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# Interview with Larry Ciupik

(*Larry Ciupik is one of those rare personalities who use the knowledge of astronomy for the administration of law and justice! In other words, he is a forensic astronomer. In laymen's terminology, forensic astronomers are also sometimes known as forensic skywatchers. Forensic astronomy is not a very widely known discipline and we decided to run an interview with one of the most famous forensic astronomers in our inaugural issue).*

*We at the "Anil Aggrawal's Internet Journal of Forensic Medicine and Toxicology" approached him for an online interview for our inaugural issue and he graciously agreed. The interview was conducted for well over two months. Some excerpts.. ..*)

**Larry Ciupik**



Qu. 1. How would you best define forensic astronomy? Can you say, which was the first ever case in which forensic astronomy was used?

Ans. Forensic Astronomy is the use of Astronomy in legal cases. We are also known in common parlance as forensic skywatchers. Astronomy has been used in legal cases for more than 100 years. A case was solved by Abraham Lincoln before he became an American President!

Qu. 2. Really! Can you give us the details of this case please?

Ans. Sure. It is an 1857 case, almost 150 years old, and goes to show that forensic astronomy is really quite old. In 1858, a young Illinois man named William "Duff" Armstrong was accused of murdering a person known as James Preston Metzker with a "slung-shot" - a weight tied to a leather thong, sort of an early blackjack. The time of incident was alleged to be before midnight on August 29, 1857. A man named Charles Allen was supposed to have seen this incident from a distance of about 150 feet. He was the star witness of the prosecution, and his testimony - if not refuted - would surely have convicted Armstrong.

Abraham Lincoln happened to be a good friend of the father of the accused (Jack Armstrong). Although Jack Armstrong was no more alive, Lincoln wanted to help his widow. So he offered to defend young Duff Armstrong, without any fees whatsoever.

During cross examination, one of the several questions Lincoln asked Allen was how he could tell the murderer was Armstrong and not any other person. Lincoln alleged that it was close to midnight and it was well nigh impossible for anyone to have seen a person 150 feet away. Allen replied without batting an eyelid, "By the light of the moon."

Upon hearing this, Lincoln produced a copy of the 1857 edition of Old Farmer's Almanac. He turned to the two calendar pages for August, and showed the jury that there were at least two factors supporting that Allen could not have seen Duff Armstrong from a distance of 150 feet. Or if he did see someone, he was almost sure to be mistaken.

Qu. 3. What were those two factors?

Ans. Well, firstly the moon on that day was in the first quarter. Secondly at the precise time of the murder it was riding "low" on the horizon, and was about to set. There would not have been enough light for Allen to identify Armstrong or anyone else. The jury agreed, and Duff Armstrong was acquitted! This case is now widely known generally as the "Almanac Trial," as it featured Lincoln's use of an almanac to discredit the testimony of a prosecution witness.

Astronomers as well as historians and lawyers continue to be drawn to this case. Two Texas physicists, Russell Doescher and Donald Olson, have performed astronomical calculations that support Lincoln's assertion that the moon was too low in the sky on August 29, 1857 for the eye-witness to have precisely observed the camp meeting altercation that ended later in James Metzker's death.

Your readers may also want to visit the following website for further details. Some very good pictures (including that of the relevant page from the almanac) appear on this site. The site is

http://www.geocities.com/SoHo/1422/lincoln_almanac.html

Qu. 4. How were you attracted towards this discipline?

Ans. As a large metropolitan planetarium and museum, Adler receives numerous public inquiries by phone and email on all sorts of astronomical topics (essentially everything under the Sun!) including periodic requests from lawyers for data such as sunrise and sunset which would be used in court. In the mid-1970s the astronomy staff became frustrated when they received a subpoena to testify in court just to read a table. Gradually, most such legal requests came to me and I found a successful method of supplying "true and correct copies" of tables for use by lawyers in court. Anything more complicated might need a court appearance.

Qu. 5. Since when are you practicing forensic astronomy?

Ans. Since about the mid-1970s.

Qu. 6. What is your basic field of specialization?

