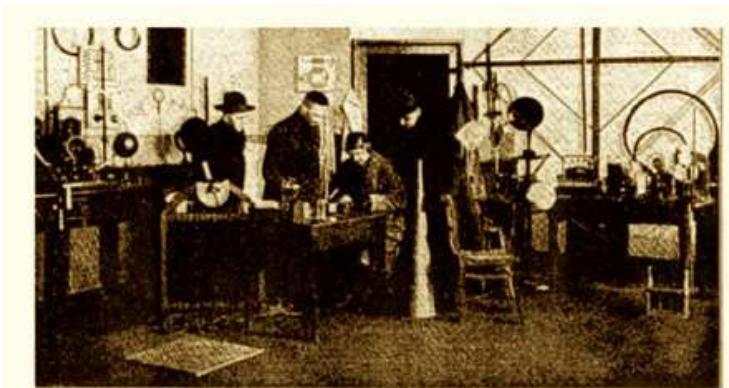


Fig. 1. Im Quarzkristall-Laboratorium.  
Dr. P. Lortes (links stehend) im Raum bei den Erfindern Dr. Krowsky und Ingenieur Frost. (Rechts in der Ecke zwei „Schwingkammen“, welche bei den Versuchen benutzt wurden.)

Bereits gleich nach Bekanntwerden nachahmender Einzelheiten kannen wir die Absicht, unseres Lesers aufzuklären über die ausserordentlich mit geringem Erfolg durchgeföhrten Versuche zu berichten. — Um aber genauereres orientiert zu sein, bemühte ich Elektriker der Erfinden Herr Dr. Lortes zunächst die Laborariorien, und wie sind somit diese in der Lage, gleichzeitig drei hochinteressante photographische Aufnahmen von Versuchen zu veröffentlichen. — Da die technischen Mittel für die Versuche selbst nicht völlig ausreichten, dürfte nunmehr Baader und anderen weiter nach ausreichenden, Versuche vorzunehmen; wir sind gerne bereit, weitere Wünsche den Erfindern zu übermitteln.

Die Schriftleitung.

### Ueberwindung der Schwerkraft? Ein neuer Erfolg der Quarzkristallforschung.

Vom noch vor kurzer Zeit, besonders von Industrieischer Seite der Beschäftigung der Radio-Antennen i. den kurzen Wellen jede Beschäftigung abgängen und die Möglichkeit wesentlicher Verbesserungen und stetiger Neuerungen auf diesem Wege vermiss wurde, nahm die Beschäftigung wieder jungen Fascher i. Akademusen. Waren eine Entdeckung gretig, dows späte in wissenschaftlicher und technischer Hinsicht h. kerte noch nicht ausserordentlich üblich. Dass die Belebung der Fachkreis, daß von der Belebung der Antenne keine Förderung von Wissenschaft & Technik zu erwarten sei, widerlegt sein.

Die Entdeckung wurde einer vor 6 Wochen in dem neu geschaffenen Zentral-Laboratorium (Fig. 1) der Neuauertadline-Werke in Darreskein (Polen) durch den Dr. Krowsky und Ingenieur Frost bekanntgegeben.

Bei Versuchen über das Konstanthalten ganz kurzer Wellen mittels Quarzresonatoren saigte das verwendete artstic plattisch ein deutlich verändertes Aussehen; es war aussehen zu erkennen, daß sich im Innern Versuchs-Kristall, vor allem dazu, wenn in dem Laborelementversuchsräume eine Temperatur von nicht über C. Wärme heraufsteigt und diese während des ganzen Durchgangs konstant gehalten wurde, milde lichtige Trübe zeigen, die sich schließlich bis zur vollständigen

Undurchsichtigkeit meigerten. Wenn auch nach den Untersuchungen von Dr. Meissner (Telefunken), wann sie mit Hochfrequenz behandelte Quarzkristalle deutliche Luftströmungen erzeugen, die sogar zur Konstruktion eines auf diesem Prinzip beruhendes kleinen Motor führten (vgl. R. U. 1922, Heft 37), weitere merkliche Erleichterungen am selben Kristall zu erwarten waren, so war doch diese Erstellung erheblich ganz unerlässlich. Wechselseitiges Erfolgreiches Experimentieren gab endlich die Erklärung, und weitere Versuche reihten dann die naggähnlichen technischen Anwendungsmöglichkeiten der Entdeckung.

Zur Erklärung soll einige vorausgeschickt werden. Wie bereits zuerst bekannt sein dürfte, haben Quarz und einige andere Kristalle von ähnlichen Atomen die Eigenschaft, bei Anlegen von Spannungen in bestimmten Richtungen entstehende Achse sich zusammenziehen bzw. zusammenschieben und damit, wenn man schnell wechselnde Spannungen verwendet, die elektrischen in mechanischen Schwingungen des Kristalls umsetzen. Diese Schwingungen waren zwar außerordentlich klein, hatten aber trotz ihrer technische Anwendung bei den Quarzkristall-Wellenrichtern und bei der Konstruktion der Wellenlängen von Sendern gefunden. Durch eine heimliche Auseinandersetzung der Erregung der Kristalle in verschiedenen Richtungen ist erreicht, daß der Kristall sich nun ausdehnt und nicht mehr zusammensiecht. Es

the article from German journal *Radio-Umschau*

It is possible that the Polish scientists were actually at the birth of methods to overcome gravity? It is true that science goes forward every day and we must admit that theoretically everything is possible. With the development of technology we do not know the day or the hour, when it will be found for the way gravity to break and perhaps a similar manner to that described in the article. However, it did not happen, and although the Frost's and Krowsky's experiment would surely bring a revolutionary discovery for science and humanity, the facts in the article are not true.

