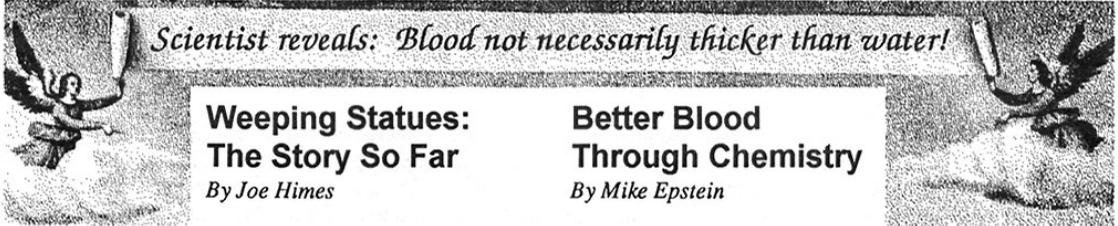




# National Capital Area SKEPTICAL EYE

Spring 1992

Vol. 6, No. 2



*Scientist reveals: Blood not necessarily thicker than water!*

## Weeping Statues: The Story So Far

By Joe Himes

What is a good skeptic to make of the continuing reports of weeping statues associated with a young priest at a small Virginia church? While reports of weeping icons or visitations by the Virgin Mary are far from rare, this recent claim is close to home and, by this time, may well involve someone you know. It also exemplifies a familiar quandary for skeptics: why and how to address claims involving religious convictions that, by definition, are founded on belief in superhuman powers not open to scientific analysis.

The following brief summary of events to date is based largely on reports in *The Washington Post* (3/9, 3/13, 3/31, 4/2, 4/5), *The Fairfax Journal* (3/11, 3/12, 3/13), and the *Catholic Standard*.

### The Phenomena

Rev. James Bruse, associate pastor at St. Elizabeth Ann Seton Church in Lake Ridge, Virginia, says he first noticed something unusual in late December 1991 when a statue of the Virgin Mary that he had given his mother began to cry, as did other statues in her nearby home. A few days later, on December 27, he was afflicted with painful stigmata--wounds replicating those of Christ on the Cross--that openly bled on his wrists, feet, and right side. Bruse claims not to have known about stigmata (a phenomenon associated with several Catholic saints, perhaps most notably St. Francis of Assisi) at the time and attributed the wounds to possible skin disease. Bruse told his pastor, Rev. Daniel Hamilton, about the phenomena on New Year's Eve. Hamilton, calling himself the "ultimate cynic," nevertheless said that he saw the stigmata, exchanged statues with Bruse as a test, then later saw one of the statues weep into his chest of drawers and the other, then in Bruse's room, bleed enough to run down the statue's cheeks. Bruse said the phenomena "shattered my doubt. God exists."

The details of how this essentially private event became public remain sparse. Parishioners apparently saw weeping

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## Better Blood Through Chemistry

By Mike Epstein

Much has been made in the news lately of the simulation of a famous and venerated relic of the Roman Catholic Church, the Holy Blood of Saint Januarius (San Gennaro). Supposedly collected in a vial after the beheading of the saint, the solid coagulated blood mysteriously liquefies during an elaborate ceremony that has been performed several times a year in Naples ever since the fourteenth century. The simulation was carried out by Professor Luigi Garlaschelli, an organic chemist at the University of Pavia, and two colleagues from Milan, Italy. The work was first reported in a scientific communication to *Nature* [1] with follow-up articles in *Chemical and Engineering News* [2] and the *Skeptical Inquirer* [3].

The story of the Holy Blood begins with the historical Januarius, an early bishop of Benevento. He was arrested during the reign of the Emperor Diocletian in A.D. 305 for visiting and encouraging a deacon named Sosius. Januarius had previously seen flames around the head of Sosius while he was singing in church, a sign that was taken to mean that Sosius would soon wear the crown of martyrdom. It was a crown Januarius was to wear as well. Januarius, Sosius, and other clergy were exposed to wild beasts in the amphitheater, but when that didn't have the desired effect, the governor of Campania ordered them beheaded [4].

Januarius's relics were taken to Naples in the fifth century, and he became the patron saint of the city. Charles II of Anjou had a silver reliquary built to contain the saint's head in 1304, and ceremonies honoring the saint were instituted by Archbishop Orsini of Naples in 1337, but nothing is mentioned about the blood until 1389, when it suddenly appeared in the diary of an anonymous Neapolitan: "On the seventeenth day (17 August 1389) there was a great procession to mark the miracle wrought by our divine Lord with the blood of Saint Januarius. The blood, which is kept in a phial, turned into liquid just as if it had been in the living body of Januarius on that very day" [5,6]. The legend that the blood was collected by a serving woman from the stone

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encourages critical and scientific thinking

serves as an information resource on extraordinary claims

provides extraordinary evidence that skeptics are cool



## Letters

Editor:

Your Winter 91-92 issue of the *Skeptical Eye*...contains an article by Steven N. Shore ["A Skeptic's Response: Scientific Creationism," pp. 7-9], including a passage dismissive about certain nonmainstream astrophysical ideas, namely plasma cosmologies and noncosmological redshifts. I am not sure that ridicule of these as a "fringe element" accomplishes anything besides setting up skeptics for potential embarrassment.

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Neither of these ideas has gathered enough empirical support to force the conventional picture to undergo large modifications, but this does not mean that the ideas themselves or the questions raised are not serious. There is evidence suggestive of noncosmological redshifts, though there is enough ambiguity in astrophysics generally to allow usual understandings of the data to squeeze by.... While Halton Arp...has proposed observational evidence for such since the 70s, some recent work by Emil Wolf suggests a theoretical basis, in certain properties of radiation sources extended in space--it is not certain whether the conditions are astrophysically realizable. Definitely controversial, but not revolutionary, or deserving of automatic dismissal.

