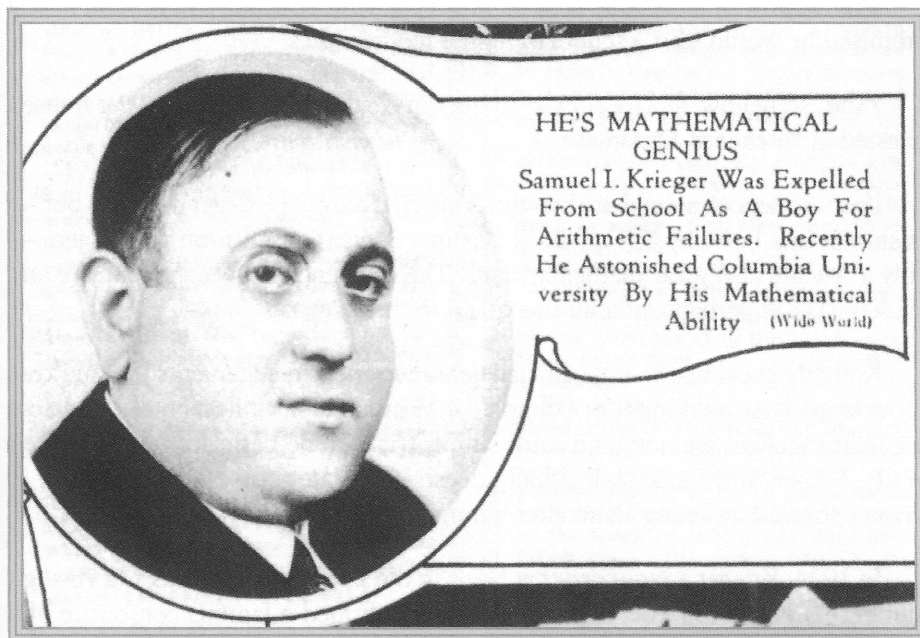# WHEN THE WORLD'S "WRONGEST" MATHEMATICIAN WAS ARRESTED IN KITCHENER

by Jeffrey Shallit

Jeffrey Shallit is a professor emeritus in the Faculty of Mathematics at the University of Waterloo. Help with research on this article came from Lauren Simon at the Kitchener Public Library's Grace Schmidt Room of Local History.

Polish-Jewish mathematician Samuel Isaak Krieger (1903-1943) was a mental calculating genius ... that much is true. Portly and already balding at 25, he didn't seem like an impressive figure at first. But he could multiply 30-digit numbers in his head, extract root numbers of even larger figures and compute logarithms with ease.

Leaving his *shtetl* in Plonsk, Poland, he arrived in the United States in 1928 with high hopes: he would sell the rights to his mental calculating methods — a million-dollar price tag was often mentioned — to industry, financial firms and schools. In the process, arithmetic all over the world would be transformed.

HE'S MATHEMATICAL GENIUS
Samuel I. Krieger Was Expelled From School As A Boy For Arithmetic Failures. Recently He Astonished Columbia University By His Mathematical Ability (Wide World)

Baltimore Sun, May 27, 1928

Sometimes Krieger called himself "Professor"; at other times he said he was the "King of Logarithms." He liked to wave around a recommendation letter, written in German and signed by the great Albert Einstein himself, supposedly certifying him as a mathematical genius. His talks at major universities were sometimes attended by prominent mathematicians. His future looked bright.

But things did not work out as planned.

For 15 years (1928-1943), Samuel Krieger toured North America, giving demonstrations of his abilities in dozens of cities.

He married twice and even taught his first wife his methods so that she, too, became a proficient mental calculator. He arranged safe passage from Germany for his mother and two sisters before the worst atrocities of the Holocaust and brought them to the United States to live with him in Buffalo.

But despite his achievements he would also become the world's "wrongest" mathematician, making one astonishing claim after another — all of which turned out to be ... well, wrong.

He forced Einstein to waste time answering questions about the recommendation letter.

His first wife successfully filed for an annulment, claiming Krieger had falsely promised he would start a school of higher mathematics.

And, somehow, in a local twist to his story, Samuel Isaak Krieger got himself arrested in Kitchener, Ontario.

Practitioners of mental arithmetic as good as Samuel Krieger are rare, but — as shown in a book by Yale political scientist Steven B. Smith on the subject — only a few are also great mathematicians. The difference between arithmetic and mathematics is perhaps difficult to explain to the layman.