Ans. Astronomy. And, more specifically with reference to Forensic Astronomy, the position and brightness of the Sun, Moon, and stars.

Qu. 7.If a youngster wanted to become a forensic astronomer, how should he go about?

Ans. Study math and science in high school and major in Physics or Astronomy in college. Eventually, obtain a PhD in Astronomy with strong computer programming skills. We get questions on all aspects of Astronomy, but typical Forensic Astronomy questions rely on specific knowledge of the day and night sky, and calculating the exact position of the Sun at any location on Earth at any time and date.

**Picture showing Ciupik's calculations in Stanley Tranowski's case. Click to enlarge**




Qu. 8. What is the potential of forensic astronomy in future? Are some universities going to start a course in forensic astronomy? Are there some courses running currently?

Ans. This is a very specialized field of Astronomy. Although I have led a number of seminars and have given public lectures and papers at planetarium conferences on Forensic Astronomy, as far as I know, there are no college classes dealing exclusively with this subject.

Qu. 9. Does the evidence of forensic astronomy stand up to Daubert criteria?

Ans. If I understand your question, yes, usually. Natural light becomes very important in certain traffic accident cases (e.g., when the Sun might be in the eyes of the defendant) or when a witness claims to be able to "see" and identify someone committing a crime. Much of the data (especially

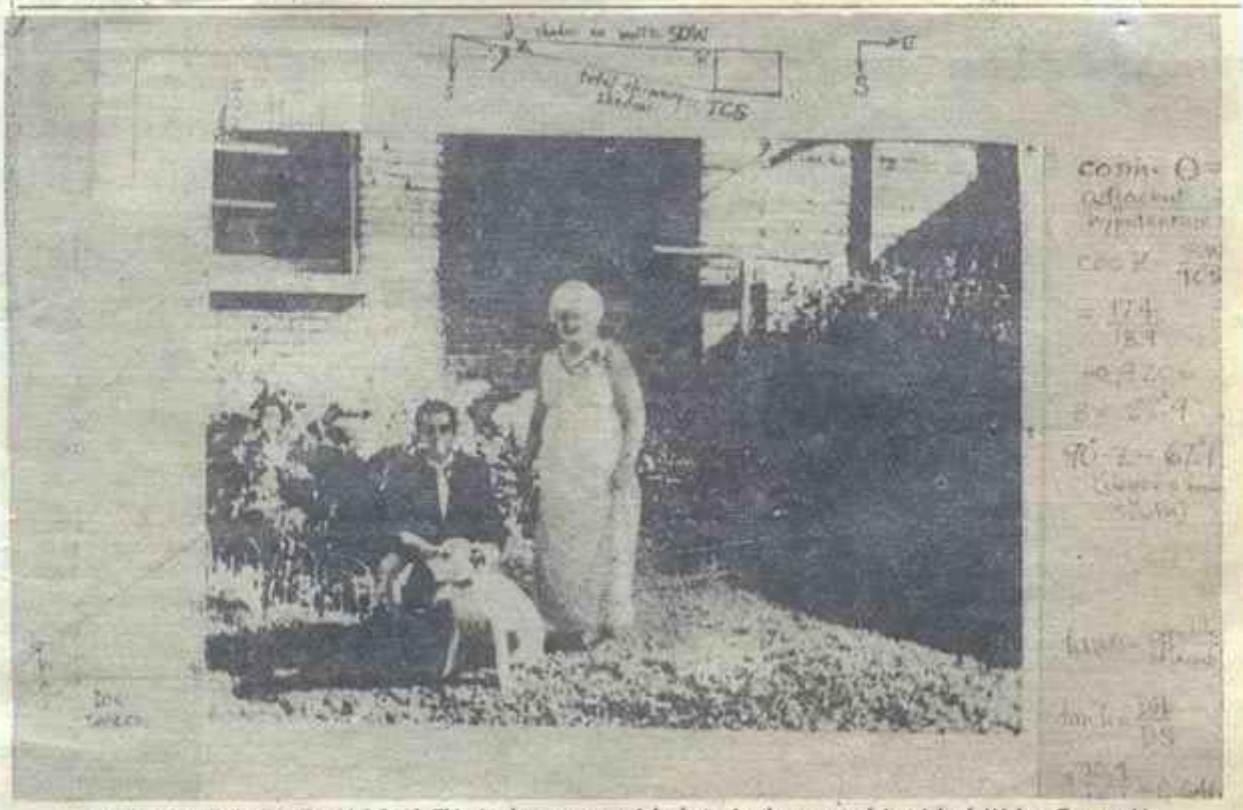
with respect to the Sun and Moon position) is well known and repeatable, can be calculated, and can be displayed in tables which are readily available. Local weather conditions, of course (e.g., clouds) will diminish sunlight or moonlight, so I must take that into account when preparing a response.