One of the readers who was very amused interested in the article, was Hugo Gernsback<sup>12</sup>. Gernsback is still highly praised for his contribution to the science fiction genre. Due to his enthusiasm for science fiction, or maybe just because, he was a great opponent of pseudoscience such as astrology spiritualism and especially the attack on alternative medicine. In 1913 he founded the magazine *Science and Invention* which was given up until 1929. The magazine was focused on science and technology, especially for amateur science experiments, construction of radio and notable inventions. There were often published speculative articles about upcoming technologies and even science fiction stories (see [26]). So when April fools article about the discovery of antigravity device appeared in the German magazine, Gernsback was so impressed article, he could not resist the joke and did not share this with your readers as well.

And because history repeat itself Gernsback used the same schema such as the *New York Sun* – he published the report called Gravity Nullified (Quartz Crystal Charged by High Frequency Currents Lose Their Weight) with the remark that (see [12]): “this report appears in a reliable German journal, Radio Umschau.”



Alžínek Gravity Nullified z časopisu Science and Invention

In this case, the editor probably aware that many readers take the article seriously, and so he tried to throw a lifeline in the form of final notes (see [12]): “Don’t Fail to See Our Next Issue Regarding This Marvelous Invention.” Above

<sup>12</sup>Hugo Gernsback (1884–1967), born Hugo Gernsback, was a Luxembourgian American inventor, writer, editor, and magazine publisher, best known for publications including the first science fiction magazine. His contributions to the genre as publisher were so significant that, along with the novelists H. G. Wells and Jules Verne, he is one person sometimes called “The Father of Science Fiction”. In his honor, annual awards presented at the World Science Fiction Convention are named the “Hugos” (see [19]).

sentence should tell readers that this is only joking article. Also, if the readers better view individual images, they found that their labels do not completely correspond to what is shown on each image. Unfortunately, not all readers were so receptive and farsighted, and so a large proportion of them would fall.

In the following October issue of tfhe magazine *Science and Invention* the article appeared which was called Gravity Nullified - A Hoax, in which the editors tried to put everything into the correct perspective and explain to readers that the article was only hoax and they cannot take this seriously (see [12]): "As a matter of fact, most of the statements are true, with the exception, of course, of those statements referring to the expanded crystal and to the loss of weight caused by the supposed high frequency currents." One of the disadvantages of periodicals is that are not daily published and disclaimer of the article may come up next month, so readers lived a lie for quite a long time. Moreover the Achilles' heel of this disclaimer certainly is that it is disprovable. It means that the original report claim that anything goes and disclaimer suddenly claims that it is not. Generally, we can say that every statement about something that does not exist, has in terms of verifiability terrible handicap. In addition, for the article, where we are not able to self-assess his truthfulness on the based on our knowledge and skills, we come to the knowledge of the basic paradox: the belief in denial follows the same logic as the belief in the original statement. In both cases, the point is to believe one's word. Questions of the readers: "What to believe?", depends largely on what "Where it says?" And if readers evaluated as a credible source of information, and the authors themselves acknowledge the fact that in the future may be all different, we can not be surprised that some readers were so excited about an experiment that did not want to believe that it is a hoax.

And therefore the deception did not left entirely without consequences. In 1981, in the February issue of the journal *Planetary Association for Clean Energy* John G. Gallimore published an article entitled Anti-Gravity Properties of Crystalline Lattices. Gallimore informed the readers that in the summer of 1927, two Polish scientists Kowsky and Frost described the specific anti-gravitational properties of crystals. The report about their discover appears in magazines *Science and Invention* and *Radio Umschau* shortly after their experiment, some photographs of the tests was published as well.

Also David Hatcher Childress and W. P. Donavan are convinced of the truth of this discovery. In the book *The Anti-Gravity Handbook*, they polemise whether the magazine misunderstood when the article declared false.

Perfection, however, that the joke was delivered by authors who publish on the Internet. For example, the above mentioned W. P. Donavan (also acting under the name Bill Donavan) wrote in his work *Glimpses of Epiphany* that he is not only deep convinced that the results of Frost's and Krowsky's experiment are true, but also that "it seems that something got out, that wasn't supposed to get out" and now it is an effort to conceal everything.

Of course, we can speculate what the editor followed through publishing this article. Someone accuses the magazine that the article was published with the intention to profit from higher sales.

The article eventually became one of the more popular jokes publications and occupies pride of place on the website of The Museum of Hoaxes. Needless to say, the editor's note in the explanatory article Gravity Nullified - A Hoax did not speak clearly to the contrary (see [12]): "Scientific hoaxes are no novelty. One of the most famous, which was no exposed as quickly as this one, appeared in no less than the *New York Sun*. At that time, in August, 1835, a certain professor was supposed to have submitted his report on a fantastic moon people to the *Edinburgh Journal of Science*, to which manuscript the *New York Sun* obtained the first rights, and the article ran consecutively over a period of the time." On the other hand, he also notes (see [12]): "The moral is that we should not believe everything that we see, but do a little original thinking ourselves, because we may never know, otherwise, what are facts and what are not." Therefore, it is also possible that the article should have more educational aspect.