Roughly speaking, mathematicians are interested in statements that are true about large classes of things (for example, prime numbers), while mental calculators use their excellent memory and some simple tricks to do basic arithmetic in their heads. Mental arithmetic skill usually doesn't translate to mathematical skill, as Krieger showed in wrong claim after wrong claim.

In 1934, Krieger announced that $N = 2$ to the 257th power, minus 1 (a 78-digit number) is prime.[1] If true, this would have confirmed a famous conjecture of a 17th-century French friar, Marin Mersenne. This claim got Krieger attention in dozens of newspapers around the world and even a mention in *Time* magazine.

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GENIUS IN FIGURES ASTOUNDS LISTENERS

Prof. Kriegner Requires Seconds Instead Of Years To Solve Mathematical Problems

Arithmetic for the school boy and higher mathematics for the college student is no longer a bug-bear when the formulae invented by Prof. Samuel Isaac Krieger of Hamburg University, are employed, according to the professor himself, who arrived in the city over the weekend and intends to lecture to Twin City industrial, educational and financial institutions in the coming fortnight.

Prof. Krieger solves mathematical problems in a few seconds which ordinarily take the best professors years and years. Possibly the greatest tribute paid to this mathematical genius, "the King of Logarithms," is the statement by Prof. Albert Einstein of Berlin, Germany, with whom Prof. Krieger is a co-worker. Einstein terms him the general of mathematics of the world and maintains that no mechanical device can defeat him in calculating figures.

Prof. Krieger is in his 27th year, but has the appearance of a man much older, being stout and inclined to baldness. He discovered his calculating formulae three years ago and has lectured at Columbia, McGill and Toronto Universities addressing both the scientists on the faculty and students. The Sorbonne University at Paris published a book on his formulae and it was there that the test which should convince the world was made. In three minutes he gave the correct answer (containing 27,210,793 figures) to a problem which without the use of logarithms takes the best professors of mathematics 24 years to work out.

Kitchener Daily Record October 28, 1929

MONDAY, NOV. 4, 1929.

Mathematical Wizard Tells His Formulae

Addresses And Amazes Collegiate Students; Some Children Grasped His System Partially At Least

Mathematical formulae and arithmetical equations flew thick and fast at the K-W collegiate this morning when Professor S. I. Krieger of Hamburg University, Germany, explained his unique methods of calculating to the student body. "The general of mathematics", as Einstein has termed him, demonstrated the principals of his system on a blackboard in the collegiate assembly hall before the hundreds of pupils who, while admitting the professor to be a wizard with figures, were quite unprepared to explain how he could do a problem in a few seconds for which they would take at least ten minutes.

In spite of the fact that it was to be primarily an explanation of his system, the lecture was more a startling show. Professor Krieger proved to have so many formulae, problems, questions and "short cuts" at his command that in the short space of 40 minutes he could not hope to impart all to his youthful audience. He placed formulae upon the blackboard from which they were copied by the students.

Not a few of the children understood Professor Krieger's simpler systems and volunteered answers to some of the problems. They applauded lustily when he came forth with his formulae for telling the day of the week on which any date has fallen since the year 1200 A. D. When explained, the problem was seen to be comparatively simple.

Kitchener Daily Record November 4, 1929

Mathematical Wizard Arrested Monday Will Not Be Deported Now

Professor Krieger, "Master Of Logarithms", Secures Extension Of Leave From Immigration Authorities At Ottawa

FRIEND OF EINSTEIN'S

At 2.30 o'clock this afternoon, Professor Krieger was released when Inspector Coulter of the Immigration Department, who arrived here today from Montreal, received the following wire from A. J. Jolliffe, of the Immigration Department, Ottawa: "Decided suspend deportation Samuel Krieger. Please therefore release him to report Montreal office, Feb. 20 next."

Professor Samuel Isak Krieger, collaborator of Professor Einstein, "Master of Logarithms" and famed mathematician, was arrested by city police yesterday afternoon for immigration authorities in Montreal. A warrant is held there, according to the communication received here, for his deportation to Poland.

Professor Krieger has been in Kitchener for three weeks during which time he has been demonstrating his system to staffs of several industrial concerns. He also lectured before the German Club and on one occasion spoke to the pupils of the K-W collegiate.

He had in his possession, several credentials which showed him to be a man of some attainments. Among these documents, was a personal letter from the great German scientist in which the latter paid great tribute to Professor Krieger and his mathematical formulae.