Qu. 10. Any famous cases you solved?

Ans. A case (which was overturned on appeal, unfortunately) I call "The Dog Story," since a dog's shadow in a photograph convicted his owner of perjury. The original case involved counterfeiting currency.

**Tranowski's case as reported by Sunday Sun Times of September 6, 1981. Click both pictures to enlarge**

Sunday Sun-Times, September 6, 1981



WHEN DO THE ROSES BLOOM? This is the controversial photo in the counterfeit trial of Walter Tranowski.

# Astronomer overshadowed in bizarre courtroom drama

By Maurice Possley

Astronomers can send Voyager II to Saturn but can't send a man to jail, the U.S. Court of Appeals has ruled.

In a 2-1 decision that left prosecutors sputtering, the appeals court rejected the theory of an astronomer whose testimony on the location of the sun was used as evidence to obtain a perjury conviction against a suspected counterfeiter.

The decision follows six years of federal litigation and is a bizarre and sometimes laughable case of justice apparently gone awry.

Five judges have been involved and three of them believe Walter Tranowski, 57, of 5171 W. St. Paul, is guilty of lying under oath.

THE CASE BEGAN May 12, 1974, when Walter's 55-year-old brother, Stanley, used a counterfeit $5 bill to purchase two "Whopper" hamburgers at a West Side Burger King restaurant. Stanley fled the restaurant before the bill was discovered to be bogus, but witnesses later identified him as the one who passed the phony bill.

Meanwhile, a Secret Service agent investigating suspected counterfeiting activities peeked through the mail slot of Walter's storefront at 4245 W. Division and spied a stockpiled arsenal.

A search produced 24 handguns, seven rifles, 14½ pounds of explosives, 16 mortar bombs, police uniforms, Justice Department identification, 150 negatives of counterfeit bills and two printing presses. However, it was ruled that the search was illegal and the evidence was ordered suppressed.

At Stanley's trial before U.S. District Judge John F. Grady, Walter testified that Stanley couldn't have passed that bad bill. Walter said he took a photograph of Stanley, their mother, Cecelia Kniebusch, and the family dog, "Jerry," in their backyard at 2 p.m. on May 12, 1974—the same time the alleged crime occurred.

THE JURY DIDN'T believe Walter and Stanley was convicted and later sentenced to six years in prison. Judge Grady was irked enough at Walter's testimony to ask federal prosecutors to indict Walter for perjury.

It seems a juror had noticed that rosebushes in the photograph were blooming and doubted the picture was taken on May 12—it was too early for roses to bloom.