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Plasma cosmology can be even more unorthodox, suggesting that plasma processes are responsible for much of the structure in the universe, and possibly calling into question the idea of a Big Bang as an event of universal beginning--perhaps replacing it with a less significant Bang.... Plasma-based ideas, with their cosmological consequences, are serious proposals which need to be examined, and stand or fall (quite possibly) on their own merit. Derisive treatment is counterproductive at the very least.

There are some problems, that should not be exaggerated but are still bothersome, with conventional cosmology. And attending a seminar on some of the various extensions of inflationary models is liable to create the impression of a lot of theoretical activity that is but sweeping things under the carpet.... In such an environment, there is more opportunity for rival points of view to be considered. As time progresses, the theories will probably evolve to include elements of each, and hopefully approach a more satisfactory picture.... In any case, science is in such debates, not the laying down of inviolable truth to bludgeon pseudoscience with.

For the skeptic who is not a practicing physicist, but is bothered by creationist inanities, where does this lead to?... Skepticism is primarily about defending the process of science, more than what may be the currently accepted best theories. And we can note that none of the serious contenders in cosmology affords any comfort to creationists: if anything, the age of the universe is increased over the present views....

In defending evolution, we often call attention to creationist abuse of the real scientific disputes going on within biology, where they can deploy punctuated equilibrium-based criticism of neo-Darwinist ideas in order to somehow raise questions about the notion of evolution itself. Similarly the fact that creationists are now using anti-Big Bang arguments is merely an indication that they have extended their usual methods to cosmology, not an excuse to brand the

unconventional within a science as pathological. And the way to deal with this is also the same: as we don't presume to solve interesting problems of current research for the biologists, and don't declare unflinching allegiance to one version of evolution or another, we should not be too confident about the Big Bang but much more so about the immense time scales provided by the history of the universe. Otherwise, in the unlikely but still very much conceivable event of a full failure of the Big Bang, we can be sure that the creationists will declare a big victory.

Taner Edis

Steve Shore responds:

In his letter, Taner Edis objects to my characterization of the ideas in Lerner's book *The Big Bang Never Happened* as "fringe." I'll comment very briefly here on this rather technical argument.

Yes, there are some examples of what appear to be noncosmological redshifts and alignments of galaxies and quasars, mainly discussed by Arp and Burbidge. These are minor anomalies that are not the result of statistically well-founded investigations. Wolf's ideas work under some laboratory conditions but face many serious difficulties as an alternative explanation for galactic redshifts. In my opinion, these do not represent a significant challenge to current cosmological ideas. As I said of evolution, it is the overwhelming variety of the predictions of "standard" cosmology (that is, the Big Bang) that makes it so successful, and it is this lack in the alternatives that prompted my dismissal of such books as Lerner's.

Scientific theories have to be predictive, organizing, consistent, and economical. They don't have to be final or even necessarily, in the end, true. But when they have the enormous predictive power that we see in the Big Bang cosmologies (and yes, there are several versions), until overwhelming evidence to the contrary accumulates, I think they should be pushed fervently until they hit an insurmountable brick wall. To date, none of these anomalies represents anything like such a barrier to further progress. If in the end the standard model is wrong, as it certainly must be at some level, it will more likely be contained in the next level of modeling than be totally superseded. Newtonian gravity was not trashed by relativity; rather, relativity had to be consistent with classical physics.

I suggest that the interested reader look at some of the summaries of modern cosmology, like those in the Academic Press or van Nostrand encyclopedias of astronomy and astrophysics, for details. For a more popular description of some of the ideas, I suggest reading Overby's *Lonely Hearts of the Cosmos*. □

## NCAS Election Results

The Board of Directors and officers for the coming year are listed on page 2. Thanks to all who participated and congratulations to the newly elected members.



# Prez Sez

Randi v Geller

by Chip Denman

Depositions in the lawsuit brought by Uri Geller against James Randi were held in Washington on March 10, 11 and 12. It was supposed to be three intense days of videorecorded testimony, with tough questions directed equally to the opponents. Although I was not directly involved in the proceedings, I accompanied Randi to lend whatever moral support I could.

Other than Randi and his attorneys, led by Michael Kennedy of New York, Penn Jillette, Teller, and I were the only ones present. Unfortunately, none of us was permitted by Geller to sit in on the actual deposition.

When Geller arrived on my first morning (the second day), he dashed out of the elevator, grabbed my hand, and introduced himself warmly. "Hi, I'm Uri!" Of course, he recognized Penn and gave him a hearty handshake and a big smile. The fellow could have had a great career in retail sales.

Once the depositions began, there was little to do. Geller seemed to have trouble sitting still; even the receptionists were commenting on his constant flitting in and out of the closed conference room. Other folks associated with the law firm where this was taking place would drop by just to catch the latest tidbits. Clearly this case is not exactly the norm for Washington. On the rare breaks, Randi seemed alternately disgusted by the various insinuations and filled with renewed determination to see this mess through to its proper conclusion.

I wasn't inside to actually see it, but I understand that things livened up a bit when Randi, in making a point about the simple nature of certain tricks, vanished a pen or pencil from the table. That story even rated a small mention in the *Washington Post*.

The next and final morning, Randi and I were there alone. Once again, Randi's attorney asked permission for me to sit in; again it was denied. But just before things got under way, Geller came out and apologized to me up, down, and sideways for having to exclude me. Right.

I mostly sat out of sight—but within earshot—of the reception area. (I took advantage of the forced con-

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## Prez, from page 3

finement to write a talk that I was to give at Johns Hopkins University on spiritualism and psychical research. There are some interesting parallels here to the nineteenth century.) I could hear Geller coming and going, looking for his lunch, and so forth. I wondered what would happen if I made myself more visible, so I took my computer and moved to the outer area. Sure enough, on his next trip through Geller sat down on the sofa beside me to chat. He wanted to know *all* about me. Where did I live? Did I use computers in my work? Do I ever do outside consulting? I had the distinct impression that what he really wanted to know was who the hell I was and whether I might be an expert digging up useful bits of information. I suppose the vibes just weren't clear that day.