He was released on bail after his arrest yesterday.

Leaving Tonight

Prof. Krieger when seen by the Record at police headquarters today stated he has been in Kitchener for three weeks and intended remaining here for another two weeks had he been granted his stay. D. G. MacIntosh has been retained by the eminent mathematician.

Representations were made to Ottawa over the long distance telephone today by Mr. MacIntosh in behalf on his client in the hope that the order for his deportation might be stayed.

In conversation with the Record Prof. Krieger stated he had been in conversation with S. Jacobs M.P. of Montreal and that Mr. Jacobs had assured him that altho he had overstayed the time limit of his immigration permit he could continue his lecturing engagements as he would make representations for him with the federal authorities to secure another three months extension.

Inspector Coulter of the immigration department arrived in the city this morning to escort the noted calculator to Montreal previous to his deportation from the country. According to the inspector's plans it was not expected he would leave the city with Krieger until this evening.

Illegally In Country

MONTREAL, Nov. 19.—Officials of the Immigration Department are silent here regarding the warrant for the deportion to Poland of Professor Samuel Isak Krieger, colleague of Professor Einstein, and mathematical wizard, who was arrested at Kitchener yesterday. Immigration Agent Moquin when questioned, admitted that instructions were issued for Krieger's arrest. He added that Krieger had been in Canada for some time, apparently illegally.

Kitchener Daily Record November 19, 1929

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Even at the time, though, mathematicians knew Krieger's claim was wrong; the number N had been proved not to be a prime by the American mathematician D.H. Lehmer in 1931.

Today, we also know that N is divisible by 535006138814359, so it cannot be prime.

Another Krieger claim involved French mathematician Pierre de Fermat's last theorem, a conjecture stated in 1637 but only resolved in 1994 by British mathematician Andrew Wiles. It says that there are no three positive integers A, B, C, and an integer n>2 such that A to the power n plus B to the power n equals C to the power n.[2]

In 1938, Krieger made headlines again by claiming he had a counterexample to Fermat: namely, A = 1324, B = 731, C = 1961, and n was said to be a number "less than 20."[3] An intrepid reporter quickly showed Krieger he could not be right, because any power of A must end in 4 or 6, and any power of B and C must end in 1 ... adding together a number that ends in 4 or 6 with one that ends in 1 gives a number that ends in 5 or 7, not 1. But Krieger was not swayed.

Krieger also claimed that his study of the Bible showed that planet Earth was 1.728 billion years old. We now know, from geology and physics, that the Earth is actually 4.54 billion years old.

Krieger visited Canada in 1929, lecturing and performing mental calculations in Toronto, Windsor and other Ontario cities. In a typical performance he would ask an audience member to suggest two numbers, and, for example given 18446744073709551616 and 36893488147419103232, multiply them in his head and answer 680564733841876926926749214863536422912 in 30 seconds. A tongue-in-cheek sportswriter's note in the *Windsor Star*, November 30, 1929 suggested that Krieger should calculate the batting averages of the Windsor Bulldogs baseball team.

In one performance at the University of Toronto, Krieger's demonstration was witnessed by John Charles Fields, who endowed the Fields Medal, mathematics' highest award.

According to the *Kitchener Daily Record*, Krieger gave one lecture at the Winter Garden, home of a German club at 33 King Street East in Kitchener on November 14, 1929 and another at Kitchener-Waterloo Collegiate.[4]

And it was in Kitchener that he ended up in jail.

No, it wasn't for a mathematical crime like dividing by zero. When Krieger

Daily Record November 19, 1929

entered Canada, he was a Polish citizen and only allowed to stay in the country for a few months. A bondsman put up money to ensure his compliance with Canadian immigration law. When Krieger didn't show up for a mandatory hearing in Montreal, a warrant was issued by the immigration authorities in Ottawa and he was arrested on Tuesday November 19, 1929 by Kitchener police.

It was all a simple mistake, Krieger insisted, and after a couple of nights he was released with firm instructions that he had to leave Canada by February 1930.[5] He did, and eventually took up residence in the United States, living for a time in Chicago, Buffalo and Hollywood.

Krieger never got that million dollars for his calculating methods. He self-published a little booklet of his ideas, most of which turned out to be unoriginal. For a brief time, he operated Krieger's Academy of Mathematics on Broadway in New York City.