## Six sensational discoveries that somehow have escaped public attention

In 1975, in the April issue of the *Scientific American* magazine was published the article about six sensational discoveries of recent years [8]. The readers were informed about a huge discovery in the number theory, about the finding of the counterexample four-colour-map theorem, about local flaw in the special theory of relativity, about revolutionary chess-playing programme, about discovery of page from Leonardo da Vinci's notebook, and about the invention of psychic-energy-working motor.

In fact any of these revolutionary discoveries were not of great importance to the world. Although they were based on true facts, lots of information has been thought through. And in many cases the names of scientists, who have studied the given problem, were altered. All conclusions in the article were completely fabricated.

The author of this article was Martin Gardner<sup>13</sup> who published column called Mathematical Games for a long time. Mathematics became his lifelong passion, but he was also an expert magician, a well-known sceptic or a leading figure in refusing pseudoscientific theories ranging from modern diets to flying saucers. All of these hobbies are reflected in his April hoax article.

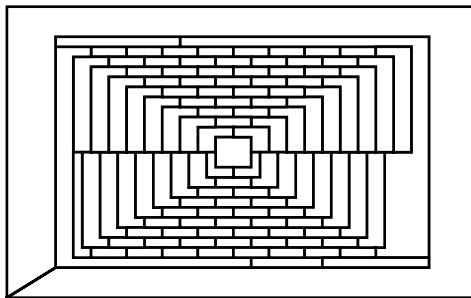
### Four-color-map theorem

Discovery of the counterexample of the four-colour-map theorem created a considerable stir among the readers. In autumn 1974, the American

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<sup>13</sup>Martin Gardner (1914–2010) wrote columns in *Scientific American* magazine for long twenty five years and published more than 70 books. In spite of, or perhaps because of, lacking proper mathematical education, Gardner's articles and books influenced generation of people. Thanks to his boundless enthusiasm and careful choice of topics, his articles got the general public interested in math. He also had other hobbies apart from mathematics. He wrote a lot of books concerning magic, philosophy, or commented on other authors' books.

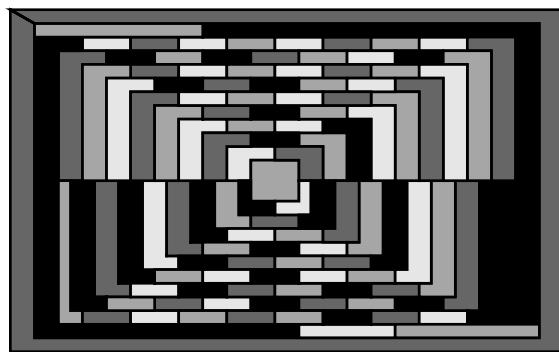
mathematician William McGregor managed to construct an example of a planar map with 110 countries (picture below), where minimum of five colours is needed for colouration.



The planar map constructed by William McGregor

Since 1740s all mathematicians tried to prove the fact that four colours are enough to colour any political map in the way that any of two neighbouring states would have the same colour. For decades they were unable to come up with the longed-for evidence of the theorem, so they tried to construct at least a counterexample. When examining small maps it was shown that four colours were enough for colouration. It seemed, however, that it would be about much more complicated maps. In early 1974, the mathematician Jean Mayer managed to prove that theorem is true for a planar map that contains a maximum of 95 states. Everybody expected that the problem would be soon resolved. Various symposiums on graph theories were held and the problem of the four colours was discussed everywhere. Gardner took the advantage of the atmosphere which longed for resolving the problem, and offered readers a simple solution.

The map, which is showed in the picture, was designed by a correspondent William McGregor (his real name). If you try to colour the map, you will discover soon, that four colours are enough.



William McGregor's map coloured by four colours.

In fact, the four colour theorem was proved in 1976 by Kenneth Appel and Wolfgang Haken. It was the first major theorem to be proved by the use of a computer (see [1]).

Gardner received thousands of letters from his readers who sent him copies of the coloured maps where only four colours were used. Some of them claimed they spent days before working it out. A large number of readers, including mathematicians, fell for the Gardner's joke as many articles at that time mentioned.

When Norman Kent Roth published the article called *Map colouring* in December 1975, he was snowed under with letters from readers who kept informing him that *Scientific American* had already published a map disproving the four colour theorem whose author was Martin Gardner.

In December, 1976, a British mathematician George Spencer-Brown announced that he had found the proof of four colour theorem without using a computer. Although the experts finally agreed that the evidence contained errors, his announcement did not pass unnoticed. In January 17th, 1977, Canadian journal *Vancouver Sun* published a letter from a woman in British Columbia, in which she protested against Brown's proof because of Gardner's article.

In 1978 *Artificial Intelligence* magazine published the article whose author stated that he managed to colour McGregor's map using a computer programme. The author obviously did not realize it was a hoax.

Not only Gardner, but also the staff of *Scientific American* magazine, was little bit taken aback by some reactions of the readers. The following letter, signed by a mathematician Ivan Guffvanoff III. at the University of Wisconsin, was a bit frightening for the staff of Scientific American magazine, unless they realized that it, too, was a joke (see [9]): "This is to inform you that my lawyer will soon be contacting you for a damage case of \$25 million. In the mathematics section of your April 1975 issue, Martin Gardner wrote that the four-colour problem had been solved. I have been working on this problem for 25 years. I had prepared a paper to be submitted to American Mathematical Monthly. The paper was over 300 pages in length. In it I had proved that the answer to the four-colour problem was no and that it would take five colours instead of four. Upon reading Gardner's article, that someone else would publish the solution before I could, I destroyed my paper. Last week I read in Time magazine that Gardner's article was a farce. I did not read Gardner's entire article, only the part on the four-colour problem, so I was not aware of the farce. Now that I have destroyed my article, it will not be possible to reproduce all 300 pages, since the work has extended over such a long time. I therefore believe that damages are due me. I believe that Gardner's article was the most unprofessional article I have ever seen in yours or any other journal. This kind of activity is below the dignity of what I thought your magazine stood for. I am not only suing you but I am cancelling my membership, and I will ask all my friends to cancel theirs".