The planned one and a half days turned into three, with only Randi being deposed. There was no time left to turn the tables. The questions for Geller would have to be scheduled for a future date. As things wound down on this last day, Paul Kurtz and Barry Karr were there, preparing for their turn the next day (CSICOP is also named in the suit). We stepped into a side room to chat about the whole affair. What a surprise to find Geller, literally ear to the door, every time I looked into the hallway!

\* \* \*

Nearly a month has passed. It is April 15, and I'm not thinking about my taxes. This morning I caught a 5:25 train to New York City and a cab to a suite of law offices on Park Avenue. Randi had hoped that I might operate a video camera on his behalf, especially during the part of Geller's testimony where he would be asked to bend a spoon or otherwise demonstrate his legitimate powers. But by now Geller knows me as president of--in the words of his attorney--the National Skeptics' Society or some such. Again he objected to my presence. Perhaps I should feel flattered.

So I sat balancing a computer in my lap in an empty office just outside the deposition room, tapping out my report from the sidelines. At every break I heard the same kind of story: for question after question, Geller apparently had tremendous difficulty recalling pesky little details...like his country of citizenship.

All in all, it was a day without big surprises. I was told that Geller again asserted under oath that he does not use trickery when he performs. When asked to bend a key, Geller declined. Those negative vibes can be such a bother.

If I thought it would actually be of some assistance to Randi, I'd focus my vibes nightly. But the world I know doesn't work that way. I'm happy to live in a universe where my accomplishments depend on my efforts and not on the auras of folks in the next room. □

4

## If You Just Tuned In...

James Randi is being sued by noted spoonbender Uri Geller, for allegedly libelous statements Randi has made regarding Geller's supposed psychic abilities. A fund has been established to help Randi with the expenses of fighting the legal battle. If you would like to contribute, checks may be sent to:

The James Randi Fund  
c/o Robert Steiner, CPA  
P.O. Box 659  
El Cerrito, CA 94530

National Capital Area Skeptics  
1991 Financial Report  
Prepared by Grace E. Denman, Treasurer

|                                  |       |
|----------------------------------|-------|
| Beginning Balance                | 2,574 |
| Income                           |       |
| Membership Fees<br>and Donations | 5,510 |
| Interest                         | 163   |
| Total Income                     | 5,673 |
| Expenses                         |       |
| Postage                          | 1,301 |
| Printing                         | 2,456 |
| Telephone                        | 282   |
| DC Taxes and Fees                | 126   |
| Rental Fees                      | 500   |
| Other                            | 720   |
| Total Expenses                   | 5,385 |
| Ending Balance                   | 2,862 |

(Values rounded to nearest dollar.)

## **Blood, from page 1**

on which Januarius was beheaded was apparently added around that time as well.

There are actually two phials of blood, one about two-thirds filled with dried blood, and the second containing only a few drops. The phials are permanently sealed in a glass case stored in a guarded vault, and the blood is exposed for veneration at three times during the year: on the Saturday preceding the first Sunday in May (the feast of Januarius's translation); on September 19 (the feast day that celebrates his martyrdom); and on December 16 (the feast day honoring him as patron saint of Naples). The ceremonies have been described as "boisterous," "unruly," and "hysterical," as crowds of people shout and invoke the saint to liquefy his blood. The blood sometimes remains liquid during the entire ceremony, while at other times it resolidifies before it is returned to the vault [6]. Very occasionally, it does not liquefy at all, to the confusion and anger of his devotees; according to one source, the last time this happened was when Naples elected a Communist mayor [7].

The recent attempt by Italian scientists to duplicate the phenomenon of the holy blood is not the first [6]. In 1880, Professor A. Albini of the University of Naples was reported to have discovered that a solution of chocolate powder, sugar, casein, whey, salt, and water remains solid when left undisturbed but liquefies when shaken. In 1906, Professor Guido Podrecci showed that calf's blood mixed with a chemical solution would liquefy when gently heated. But the recent work reported in *Nature* [1] is the most convincing. The procedure [8] used to prepare the simulated holy blood is shown on page 7. The blood is a thixotropic gel of iron hydroxide, colloidal  $\text{FeO}(\text{OH})$ , of proper ionic strength.

The validity of this replication of St. Januarius's miracle blood depends on establishing that the apparatus, chemicals, and procedures used here were available in the fourteenth century. The balance, distillation (for preparing pure water), crystallization, evaporation, and filtration were all known before the third century A.D. [9]. Calcium carbonate (chalk, limestone,  $\text{CaCO}_3$ ) and sodium chloride (salt,  $\text{NaCl}$ ) are both natural minerals described in ancient texts. Ferric chloride ( $\text{FeCl}_3$ ) exists as the mineral molysite, which is precipitated out of volcanic lava flows from interaction of chlorine gas with the iron in the rock. It only occurs naturally in areas of volcanic activity, such as near Vesuvius in Italy [1].

From a historical standpoint, the weakest part of the replication procedure is the dialysis, which is used to purify the colloidal dispersion by removing the unreacted ferric chloride and calcium chloride byproducts of the reaction. The brown reaction product is stored on one side of a semi-permeable membrane (i.e., in a bag of cellophane, parchment, or animal gut) placed in distilled water. The dissolved salts then flow through the membrane into the distilled water

until the concentrations on both sides are equalized. While pigments were stored in gut or bladder bags in the fourteenth century [8], the procedure as a mechanism for purification of colloidal dispersions was not established until the nineteenth century. However, Van Helmont showed experimentally that salt can pass with water through a bladder in the early part of the seventeenth century [10], and it is possible that an earlier researcher accidentally stumbled upon this phenomenon. It is only a small step from filtration to dialysis. While a thixotropic gel can be obtained without dialysis by mixing ferric chloride, calcium carbonate, and water in exact proportions [11], the simulated blood prepared in this manner has been found to work for only a couple of days [8].