Grady noted, "Roses do not bloom until the second or third

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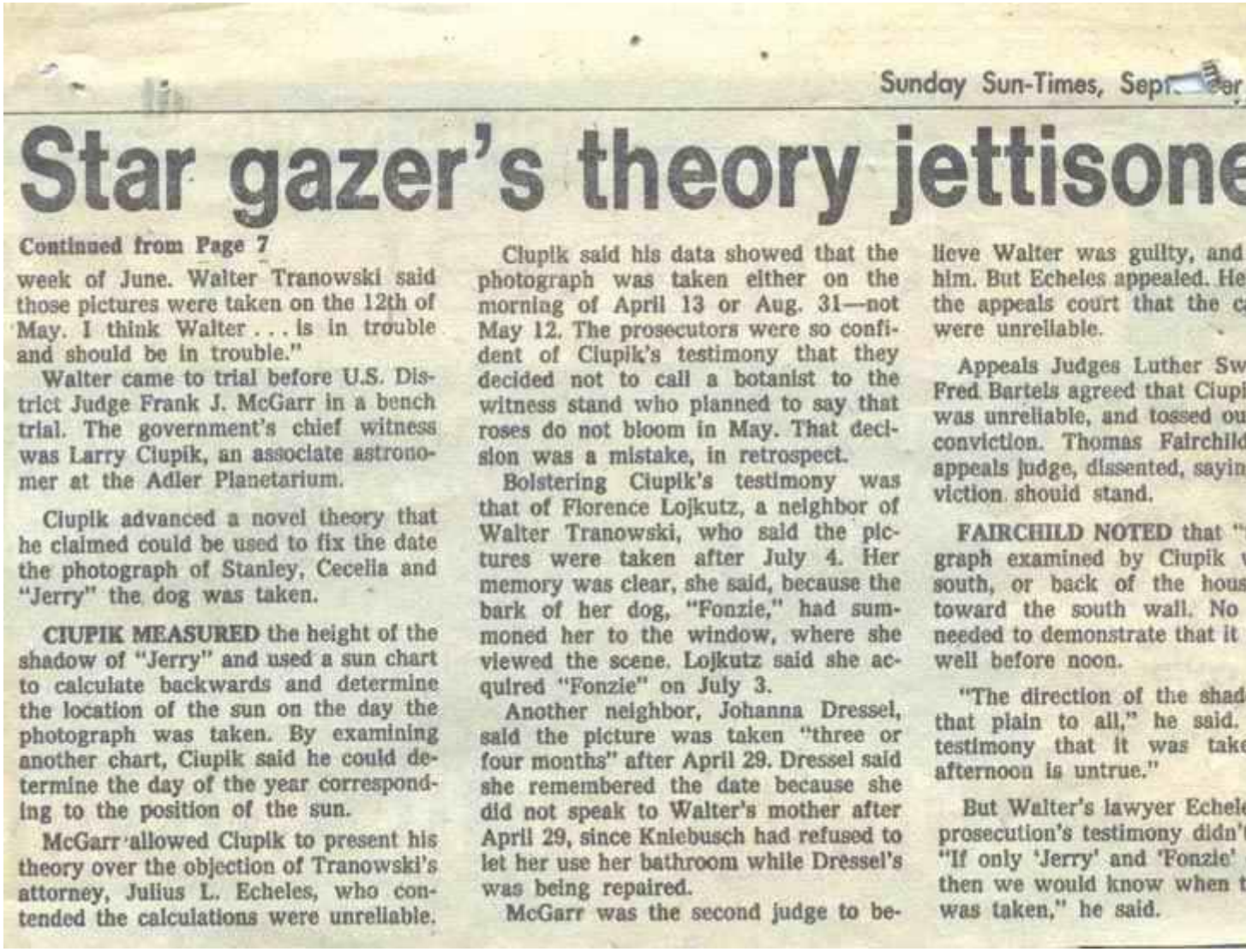


Sunday Sun-Times, Sept[illegible]er

# Star gazer's theory jettisone

Continued from Page 7

week of June. Walter Tranowski said those pictures were taken on the 12th of May. I think Walter . . . is in trouble and should be in trouble."

Walter came to trial before U.S. District Judge Frank J. McGarr in a bench trial. The government's chief witness was Larry Ciupik, an associate astronomer at the Adler Planetarium.

Ciupik advanced a novel theory that he claimed could be used to fix the date the photograph of Stanley, Cecelia and "Jerry" the dog was taken.

**CIUPIK MEASURED** the height of the shadow of "Jerry" and used a sun chart to calculate backwards and determine the location of the sun on the day the photograph was taken. By examining another chart, Ciupik said he could determine the day of the year corresponding to the position of the sun.