A reference of Gardner's article can also be found in the Italian magazine *Rendiconti*. In 1975, mathematician Serge Benjamino published series of articles in which he showed that McGregor's map can be coloured using four colours.

## Ramanujan's constant

Another piece of news Martin Gardner came up with was a surprising discovery in number theory claiming that the number  $e^{\pi\sqrt{163}}$  is integer.

This exciting result was discovered thanks to American mathematician John Brillo in 1974. He was supposed to find an ingenious way of applying Euler's constant to prove that

$$e^{\pi\sqrt{163}} = 262\,537\,412\,640\,768\,744.$$

Mathematicians of the 18th century were already interested in number  $e^{\pi\sqrt{163}}$ . This number was discovered by Indian mathematician Srinivasa Ramanujan<sup>14</sup>. In any case, it is not an integer. S. Ramanujan occupied himself with several similar powers of Euler's number in the article *Modular equations and approximations to  $\pi$* . But it was clear to him that all numbers were transcendental numbers (viz [30]): “[from equations] we can find whether  $e^{\pi\sqrt{n}}$  is very nearly an integer for given values of  $n$ , and ascertain also the number of 9's or 0s in the decimal par...”

John Brillo, to whom this hoax is attributed, is a play on the name of the distinguished number theorist John Brillhart.

Gardner's idea, that the prime number 163 manages to convert the expression to an integer, implies from the fact that the number 163 is, in many respects, interesting. For example the number 163 is one of the Heegner numbers. To understand better the importance of Heegner numbers we recall some qualities of complex numbers.

There are many possibilities how to express complex numbers. The most famous method is by using the Gaussian integers. By *Gaussian integer* is meant a complex number  $z = a + bi$  an integer when  $a, b$  are integers:

$$\mathbb{Z}[\sqrt{-1}] = \mathbb{Z}[i] = \{z = a + bi : a, b \in \mathbb{Z}\}.$$

Gaussian numbers form a square lattice in the complex plane. The mappings between complex numbers and Gaussian numbers are of one-to-one correspondence. It means that every complex number is paired with just one Gaussian number and the other way round. Gauss also discovered that every Gaussian number can be uniquely factored into Gaussian primes<sup>15</sup>. Gaussian primes are of shape

$$\begin{cases} a + bi, & \text{when } a^2 + b^2 = p \text{ is prime, or} \\ up, & \text{when } u = \{\pm 1, \pm i\} \text{ a } p \text{ is prime of shape } 4k + 3. \end{cases}$$

<sup>14</sup>Srinivasa Ramanujan (1887–1920) was an Indian mathematician with a wide range of interests such as heuristic aspects in number theory, mathematical analysis, infinite series (see [32]).

<sup>15</sup>Gaussian number  $z$ .

For example::

$$\begin{aligned} 2 &= (1+i)(1-i) = 1^2 + 1^2, \\ 3 &\text{ is prime,} \\ 5 &= (2+i)(2-i) = 2^2 + 1^2, \\ 7 \text{ and } 11 &\text{ is prime,} \\ 13 &= (3+2i)(3-2i) = 3^2 + 2^2 \text{ and so on.} \end{aligned}$$

An alternative system how to define the complex "whole numbers" is through Eisenstein integers. Like Gaussian numbers form a square lattice in complex plane, Eisenstein integers form a triangular lattice. Every number is of shape  $z = a + \omega b$  when  $a, b \in \mathbb{Z}$  and  $\omega = e^{2\pi i/3} = -\frac{1}{2} + \frac{\sqrt{3}}{2}i$  we call *Eisenstein integer*:

$$\mathbb{Z}[\sqrt{-3}] = \mathbb{Z}[\omega] = \{z = a + \omega b : a, b \in \mathbb{Z}, \omega = e^{2\pi i/3}\}.$$

So the Eisenstein integers also have unique factorization and every nonzero Eisenstein integer is uniquely the product of Eisenstein primes<sup>16</sup>. Eisenstein primes are of the shape

$$\begin{cases} a + \omega b, & \text{when } a^2 - ab + b^2 = p \text{ is 3 or prime of shape } 3k + 1, \text{ or} \\ up, & \text{when } u = \{\pm 1, \pm \omega, \pm \omega^2\} \text{ and } p \text{ is prime of shape } 3k + 2. \end{cases}$$

It was not entirely clear whether complex integers can be always uniquely factored into prime numbers. We know that this is true for numbers containing  $\sqrt{-1}$  nebo  $\sqrt{-3}$ . How we can factorize the numbers of shape  $a + b\sqrt{-5}$ ? This is not unique factorization in this system of numbers. For example 6 factorizes in two different ways:

$$6 = 2 \cdot 3 = (1 + \sqrt{-5})(1 - \sqrt{-5}).$$

Neither of the numbers 2, 3,  $1 + \sqrt{-5}$  or  $1 - \sqrt{-5}$  cannot be further factorized. We have two different ways of factorization. We can ask the question: Which negative numbers in a number system  $\mathbb{Z}[\sqrt{-d}]$  can be uniquely factorized? The answer is *Heegner numbers*:

$$-1, -2, -3, -7, -11, -19, -43, -67, -163.$$

For a long time mathematicians were aware of these nine numbers but the question was whether there were more numbers meeting the requirements. At the beginning of the 20th century they came to the conclusion that if other number did exist, it would be only one. It gave rise to "tenth discriminant problem". In 1936 Hans Arnold Heilbronn and Edward Linfoot showed that if other discriminant existed, it would be bigger than  $10^9$ . In 1952 mathematician Kurt Heegner<sup>17</sup> produced evidence that such a tenth discriminant didn't exist and the list of nine was complete. Unfortunately, the experts didn't accept his

<sup>16</sup>Eisenstein number  $z$ .