Since the only doubtful step is the dialysis, I experimented with procedures to eliminate it. I followed the procedure [1] for the preparation of the simulated blood up to the point of dialysis. Then, rather than using dialysis, I allowed the brown solution to sit undisturbed for 24 hours. At this point it had formed a thick gelatinous layer on top of the bulk of the solution. I removed that layer, added a few drops of distilled water, and ground the resulting mixture with a glass mortar and pestle to break up clumps and hasten evaporation until it would solidify upon sitting undisturbed for several minutes. The mixture was then placed in two small glass vials. The remainder of the bulk solution from which the gelatinous layer was removed solidified after another 24 hours and was treated similarly. Also, to generate a more "blood red" color than the "yellow-brown" of the original gel, I added a few grains of potassium thiocyanate to each vial. The reaction of thiocyanate with iron is often used in "chemical magic" to produce a simulated blood color. While "blood acid" was first mentioned only in the eighteenth century by Winterl [9], thiocyanate can be prepared by fusing a cyanide-containing compound and sulfur. The recognition of cyanide as a poison in plant materials such as bitter almonds, cherry laurel leaves or peach pits goes back to the ancient Egyptians, who spoke of "the penalty of the peach" [15]. The original holy blood of Saint Januarius has been described as "a solid black congealed mass" [5] or "dark brown" [6] when dry, and it transforms during liquefaction to "a red liquid" [5] or "lighter...then turns yellowish red and finally scarlet" [6]. This is similar to the behavior of the simulated holy blood produced by this procedure, which solidifies when motionless for about a minute and rapidly liquefies when shaken.

After several days the two vials of blood prepared from the bulk solution failed to coagulate [8]. The vials prepared from the gelatinous layer above the bulk solution still coagulate after several months, but more slowly than when first prepared. They are also much less solid in appearance and required regeneration after approximately six weeks by the addition of a small amount of salt [8] and evaporation. It is possible that some purification took place during the formation of the layer on top of the bulk solution, producing a more stable thixotropic gel. The thiocyanate probably plays no

*continued on page 6*

## Blood, from page 5

more than a cosmetic role and may be unnecessary, although some stabilization of the gel might be due to complexation of iron impurity. Dialysis is a more straightforward and likely answer.

Beyond the chemistry in the preparation of simulated blood, the question of motivation arises. It is not well known that Albertus Magnus (1193-1280) and his student, Thomas Aquinas (1226-1274), both canonized as saints and recognized as among the greatest intellects in the history of the Church [4], were also qualified alchemists [9,12]. Albert the Great was a bishop, a professor at the Paris University and one of the outstanding scientists of the Middle Ages. In spite of the fact that many alchemists were priests, Pope John XXII forbade the study of alchemy in a bull in 1317: "Alchemists deceive us and promise what they cannot perform ... if any members of the clergy are found among alchemists, they will receive no mercy ..." It is little wonder that alchemists kept their work secret.

Today, a large percentage of the world's population believes that through transubstantiation, bread and wine physically change into the body and blood of Jesus Christ. Is it not possible that 650 years ago a Neapolitan cleric/chemist, who might regularly pray to his patron saint, Januarius, accidentally discovered the thixotropic properties of the mixture of molysite and chalk? Better to present his discovery as the finding of Januarius's blood and receive acclaim, than present it as the result of an alchemical procedure and receive "no mercy" from Pope John XXII!

Several unique events or claims have been associated with the phenomenon of Saint Januarius's blood. Let's examine some of them.

"Failure of the blood to liquefy is considered a bad omen. It did not liquefy in May 1976, just before the worst earthquake in Italian history struck" [6]. Another reference [5] relates that "in May 1976 the liquefaction did not occur and nothing unusual happened." While an earthquake did occur in Italy in 1976, it can hardly be called "the worst earthquake in Italian history." The Great Italian Earthquake occurred on November 23, 1980, killing 3,000 people and leaving 300,000 homeless [13]. Italy is seismically active, and earthquakes happen there quite often.

"The substance stored in the phials is definitely blood. Several scientists at the University of Naples examined the phials in 1902. By shining a beam of light through the glass case they were able to make a spectroscopic analysis of the relics. This analysis verified that the phials contain blood, though it is possible that it has been contaminated by a foreign substance" [6]. The instrumental difficulties in

making an absorbance measurement in a phial within a glass case using equipment available in 1902 are immense. The measurements had to be made by visual estimation of light levels, since photographic and photoelectric detection methods weren't used until 1910 [14]. Since the liquid or solid blood is too dense to permit an absorbance measurement, the absorbance spectrum of the film of blood remaining on the wall of the phial would have to be measured. This would be very difficult, particularly if the substance were really liquid blood, because the film thickness would not be stable over an extended time. In any event, since the material in the phial "looks like blood," it must have a similar absorbance spectrum, and any such test could not possibly be used to determine that the material "is definitely blood."

Scientists in 1902 could only visually measure absorbance spectra down to a wavelength of about 400 nm, since the sensitivity of the human eye rapidly decreases at shorter wavelengths. This was verified from spectra of blood published around that time [16] and by repeating the visual measurement experiment using a hand-held spectroscope. Using a more modern photoelectronic absorption spectrophotometer, I compared the absorbance spectrum of blood to three versions of the simulated blood. The result is shown in figures 1 and 2. In figure 1, samples of old blood (approximately 10 years old, stabilized with heparin) and simulated blood (with and without dialysis and with thiocyanate) were spread as a film on one surface of a 1 cm<sup>3</sup> quartz cuvette and the absorbance spectrum measured in the visible (650-370 nm) region of the electromagnetic spectrum. While the simulated blood films were stable and absorbances were reproducible over the 15 min measurement time, the real blood film was stable for less than

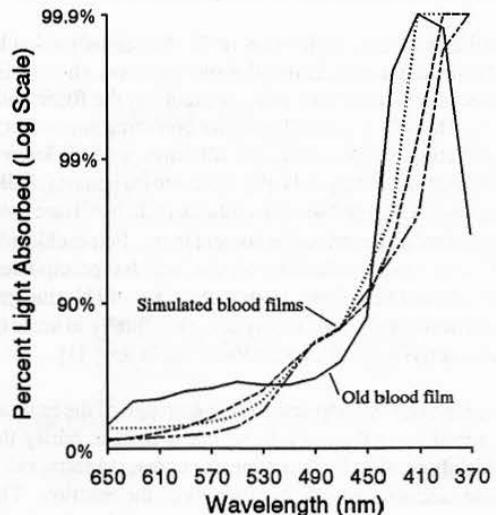


Figure 1. Absorbance of real (solid line) and simulated (dashed lines) blood films.