McGarr allowed Ciupik to present his theory over the objection of Tranowski's attorney, Julius L. Echeles, who contended the calculations were unreliable.

Ciupik said his data showed that the photograph was taken either on the morning of April 13 or Aug. 31—not May 12. The prosecutors were so confident of Ciupik's testimony that they decided not to call a botanist to the witness stand who planned to say that roses do not bloom in May. That decision was a mistake, in retrospect.

Bolstering Ciupik's testimony was that of Florence Lojkutz, a neighbor of Walter Tranowski, who said the pictures were taken after July 4. Her memory was clear, she said, because the bark of her dog, "Fonzie," had summoned her to the window, where she viewed the scene. Lojkutz said she acquired "Fonzie" on July 3.

Another neighbor, Johanna Dressel, said the picture was taken "three or four months" after April 29. Dressel said she remembered the date because she did not speak to Walter's mother after April 29, since Kniebusch had refused to let her use her bathroom while Dressel's was being repaired.

McGarr was the second judge to believe Walter was guilty, and him. But Echeles appealed. He the appeals court that the c were unreliable.

Appeals Judges Luther Sw Fred Bartels agreed that Ciupi was unreliable, and tossed ou conviction. Thomas Fairchild appeals judge, dissented, sayin viction should stand.

**FAIRCHILD NOTED** that " graph examined by Ciupik south, or back of the hous toward the south wall. No needed to demonstrate that it well before noon.

"The direction of the shad that plain to all," he said. testimony that it was take afternoon is untrue."

But Walter's lawyer Echel prosecution's testimony didn' "If only 'Jerry' and 'Fonzie' then we would know when was taken," he said.

The case has its origins on Mothers' day May 12, 1974, when a 48 year old person named Stanley Tranowski used a counterfeit five dollar bill to buy two "Whopper" hamburgers at a West Side Burger King restaurant. Stanley immediately left the restaurant, but witnesses later identified him as one who had passed on that fake bill. This was however denied by Stanley.

Meanwhile secret service agents gathered evidence that Stanley's elder brother Walter, 50, was indeed involved in counterfeiting currency. A search by the secret service agency disclosed - among other banned items - 150 negatives of counterfeit bills and two printing presses.

Subsequently - in 1977 - Stanley Tranowski was charged with using a counterfeit bill (to buy hamburgers). However the results of secret service search could not be used against Tranowskis, because the secret service agents failed to follow the proper guidelines prescribed for searching premises. This search was thus declared illegal, and none of the evidence recovered could be used against him.

During the trial, Stanley's elder brother Walter testified that Stanley could not be at the burger restaurant on May 12, 1974, because on that day he (Stanley) was with his brother Walter and mother Cecelia Kniebusch. Walter corroborated his statement by producing a photograph purported to have been taken by him (Walter) on that very day. This photograph was supposed to be taken in his mother's backyard between 2 p.m. and 3 p.m. that day - not long before Stanley was

supposed to have used the fake currency. This photographs showed Stanley in a kneeling position, their family dog "Jerry" in front of him, and his mother Cecelia standing beside them.

Stanley's trial was conducted before US District Judge John F. Grady. During the trial, a juror noticed that the photograph could not have been taken in May, as the rosebushes in the background of the picture were blooming. Roses do not bloom until the second or third week of June. Judge Grady convicted Stanley and sentenced him to six years in prison (on Dec. 16, 1977). On June 29, 1979, Walter too was indicted for perjury.

Stanley went in for appeal, and this time his case was heard before US District Judge Frank J. McGarr in a bench trial. At this trial, the prosecution roped me in. I noticed that there were long shadows in the photograph. By measuring the length of the shadows in the photograph, I could calculate the position of the Sun in the sky and thus the day of the year. I opined that this photograph could either have been taken on April 13 or Aug 31, but certainly not on May 12.

**Tranowski's case as reported by Science 82 magazine. Click to enlarge**

of drinking water. Depending on if the site is private or public and if the owner can be found, the state and federal governments may share the cost.