In 1936, Krieger was in the newspapers again, claiming that a theorem of Professor Leonard Eugene Dickson, from the University of Chicago, was incorrect. But Krieger was wrong again, and the Chicago professor was right.

Doubters wrote to Einstein and asked him if Krieger was the real deal. Einstein felt obligated to reply to these inquiries, saying in 1942 that:

> Mr. Krieger has misused my name many times for self-advertising in order to mislead people. He has an outstanding ability to make calculations with great numbers by heart but I do not believe that his tricks can be of considerable value to others.[6]

You can sense Einstein getting testier with each exchange, even after Krieger's death. In June 1944, Einstein wrote: "Mr. Krieger has never been a mathematician and I have, of course,

PROTEGE OF EINSTEIN LECTURES IN AKRON

Professor Samuel Krieger Finds All Mathematical Problems Simple

Professor Samuel I. Krieger of Hamburg, Germany protege of the famous author of the theory of relatively Dr. Albert Einstein, arrived in Akron this morning to give a series of lectures on mathematics. Professor Krieger finds all mathematical problems as simple as A, B, C and claims that he has discovered formulas which it is possible for the average mind to understand which will reduce difficult problems to easy ones.

Samuel I. Krieger

During a stay of several days in Akron Prof. Krieger plans to lecture at the University of Akron, a number of industrial plants, and in city high schools.

The professor claims to be able to explain his formulas so that others can use them within ten minutes.

Akron Beacon Herald April 3, 1930

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Einstein wrote:

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> ask me some favo[...]

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Notes

1 A number is consid[...]
2 An integer is any nu[...]
   fraction, decimal or [...]
3 "Puzzler ready to 's[...]
   February 22, 1938, [...]
4 *Kitchener Daily Rec[...]
   mathematical geniu[...]
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5 From the *Jewish Da[...]
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6 Letter from Einstein[...]
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7 Letter from Einstein[...]
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8 Letter from Einstein[...]
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9 "Mathematical robo[...]

not called him 'a mathematical genius'...."[7] And in another letter, in July 1944, Einstein wrote:

> Mr. Krieger was some kind of impostor who used my name without any justification. My only connection with him was that he visited me in Berlin to ask me some favors.[8]

Perhaps sensing that mental arithmetic would not be the road to riches that he had imagined, Krieger began thinking about how to improve mechanical calculators. In a newspaper article, he spoke of a new kind of computing device that "will be of handy pocket size" and "make any man who possesses it a mathematical wizard."[9] He even submitted a patent for an improved calculator in 1942.

But this scheme never came to fruition.

Krieger died in 1943 in New York City. His mental arithmetic never caught on. A year after his death, US patent 2,362,702 for a faster calculating machine was finally granted to him. It was never used by industry.

Krieger's dreams of rapid calculations were achieved by others in the form of our modern digital computers and hand-held devices. I wonder what he would think of them if he were still alive today.

Notes

1 A number is considered prime if it is divisible only by itself and 1.
2 An integer is any number, either positive or negative, including zero. It can never be a fraction, decimal or per cent.
3 "Puzzler ready to 'shock world' by disproving Fermat's theorem," *New York Times*, February 22, 1938, p. 23.
4 *Kitchener Daily Record*, November 14, 1929. A small advertisement said: "Don't fail to see this mathematical genius and sensation of two continents. Open for everybody." Sadly no account of the lecture appears in subsequent issues of the *Daily Record*.
5 From the *Jewish Daily Bulletin*, November 27, 1929:
   "Extension of time until February 20, 1930 in which Prof. Samuel Isaak Krieger, noted Polish-Jewish mathematician, may remain in Canada, was granted on representations made to the Hon. Robert Forke, Minister of Immigration and Colonization. In making this statement Mr. Forke announced that there will be no further extension of time granted to Professor Krieger in the future."
6 Letter from Einstein to Wayne Dewess, September 25, 1942, available at: https://ein-web.adlibhosting.com/aea/Details/archive/110040765 (accessed February 2, 2024).
7 Letter from Einstein to Carrol Muccia, June 9, 1944, available at: https://ein-web.adlibhosting.com/aea/Details/archive/11004076 (accessed February 2, 2024).
8 Letter from Einstein to E. R. Stark, July 21, 1944, available at: https://ein-web.adlibhosting.com/aea/Details/archive/110040770 (accessed February 2, 2024).
9 "Mathematical robot offered to business," *Buffalo Evening News*, July 20, 1935, p. 4.

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