### Procedure to Synthesize a Thixotropic Mixture [8]

Dissolve 25 g  $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$  in 100 mL of water. Slowly add 10 g of  $\text{CaCO}_3$ . Foaming and  $\text{CO}_2$  evolution will occur, so add slowly by stirring. A dark brown solution will be produced. Dialyze the solution against distilled water using cellophane tubing, parchment, or animal gut, changing the distilled water every 24 hours until it is no longer yellow. If using cellophane tubing, cut about one foot, wet it well, and tie a knot at one end. If using parchment, attach to the end of a bottomless tube. Animal gut can be obtained from a butcher or also found in drugstores, sold as a prophylactic. After dialysis, the solution can be used as is or can be concentrated by gentle evaporation. Pour some of the solution into a small round flattened bottle, add a tiny amount of table salt ( $\text{NaCl}$ ), and shake. Leave untouched and see if it has jelled. If not, add more salt. The setting qualities of the gel, such as how fast it sets or liquefies, can be adjusted by varying the solution concentration (by evaporation) or the amount of added salt. Thixotropic sols will equilibrate after one or more months, and they may gel incompletely and become only very viscous. The addition of a very tiny amount of salt should restore their original behavior. (Author's note: The procedure is necessarily abbreviated from the original directions and hints provided by Professor Garlaschelli. To obtain a copy of that procedure, contact the author through the NCAS Skeptic Line.)

a minute. Absorbance of that film had to be measured very rapidly. Water was then added to the cells to provide a homogeneous absorber and the absorbance measurements were repeated, as shown in figure 2.

The results are significant on three points. First, the spectra of all the simulated blood films and solutions are similar and do not differ greatly from the blood film and solution down to about 400 nm, the short wavelength limit of visual measurement. The spectrum of the old blood does not exhibit the strong oxyhemoglobin maxima at 545 nm and 575 nm typical of freshly drawn blood. It would be hard to differentiate the simulated blood and genuine blood using visual

estimation of absorbance. Second, careful absorbance measurements at 570 and 490 nm, and below 400 nm, may be used to distinguish between the simulated blood and the real blood. Measurement using a high-resolution absorption spectrophotometer also detected small maxima at 630 nm, 575 nm, 545 nm, and 498 nm in the spectrum of the old blood, which would escape visual detection. In figures 1 and 2, note the much greater absorbance of the simulated blood than the real blood at 490 nm than at 570 nm, and the maximum in the blood spectra at 410 nm, the Soret band of the porphyrin structure of hemoglobin. While absence of the latter would be conclusive evidence that the holy blood is simulated, the presence of the Soret band is not conclusive proof that it is really blood. This has been clearly pointed out by investigators who studied the Shroud of Turin [17], a religious icon of comparable vintage, where a similar question of blood authenticity arose. And finally, even if visual measurement had produced spectra similar to those in figures 1 and 2, without the knowledge that iron hydroxide thixotropic gel was another explanation, the most logical interpretation of the simulated blood spectrum would be that "the phials contain blood, though it is possible that it has been contaminated by a foreign substance." This is apparently what was reported [6].

"A number of other cases of 'liquefying blood' miracles have been documented ... the great majority of liquefying blood miracles occur in the south of Italy, in or around Naples. This geographical quirk, and the fact that none of these miracles predate the miracle of St. Januarius, may provide a clue to the nature of the phenomenon. Could it be that the news of St. Januarius's miracle in Naples which spread throughout southern Italy sometime in the fourteenth century caused congregations in other churches that housed blood relics to pray for or expect similar wonders?" Could it be instead that the chemical knowledge to make liquefying Holy Blood was spread around southern Italy in the fourteenth century?

*continued on page 8*

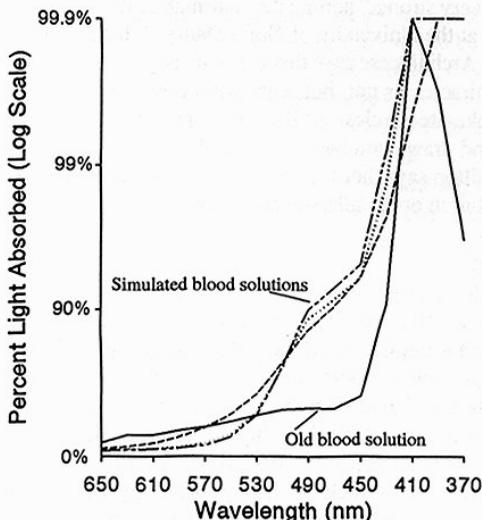


Figure 2. Absorbance of real (solid line) and simulated (dashed lines) blood solutions.

## Blood, from page 7

Since we know what to look for, a repeat of the 1902 absorbance measurements with modern spectrophotometric equipment should provide the answer.

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- [17] Joe Nickell, *Inquest on the Shroud of Turin* (Buffalo: Prometheus Books, 1987), pp 127-132, 157-160.