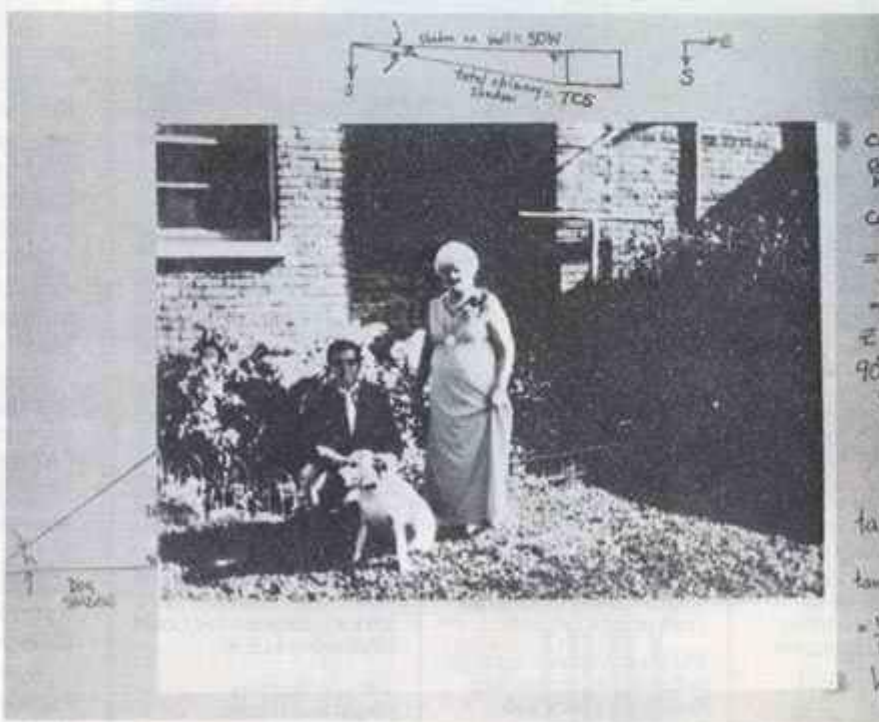
Other sites in the top 10 are Keefe Environmental Services in Epping, N.H., Lipari Landfill in Pitman, N.J., Mark Phillip Trust in Woburn, Mass., McAdoo Associates in McAdoo, Pa., Nyanza Chemical Waste Dump in Ashland, Mass., Pollution Abatement Services in Oswego, N.Y., Price Landfill in Pleasantville, N.J., Tar Creek in Ottawa County, Okla., and Tybouts Corner in New Castle County, Del.

## Icy signs of a warmer world

PALISADES, N.Y. — The Antarctic ice pack has shrunk, and temperatures in the Arctic have risen, say two researchers from the Lamont-Doherty Geological Observatory here. These observations may be harbingers of warmer temperatures caused by an overload of carbon dioxide from burning oil, gas, and coal.

By comparing satellite pictures to atlases and ship reports, George Kukla and Joyce Gavin found that the summer ice pack around Antarctica during the 1930s extended about 150 miles farther north than it did in the late 1970s. In addition, average spring and summer temperatures in the Canadian Arctic and Siberia were up to two degrees Fahrenheit colder in the mid-1930s than in the mid-1970s.

Kukla is cautious about blaming these changes on carbon dioxide, which is believed to trap heat that would otherwise escape from the Earth's atmosphere. They might be explained by the natural vagaries of climate, he says. But the polar regions were expected to be first to show the effects of increasing carbon dioxide. "It is premature to immediately assume it is due to $CO_2$," says V. Ramanathan of the National Center for Atmospheric Research. "But if it continues for another decade, $CO_2$ might be the cause. We certainly need



*Walter Tranowski, on trial for perjury, said he took this picture of his brother 12, 1974. An astronomer who analyzed the shadows says he lied about t*

## Shadows of a doubt

CHICAGO — Who knows what evil lurks in the hearts of men? The shadow knows; or, as in a recent court case here, two shadows and an astronomer.