<sup>17</sup>Kurt Heegner (1893–1965) was a German mathematician who was famous for his discoveries in number theory (see [23]).

proof because they expressed doubts about its validity. In 1966–67, two young mathematicians, Harold Stark and Alan Baker, both gave independent proofs. H. Stark also focused on Heegner's proof and two years later he confirmed its validity.

Heegner numbers have a lot of interesting qualities. It is given the formula

$$n^2 - n + k,$$

when  $k > 1$ . This formula represents primes for the consecutive numbers  $n = 1, 2, \dots, k-1$  as long as  $1-4k$  is one of the Heegner numbers. Heegner number we have in case  $k = 2, 3, 5, 11, 17$  a 41.

$n^2 - n + 2$	$n = 1$	2
$n^2 - n + 3$	$n = 1, 2$	3, 5
$n^2 - n + 5$	$n = 1, 2, 3, 4$	5, 7, 11, 17
$n^2 - n + 11$	$n = 1, 2, \dots, 10$	11, 13, 17, 23, 31, 41, 53, 67, 81, 101
$n^2 - n + 17$	$n = 1, 2, \dots, 16$	17, 19, 23, 29, 37, 47, 59, 73, 89, 107, 127, 149, 173, 199, 227, 257
$n^2 - n + 41$	$n = 1, 2, \dots, 40$	41, 43, 47, 53, 61, 71, 83, 97, 113, 131, 151, 173, 197, 223, 251, 281, 313, 347, 383, 421, 461, 503, 547, 593, 641, 691, 743, 797, 853, 911, 971, 1033, 1097, 1163, 1231, 1301, 1373, 1447, 1523, 1601

Another remarkable fact of Heegner numbers is that the numbers  $e^{\pi\sqrt{d}}$  are getting closer to integers, the bigger Heegner number  $d$  is:

$$\begin{aligned} e^{\pi\sqrt{43}} &= 884\,736\,743,999\,777\dots \\ e^{\pi\sqrt{67}} &= 147\,197\,952\,743,999\,998\,66\dots \\ e^{\pi\sqrt{163}} &= 262\,537\,412\,640\,768\,743,999\,999\,999\,999\,250\,07 \end{aligned}$$

## Chess-playing programme

Readers who like playing chess must have found a big chess discovery interesting. In 1973 the Artificial Intelligence Laboratory in the Massachusetts Institute of Technology designed a special-purpose chess-playing computer.

The programme known as MacHic, was made by Richard Pinkleaf with the help of ex-world-chess-champion Mikhail Botvinnik of the U.S.S.R. Unlike most chess-playing programmes, MacHic used methods of artificial intelligence à a special learning machine that profited from mistakes by keeping records of all games in its memory and thus was steadily improving. In 1974, after many games of chess, the programme arrived at a surprising result: "It had established, with a high degree of probability, that pawn to king's rook 4 is a win for White." This was quite unexpected because such an opening move used to be regarded as poor. The machine MacHic constructed a "game tree" and analysed which position were about to win.

The chess-playing programme, described by Martin Gardner, was built by the Artificial Intelligence Laboratory in the Massachusetts Institute of Technology.

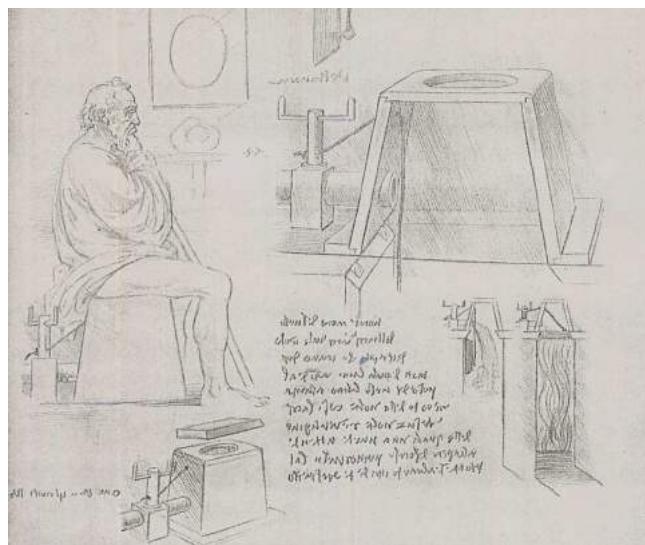
In fact, it was designed between 1966-67; and its creators were Richard D. Greenlatt and Donald E. Eastlake III. and it was known as Mac Hack or also the Greenblat chess programme. The truth is that it was a revolutionary chess programme at the time. This programme was the first one, which could simulate human conditions while playing chess. It was also the first programme, which was able to compile and analyze the game and thanks to these qualities it was able to win the game against a man. However, it never counted the probability of winning in different positions.