**Acknowledgments:** Thanks to Laura Wood for involuntary donation of her blood to the experiment (i.e., she happened to cut herself just when I needed some fresh blood), and to Steve Choquette for help in preliminary measurements using a rapid-scan absorption spectrophotometer. I am also grateful to Charles Beck for guiding me to books on the history of chemistry, to Walter Rowe for forensic guidance, to Nick Omenetto for his help in contacting Luigi Garlaschelli. Special thanks to Professor Garlaschelli for all the information (and dialysis tubing) he sent me.

*Mike Epstein is an analytical chemist and spectroscopist and has been an NCAS board member since 1990. □*

## Statue, from page 1

for the first time on March 1; on March 4, Ash Wednesday, a statue at the main altar wept three times. Somehow, WUSA-TV was notified and broadcast an interview with Bruse on March 6; the rest is a blur of more weeping and turn-away crowds at the church. The stigmata bled intermittently until about the end of February, according to Bruse, but were mostly gone by March 12 when Hamilton revealed that a doctor had found "no reason why they were there and no reason why they disappeared." (By this time Bruse himself was no longer responding to requests for interviews.)

Bruse has since appeared at two other churches in the Washington area, and the weeping has followed, sometimes in copious quantities. An etched-glass portrait of Mary was said to have wept at one of the other churches, where the associate pastor also said he saw the stigmata on March 27, though they must have been extremely faint by that time.

### The Church

The public position of Church officials remains at least prudent and sometimes downright skeptical, but within a limited concept of skepticism. It is skepticism rooted in a tradition that ultimately frowns on doubting too much. The Arlington Diocese stated the Church's official position as follows: "The [Roman Catholic] Church does not pass judgment on purely physical phenomena, but only on a purported meaning, message or significance that may be associated with the events....There is no determined message attached to the reported phenomena, and thus there is no ecclesiastical declaration to be made at this time."

While the Church maintains that there can be no true miracle without a message, it clearly recognizes both a will to believe and a benefit from believing almost any kind of claim, even those that carry no message or are ultimately rejected. "The grip of the irrational is very strong," admits the chairman of the Theology Department at the University of Notre Dame. A bishop at the Washington Archdiocese says that the issue is not whether you believe in miracles or not, but what you do with your belief. Hamilton makes it even clearer: "If the phenomenon...strengthens your faith and draws you back to God, obviously it is a good thing." Hamilton says there is no need for an investigation by either the Church or an independent party.

### The Public

The media have largely carried the claims of the weeping/bleeding statues and Bruse's stigmata as news reports without exaggeration and implied wonder, even quoting physicist Shawn Carlson about how he could create similar weeping with fragrance as a bonus. But there are a great many people who *want* to believe in a miracle. A 1988 Gallup poll revealed that a large majority of Americans (not just Catholics) still believe in present-day religious miracles, and they apparently feel no need to wait for church endorsement. Attendance at shrines is reported to be increasing as confidence in temporal leadership declines--facts that probably offer material for several dissertations. For whatever reason, most of the people interviewed for

reports about the weeping statues considered themselves to be "skeptical," but they leaned toward hope if nothing at all happened in their presence and toward full belief if they saw anything liquid. Volunteers at St. Elizabeth Ann Seton Church helpfully point out the tears if you express doubt, and they will touch your articles to the base of the statue of Mary, returning them "nearly always damp." The Church's official position does not discourage any of this.

### The Skeptics

Does it really do any harm to anyone to believe in a miracle if it should prove to be something less? Shouldn't skeptics just scoff a little and let it go? One could take a passive attitude that since no proof--indeed, no analysis--exists for the present extraordinary claims, they should be ignored by all rational people. But believers do not require scientific proof, and many think it sacrilegious to try to obtain it. Skeptics can ignore the claim, believers may ignore the skeptics, and eventually the expanding reports will become uncontroverted "fact."

One writer told *The Washington Post* that "in fact, theologians and scientists have validated as supernatural events just such as these apparently unexplainable occurrences." The hundreds of young students who were shown wet statues by their teachers and told that "Father Bruse apparently has been chosen as someone very special" are unlikely to challenge that conclusion. A few may one day turn belief into action, damaging their eyes looking for images in the sun, or spending their limited funds for futile travel to distant "miracle" cures. No, we shouldn't ignore the claim.

Nor should skeptics put down the claims--sight unseen and pending "extraordinary proof" by the claimants--as just more in a long line of misinterpretations of natural phenomena and/or downright hoaxes. History might be with us by about a zillion to nothing, so far as we know, but we've already noted that claimants aren't likely to worry a lot about either proof or odds, while skeptics are supposed to weigh the evidence in every case before reaching conclusions. This is the wrong approach if skeptics want to encourage critical thinking and rational inquiry.

Skeptics might follow through with Carlson's and others' ideas for producing "tears" under similar conditions to show that a miracle may not be the simplest explanation. That may be the best "proof" available, absent Church participation. Still, risks are involved, one being that such experiments might lead to more "copy cat" miracles. (It is not certain even now that only one person is involved in the phenomena.)

Obtaining Church participation would surely be difficult, but not impossible. On the one hand, Hamilton said that no analysis of tears would be done after Bruse had already told one reporter of a doctor's plans to do just that. On the other, there are signs that both the Church and its followers would like to change the focus. As one visitor lamented, "It's just one more thing for people to laugh at Catholics" about. The *Catholic Standard* editorialized about the penchant for being "so eager to look for signs and wonders concerning the unexplained and so oblivious to the signs and wonders that surround us every day," a thought that many skeptics might endorse. If skeptics were to attempt to reproduce the weeping, we might also try to convince Church officials that it is nonthreatening and in their interest to help investigate the physical phenomena as soon and as thoroughly as possible. Analysis now is unlikely to threaten anyone's belief in the original occurrences. This is not the blood of St. Januarius or the Shroud of Turin; the original tears have long since dried, and Bruse's wounds have healed. The Church should now want to know if there is a human behind more recent claims of weeping because unbridled copying might eventually be discovered, touching many people with disrepute. No one need be directly affected if human-caused weeping were exposed now; skeptics should care only about what happened, not who did it.