In 1977 Stanley Tranowski was charged with using a counterfeit five-dollar bill to buy two Burger King "Whoppers." But his brother Walter testified that Stanley was not guilty because both of them were visiting their mother the afternoon of May 12, 1974, when the crime allegedly took place. And they had photographs to prove it.

The court rejected the alibi, Stanley was convicted, and Walter was charged with perjury. The prosecution against Walter brought in Larry Ciupik, an astronomer at the Adler Planetarium, to testify whether Walter was lying about the time of the pictures.

Ciupik studied a photograph in which the corner of a chimney casts a shadow on the outside wall of the house and a pet dog casts a shadow on the ground. Using the chimney's shadow,

using the dog and its shadow h
mined how high the sun was in
in much the same way as the he
lunar mountains are calculate
photographs. Because there a
two days each year when the su
particular position, Ciupik co
that the photograph must ha
taken the morning of either Ap
August 31, 1974, not May 12.

Walter was convicted of perj
a higher court, saying that "tri
should not be used as a testing
for theories supported neither
control experiments nor by
tions with indicia of reliabilit
turned the conviction this fall.
who has testified on the phas
moon and the amount of moon
the night of a crime, says this
most bizarre case. But if the co
asked, he says, he could have co
them his work was not just the

In the case of a retrial, the p
tion might also have used a
who could testify that the flowe
pictures were in a stage of grow
did not coincide with the date

Two independent witnesses corroborated my theory. One was Florence Lojkutz, a neighbor of Walter. She said that the picture was taken after July 4. She knew because she had acquired a dog "Fonzie" on July 3. It was "Fonzie" who barked one day to summon her to the window, when she did see Walter taking the said photograph.

Another neighbor Johanna Dressel also testified that the photograph was taken at least 3-4 months after April 29, the day when Johanna and Kniebusch stopped speaking to each other over a trivial matter.

Judge McGarr too convicted Stanley. Stanley's lawyer Julius L. Echeles went in appeal again, saying my calculations were unreliable. Appeals judges were Luther Swygert, Fred Bartels and Thomas Fairchild. The prosecution were so sure of a conviction based on my testimony that they did not bring in a forensic botanist, who could have easily testified that the photograph was NOT taken on May 12, as roses in the background were blooming. While Judge Fairchild agreed with my testimony, Judges Swygert and Bartels did not and the conviction of Stanley was set aside. This was in 1981. Walter and Stanley were 57 and 55 respectively at this time. Though the conviction was set aside, I am satisfied that out of the five judges involved, three agreed with my point of view.

Qu. 11. Great! This is indeed one of the most remarkable cases we have heard?

The legal reference of this case is U.S. v. Tranowski, 80-1413. This case was featured in: the Chicago Sun-Times, September 6, 1981 (including a picture of the dog and family); Science 82 magazine (a defunct magazine formerly published by the AAAS), volume 3, No. 1, page 10; and on NPR (National Public Radio). This case is also on the web at:

http://www.law.harvard.edu/publications/evidenceiii/articles/tybor.htm

Qu. 12. *Science 82* magazine? Just curious. What is meant by the 82 in it? Is it a 1982 issue? Please let me know. Our readers would be curious to know this.

Ans. Yes, the name of the magazine included the year to distinguish it from the already well-established *Science* magazine. The magazine Science 82 was an attempt from the association that publishes the hard-core science magazine *Science* to enter the "popular science" field.

Qu. 13. Are there any books available in the market on forensic astronomy?

Ans. Not that I know of.

Qu. 14. If some of our readers wanted to contact you directly for advice, would it possible for them to do so? How can they do that?

Ans. They could email the general inquiry to - AskAdler@adlernet.org or visit our web site http://www.adlerplanetarium.org

Qu. 15. Any message for our readers?

Ans. Keep looking up! Conan Doyle's famous fictional detective Sherlock Holmes thought learning Astronomy would clutter his mind with useless facts... I strongly disagree.

*Larry Ciupik can be approached via E-mail at lciupik@adlernet.org. His website is http://www.adlerplanetarium.org*.

Interviews : Collective Index

Interviews in our sister publication : Collective Index

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