Unfortunately, people did not know much about computers at the time Gardner's article came out. And that's why high number of readers took this article seriously.

### **Discovery of the missing page from Leonardo da Vinci's notebook**

For lovers of art and various inventions Gardner published a groundbreaking discovery of Leonardo da Vinci.

In the 1960s the famous manuscript of Leonardo da Vinci, known as *Codex Madrid I*, was found in the National Library in Madrid. In the manuscript there were some sketches and treatises on theoretical and applied mechanics. Later, it was discovered that one page was missing. For years, the nature of the missing page was speculated about. Augusto Macaroni of the Catholic University of Milan thought that the page might have dealt with some type of flushing mechanism, because the sketch was in a section on hydraulic devices. In December 1974 the missing page was finally found (see figure below). It turned out that A. Macaroni was right. Ramón Paz y Bicuspid came across the missing page when he browsed the 15th-century treatise on the Renaissance art of perfume making. The sketch became a great discovery, because the drawing established Leonardo as the first inventor of the valve flush toilet.



The missing page from Leonardo da Vinci's notebook.

The drawing, which is shown in the illustration, inspired Gardner to write his “discovery”. In fact, Leonardo da Vinci’s sketch was drawn by Anthony Ravielli, a graphic artist well known for his superb illustrations in books on sports, science, and mathematics. Gardner claims that: “Many years ago a friend of Ravielli’s had jokingly made a bet with a writer that Leonardo had invented the first valve flush toilet. The friend persuaded Ravielli to do a Leonardo drawing in brown ink on faded paper. It was smuggled into the New York Public Library, stamped with a catalogue file number, and placed in an official library envelope. Confronted with this evidence, the writer paid off the bet”.

The writer obviously was not the last one who was taken in by this joke. Gardner’s hoax also gained entrance to Wikipedia. We can find this information under the reference to the European toilet paper holders (see [38]): “An important gap in the history of toilet paper receptacles was filled in 1974, with the discovery of a missing page from the Codex Madrid I, a notebook of Leonardo da Vinci found in Madrid’s National Library in the 1960s. Ramon Paz y Bicuspid found the missing page, which verified a long-held belief that Leonardo had invented the first valve flush toilet. As you can see from the sketch (at right), the valves involved clearly double as toilet paper holders, and one of them is conveniently within an arm’s-length of the seat.”

The fact is that Leonardo da Vinci was one of the broad-based inventors and dealt with sewer system. One of the major advances in urban hygiene, which Leonardo wanted to implement, was an underground collection and disposal of household and street waste. This was the main cause of serious health hazards all over Europe and of several pestilence epidemics. When in 1484–86 pestilence epidemics hit Milan, Leonardo tried to create a plan for the ideal city for the French King Francouis I., where people would live better and healthier than in existing cities. The project, created by Leonardo da Vinci in 1516, was called Romorantin. A crucial role in this project played an underground collection and disposal of household and street waste. Romorantin, on the bank of the river Sauldre, is the capital of the Sologne region in France. The project also included a palace for the king with the series of flush toilets, including run-off channels in the walls inside and a ventilation system going through the roof. Unfortunately, as well as his plans for flying machines and military tanks, this project was destroyed and declared nonsense.

The name Augusto Macaroni is a wordplay on Augusto Marinoni, a da Vinci specialist at the Catholic University of Milan. Ramón Paz y Bicuspid is a play with words on Ramón Paz y Remolar, the man who actually found the two missing da Vinci notebooks.

### **Logical flaw in the special theory of relativity**

Stunning is also the discovery of the mistake in the theory of relativity.

The crucial “thought experiment” is described in the paragraph about the mistake in the theory of relativity. It proves that a meter stick travels at a high speed along horizontal plate with a circular hole with diameter 1m centered. The plate is parallel with the stick’s path and moves perpendicularly to it. In

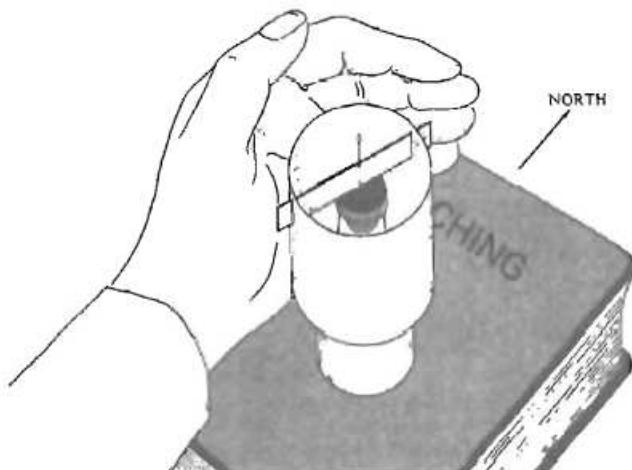
terms of system associated with a moving stick the situation appears that the front end of the stick exceeds a hole long before the rear section of the stick enters the hole, so the stick would not fall into the hole. These two situations are equivalent, however, and therefore the basic assumption of the theory of relativity is broken.

This relativistic paradox is well known. It is often referred to as the Meterstick and the hole paradox or Fast walking man paradox. The solution of this paradox lies in admitting the fact that rigid stick is relativistically unacceptable. The rigid sticks do not exist in relativity. The front part of the stick slightly bends at the entrance of the hole and bent stick can pass through the opening.

### The psychic motor

At the end of the article there was another blockbuster waiting for the hungry readers and it was a great discovery in parapsychology in the form of a simple motor that runs on psychic energy.