This story is almost certainly not over.

*Note:* The fullest and most skeptical coverage of the "weeping statue" story appeared as this issue was going to press: "Why Is This Woman Crying?" by Weston Kosova, *Washington City Paper*, April 24-30, 1992, pp. 24-33. Kosova discussed the case in an NCAS program on May 30. Readers are invited to comment on the "weeping statues" claims and media coverage of the story. Send letters to: Editor, *Skeptical Eye*, c/o NCAS, 8006 Valley St., Silver Spring, MD 20910. □

History may be with us a zillion to none, but claimants aren't likely to worry about proof or odds.

## Journalists Among the Astrologers

### Commentary

By Lys Ann Shore

Astrologers should be grateful to the *Washington Post*, which covered the 1992 United Astrology Congress at the Crystal City Hyatt in not one but two feature articles: "Technology Dawns on Age of Aquarius" (District section, Thursday, April 16) by freelancer Susan Marya Baronoff, and "For Heavens' Sake: Astrologers Meet in Crystal City" (page 1 of Style section, Saturday, April 18) by staff writer Joe Brown. Both articles focused on the "high technology" now available to members of the astrology "profession," and both included a photograph of a thoughtful, intellectual-looking white male, bearded or moustached, with a high forehead, seated at a computer whose screen displays a complicated diagram and lists. The men in the photographs were identified as "Warren Kinsman, a professional astrologist" (Baronoff's article) and "High-tech astrologer Rob Hand" (Brown's article).

Both articles also emphasized the mainstream aspect of the convention. Baronoff began her story, "It promises to look like your typical trade convention: hotel meeting rooms decorated in Contemporary Flip Chart, sober researchers crowding to technical lectures, earnest experts debating professional ethics and trade show hawkers pitching mind-popping technologies." Brown described the scene this way: "With a 52-booth trade show (open to the public), 19 separate 'tracks' (from absolute beginners to the advanced Cosmobiology/Uranian) and a raft of papers to be delivered, the astrologers' event seemed much like any other convention."

Each of the *Post* writers included a token putdown of astrology, in the form of a reference to Nancy Reagan's favorite astrologer, Joan Quigley, who happened to be the keynote speaker at the conference. "Astrology in Washington?" asked Baronoff. "There was that Reagan connection to Joan Quigley, of course, but wasn't that just a fluke?" Brown listed several of what he called "Quigley's startling (not!) revelations." (Among them, "George Bush will suffer physical aggravation due to overexercise, or will threaten or take some military action against a foreign country.")

In spite of these would-be skeptical comments, both writers devoted most of their articles to quotations from astrologers attending the convention, which were not balanced by any quotations of skeptical sources. They allowed the astrologers to present, unchallenged, a picture of astrology that might cause a high-school student to see it as a career option much like, say, computer programming, management consulting, or investment banking. For example, Brown quoted astrologer Susie Cox, "who has two telephone lines, a fax machine and an IBM clone, and is ready to invest in a laptop, 'so I can do consultation wherever I am.'" He also quoted Rob Hand, the same man pictured in his article: "Wall Streeters have

embraced astrology," said Rob Hand, 'a fully functioning astrologer as well as a computer programmer' with a Brewster, Mass., high-tech astrology concern called Astrolabe."

A high-school student reading Baronoff's article might get the idea that astrology is an academic specialty like philosophy or mathematics. Baronoff quotes Hallolie Richter, a local "astrologist," who says that "now a professional astrologer has to have a degree in psychology or philosophy." Baronoff adds that "now, astrology is as software-based and hardware-bound as other areas of statistical investigation."

From Brown's article, the same hypothetical high-school student could learn that astrology pays well: "Let them laugh. This is a very lucrative business," said [Susie] Cox, an astro-entrepreneur.... I charge \$125 an hour and I'm booked three months in advance."

Both the *Post* writers helpfully defined technical astrological terms, so that taken together their articles provide a short glossary of such terms as *mundane astrology* ("supposedly deals with worldly rather than personal issues" [Baronoff]) and *horary astrologist* ("specializes in locating lost articles and missing people" [Brown]).

The 1992 United Astrology Congress attracted "more than 1,000" (Baronoff) or "an estimated 1,300 professional and amateur astrologers" (Brown). Given the quality of the *Post's* coverage, it wouldn't be surprising if the 1993 meeting attracted twice that many. □

### Old News

"If you marke the cunning ones [e.g. the astrologers], you shall see them speake darklie of things to come, devising by artificiall subtiltie, doubtful prognostications, easilie to be applied to everie thing, time prince, and nation: and if anie thing come to passe according to their divinations, they forteifie their old prognostications with new reasons.... And if one of these prognostications fall out right, then they triumph above measure. If the prognosticators be found to forge and lie alwaies (without such fortune as the blind man had in killing the crow) they will excuse the matter, sieng, that...neither the wiseman ruleth the starres, nor the starres the wiseman, but God ruleth them both."

*The Discoverie of Witchcraft*

Reginald Scot

1584

# Skeptic's Tour of Washington

By Elena M. Watson

with contributions from Chip Denman and Lys Ann Shore

If you've lived inside the Beltway for very long you probably know about the Scandal Tour that buses tourists around to notorious sites of political disgrace. And if you've ever been to Los Angeles you may have taken the Graveline Tour, a hearse that chauffeurs tourists past the spots where celebrities have died. It seems only fitting to have a Skeptics' Tour as well. This self-guided driving tour version is intended to acquaint NCAS members with the abundant examples of pseudoscience, the paranormal, and other extraordinary claims that surround us in the national capital area. So if you're looking for some ghosts to bust or a conspiracy to unravel, here's your chance. Remember, drive carefully, have fun, and be skeptical!