The motor was constructed by Robert Ripoff, the noted Prague parapsychologist and founder of the *International Institute for the Investigation of Mammalian Auras*, in 1973. Construction of the motor is not difficult â we need paper, needle, glass bottle, and the *Bible* or the *I Ching*. And then we have no choice but to lend a hand on it, make our mind blank and focus our mental energy on the motor until the psychic energy coming from our aura takes effect and the motor starts to rotate slowly.



The psychic motor from *Scientific American* magazine.

“Psychic motor” that is shown in the picture above, is a modification of Ripoff rotor, which was described by Hugo Gernsback in the magazine *Science and Invention* (see [11]). Readers of the magazine were asked to send the explanation what makes the cylinder turn. The best response should be rewarded with \$20.



The article about the psychic motor from *Science and Invention* magazine.

In fact, the motion can be caused by any of three forces: slight air currents in the room, convection currents produced by heat of the hand, and currents cause by breathing. The three forces could be combined in many unpredictable ways, so we cannot say nor influence, in which side the cylinder would rotate.

Martin Gardner was considered to be one of the leading polemics against pseudoscientific and fringescientific theories, astounding discoveries, the paranormal and everything what became later known as pseudoscience. He was a founding member of the *Committee for the Scientific Investigation of Claims of the Paranormal*, in short CSICOP in 1976. The mission of the committee was to promote scientific inquiry, critical investigation, and the use of reason in examining controversial and extraordinary claims. From 1983 until 2002 Gardner wrote a column in magazine *Skeptical Inquirer*. Gardner was able to influence people's opinions and also mitigate the damage caused by pseudoscientists. "Bad science contributes to the steady dumbing down of our nation", declared Gardner (see [7]). In his articles, he always tried to put all these misleading and confusing information appearing in the media straight. Although his critics considered him as a very serious man, Gardner had a playful mind. He was often rather amused than outraged of many "amazing discoveries". He and H. L. Mencken said that (see [7]): "one horselaugh is worth ten thousand syllogisms." And he hoped that his readers would understand his article.

Several psychic motor appeared on sale after Gardner's hoax. Most readers, however, did not take this discovery seriously.

When Gardner published his article, he did not have the faintest ideas of the great acclaim he was going to get. Gardner claimed that the main purpose of the article was to entertain his readers. To his surprise, both the public and also professionals did not understand his joke and took the article seriously. He got thousands of letters from mathematicians and physicists. Many readers pointed out that he made a mistake in his article — but only in the field they specialized in, but the rest they considered unquestionable. Speaking up for the cheated readers, Gardner's article was a truly brilliant hoax in full details. When readers read only one paragraph, about the topic they were interested in, it was not clear at first sight that it was a hoax.

Gardner was one of the few authors who signed the article and proudly claimed responsibility for it. Benevolent readers forgave him soon. Everyone loved Gardner's columns for their originality, playfulness and witty spirit.

## Legislating the value of $\pi$

Human imagination, however, will never be wild enough for some politicians' decisions. In 1998 *New Mexicans for Science and Reason*<sup>18</sup> magazine published the report that the Alabama state legislature passed a law redefining a mathematical constant  $\pi$ .

The law was passed on March 30, 1998, redefining the value of  $\pi$  to exactly integer three. The law took the state's scientific community by surprise ([25]): "It would have been nice if they had consulted with someone who actually uses  $\pi$ ." Mathematicians from University of Alabama tried to explain to state legislature that  $\pi$  is a universal constant, and cannot be arbitrarily changed by lawmakers. In addition, we can never express it exactly because  $\pi$  is an irrational number, which means that it has an infinite number of digits after the decimal point. However, the mover did not listen to any arguments (see [25]): "I think that it is the mathematicians that are being irrational, and it is time for them to admit it. The Bible very clearly says in I Kings 7:23 that the altar font of Solomon's Temple was ten cubits across and thirty cubits in diameter, and that it was round in compass." On the contrary, he called into question the usefulness of any number that cannot be calculated exactly, and suggested that not knowing the exact answer could harm students' self-esteem (see [25]): "We need to return to some absolutes in our society, the Bible does not say that the font was thirty-something cubits. Plain reading says thirty cubits. Period." The members of the state school board supported the change in value of  $\pi$ , but they believed that the old value should be retained as an alternative (see [25]): "...the value of  $\pi$  is only a theory, and we should be open to all interpretations." Their idea was that students would be given the freedom to decide for themselves what value  $\pi$  should have.

Somehow bewildering is the fact that this joke was probably inspired by true events. In 1897, the legislature of Indiana attempted to give  $\pi$  an exact value by law. The Indiana Pi Bill was fabrication of Edwin J. Goodwin. This man was convinced he had found the solution of "squaring the circle" - an ancient problem whose task is to construct a square with a pair of compasses and a pair of scissors. This problem had been infatuated many thinkers, but it had already been proven impossible in 1882. Among other, Goodwin's contradictory explanation contained argument regarding relating to the diameter of a circle (see [31]): "...the fourth important fact, that the ratio of the diameter and circumference is as five-fourths to four."

We know that the ratio of the diameter to the circumference is equal to  $\pi$ , so

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<sup>18</sup>*New Mexicans for Science and Reason* is a non-profit group with the goals of promoting science, the scientific method, rational thinking, and critical examination of dubious or extraordinary claims (see [25]).

Goodwin was effectively dictating a value for  $\pi$  according to the following recipe:

$$\pi = \frac{\text{circumference}}{\text{diameter}} = \frac{4}{\frac{5}{4}} = 3,2$$

Goodwin reportedly said (see [31]): “Indiana schools could use his discovery without charge, but that the state and he would share the profits from royalties charged to other schools who wished to adopt a value of 3,2 for  $\pi$ . ” The technical nature of the bill so baffled the politicians that it being passed without any objection.

However, considerations of whether the number  $\pi$  can be expressed as an integer constant, are completely misleading. The number  $\pi$ , which is approximately 3,141 592 6, is the length of the circumference of a circle whose diameter is exactly 1. Generally speaking, a circle of diameter  $d$  has a circumference of  $\pi d$ . The number  $\pi$  cannot be expressed as a fraction and it really is an irrational number. The simplest proof that  $\pi$  is irrational uses calculus, and it was founded by Johann Lambert<sup>19</sup> in 1770. More strongly,  $\pi$  is transcendental. It means that it does not satisfy any algebraic equation that relates it to rational numbers. In 1882, this property was proved by Ferdinand Lindemann,<sup>20</sup> also using calculus. The fact that  $\pi$  is transcendental implies that the classical geometric problem of ‘squaring the circle’ is impossible.

Although there were lots of evidences suggesting deception in the article, for example, the fictitious names of people who wanted to enforce the law, thanks to the Internet the article was passed on to many different countries. In a short time the article spreaded in the world. But, as the story was forwarded from person to person, all of the deliberate hints disappeared. The names, which were originally fictitious, began to be gradually replaced by the names of particular living people working at the university or in the Alabama state legislature. Gradually, the newer and better versions of the original article began to appear, cutting their way through the internet. All funny hints from the article disappeared and it became more and more credible. As the general public was more and more acquainted with the article, the Alabama state legislature began to receive hundreds of letters and phone calls from people who protested against this legislation.

## Conclusion

The previous chapters contain cross-section of fool hoax articles from the past to the present. The fact is that both the daily press or in the serious magazine, the authors of fool hoax articles follow a similar goal - to entertain its readers

<sup>19</sup>Johann Heinrich Lambert (1728–1777) was a Swiss mathematician, physicist, philosopher and astronomer. He is best known for proving the Irrationality of  $\pi$ . He was the first to introduce hyperbolic function into trigonometry. Also, he made conjecture regarding non-Euclidean space. In Photometria Lambert also formulated the law of light absorption à la Beer-Lambert law (see [15]).

<sup>20</sup>Carl Louis Ferdinand von Lindemann (1852–1939) was a German mathematician, noted for his proof, published in 1882, that  $\pi$  is a transcendental number. His methods were similar to those used nine years earlier by Charles Hermite to show that , the base of natural logarithms, is transcendental (see [6]).

and force them to critically assess the content of the report and while watching TV or reading newspapers to ask themselves whether the given report may be true or not. But the question is, if this is not a realistic goal.

Not all information can be verified and not all are connected to the lack of knowledge among the recipients. And thus created simple or complex judgments about the facts. Every person, even the great professionals, has many ideas about different things, people, institutions, countries, etc. Modern man can not cover all the knowledge and information that surround it. Expertise based on knowledge in a particular field then exposes humans to receive and formed the only opinion in other fields. These opinions - unlike knowledge - have a strong irrational character and are not only view but also a conviction.

In everyday life we rarely verify the information that we hear from the media. Social life is based on trust that the task of verifying the report is commissioned by someone. If we read the report in the newspaper, we assume that it is proven, though for we have no proof. We rely on responsibility and professional duties of journalists.

The authors of the hoax articles are always surprised and shocked by the apparent lack of will verify the facts, which are given in the article (see [20]): "The journalistic profession the verifying, what is then further distributed to thousands of people, is a fundamental requirement. Leading French journalist Jean Lacouture reminds aptly that the role of the journalist is not so much to spread the message about the birth or death of the king, but rather to refute or confirm rumors that one or the other would accelerate, accompanied or distorted." The fact that it is necessary to inculcate future journalists verification reflex, mean that this kind of reaction is not spontaneous. Why do we take for normal that nobody or almost nobody not verifies the information in the newspaper? There are some situations when we try to verify information from a newspaper or other media, especially if the report is born on us, for example stock ticker, military or other major decisions. On the other hands, the cases if we act without apparent risk eliminate the need for verification. If we are not forced to make any decisions, the motivation for authentication is missing. Only the professional skeptics (such as journalists) or those with their own personal interests can make an effort to explore more information.

Moreover, we cannot argue that the people believe everything what the media give them. If we read the report in the newspaper or magazine, tacitly assume that the news passed the filter in some groups, such as the editorial board, before the news came to us. If it was a hoax, it would have not believed so many people would not get to us.

For the media, which created a ethical code and behave according to him, this code can be considered a guarantee objectivity and proper etiquette. Still, however, the rules of behavior by the ethical code are not in principle for the public enforceable. It depends only on the media; whether they will act as powerful without liability or whether they will aspire higher and look for what is one of the deepest level of humanity the good and the associated truth. The problem of the April articles is that although the media behave unethically in

that moment, it still remains within the law. Then the public can do nothing else but be a little indulgent and taken the April cells with reserve.

The question is whether, in the upcoming years, the meaning of April articles will tend to decrease, as even completely serious news often seem unbelievable and people are confused whether the April Fool's Day is not in December. But now, we can do nothing but to look forward to April and new kinds of joke the professionals, for sure, are coming up with.

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