**The George Washington Masonic Memorial**, on Callahan Dr. at King St., Alexandria, Virginia. This 333-foot-high building is modeled on the lighthouse of Alexandria, Egypt, and features such esoterica as the clock that was stopped at the moment of Washington's death, and more fezzes than you can shake a stick at. Freemasonry itself has long been rumored to have a paranormal, mystical connection, although the Masons actually began as a trade guild for stonemasons. It eventually became a secret society, accepting the first nonstonemason member in 1600. This contradicts the claim that the movement dates to the druids or ancient Egypt. The philosophy seems to have borrowed from Rosicrucianism, gnosticism, and Theosophy, but there is no authoritative statement of Masonic beliefs. Some accuse Masons of devil worship, probably because Masons worship God as "the Great Architect of the Universe" (TGAOTU). Those in the highest degrees learn that this stands for the "true" name of the Trinity, JAH-BUL-ON (the first being Jahweh, the next Baal, and the last standing for Osiris, the god of the Egyptian underworld). Baal is a Canaanite fertility god who was considered a demon in the sixteenth century. But as the GW Memorial will show, the Masons are really just a fraternal organization. The structure is also said to be a "power site," a rather vague New Age term for places where ancient energies, or earth energies, can be perceived by modern-day humans.

**National Airport** is the site of the UFO "radar invasion" of July 20, 1952. As reported by NCAS member and CSICOP Fellow Philip Klass in *UFOs: The Public Deceived*, myste-

The Eye's Tidewater columnist, Elena M. Watson, comes to Washington for this issue. Her "Remote Viewing" column will return in the next issue.

rious radar blips began to show up on the airport's radarscopes in the early hours of the 20th, and a week later, during the night of the 27th. The U.S. Air Force dispatched an F-94 interceptor aircraft to investigate the second incident. This gave rise to alarming headlines nationwide. A subsequent investigation by the Civil Aeronautics Administration concluded that such spurious radar blips were common, and were caused by temperature inversions.

**Key Bridge**, crossing the Potomac into Georgetown, is allegedly haunted by the ghost of Francis Scott Key.

**The "Exorcist" stairway** from the movie of that name is located in Georgetown. Going west on M St. from the Key Bridge, the stairway is on the right at 36th St. There are 75 steps in all. It was filmed atmospherically, and many residents still consider it to be a "spooky" location.

**Townhouse at 1606 33rd St. NW** was the site of the July 31, 1990 attempt by The Amazing Kreskin to get in touch with the vibes of, well, whatever vibes he gets in touch with. According to the *Washington Post*, Kreskin pronounced the day a success and said it spotlighted the issue of "paraESPionage."

**Georgetown shops** offer many opportunities for psychic, pseudoscientific, and New Age experiences. At 1035 31st St. NW is Yes! Bookshop, a major purveyor of New Age literature. Crystal's, at 3061 M St. NW, sells a wide range of mineral specimens, which supposedly possess marvelous powers to heal, strengthen, and enrich. You can also take your pick among Georgetown's many psychics and readers, a versatile bunch who offer everything from crystal gazing to palmistry to Tarot and more.

**Monument to the founder of homeopathy, Samuel C. Hahnemann**, is located on one side of Scott Circle. Hahnemann believed in the "Law of Similia," that like cures like. His medical cult, homeopathy, based its remedies on this "law" and spread through Europe in the 1820s, reaching England and America in the 1840s. Homeopathy peaked in the United States around 1880. By 1900 there were 22 homeopathic colleges in the country, but from then on the cult declined. Homeopathic "remedies"—extremely dilute solutions—can still be purchased, however, and are popular among New Agers.

**The White House** is infamous for more than its recent patrons of astrology; the ghost of Abraham Lincoln is said to show up in his old bedroom. Nettie Colburn, a medium allegedly invited into the White House by Mary Todd Lincoln, claimed that her spirit contacts had guided the President in the timing of certain key actions such as the Emancipation Proclamation. Imagine, the President of the United States, influenced by a paranormal advisor!

# Skeptic's Tour of Washington



Meditators demonstrate "Yogic flying" in front of the Capitol.

Harry Houdini poses with the ghost of Abraham Lincoln in this "spirit photograph."



Houdini escapes from a straitjacket while suspended upside down in front of the former Keith's Theater, the Washington Monument in the background.



Samuel Hahnemann's statue is a pigeon roost in Scott Circle.



The Capitol and the Supreme Court under attack in 1956.



The Exorcist is needed in Georgetown.

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 - GIFTED PALMIST -  
 PALM READINGS - TAROT CARDS - CRYSTAL BALL  
 I TELL YOU YOUR PAST - PRESENT - FUTURE  
 PROFESSIONAL ADVICE • HELP ON ALL PROBLEMS  
 • LOVE • MARRIAGE • BUSINESS • HEALTH • MUCH MORE  
 I CAN GUARANTEE RESULTS IN 24 HOURS  
 CALL FOR APPOINTMENT OVER EVERY DAY 9 AM - 4 PM  
 REASONABLE RATES

**MRS. NATALIE of Georgetown**

- Gifted Psychic Consultant
- Tarot Cards
- Palmistry
- Help on all Problems, Love, Finance, Business

REASONABLE RATES

The Octagon, at New York Ave. and 18th St. NW, is also said to be haunted, by both Dolley Madison and a daughter of the Tayloe family who died on the stairs. Some say the latter ghost can be heard screaming.

The former national office of the Transcendental Meditation cult, 5000 14th St. NW, closed August 14, 1991, when the Maharishi announced that TM had been unsuccessful at lowering the city's crime rate. The cult's College of Natural Law closed its facility near the Convention Center in 1987.

National Theater, 1321 E St. NW, also supposedly houses a ghost, that of a murdered actor buried in the basement.

House at 604 H St. NW is the former boardinghouse run by Mary Surratt, a co-conspirator in Lincoln's assassination. Muffled sounds heard here have been attributed to her ghost. It is now a Chinese restaurant.

The Library of Congress houses the Houdini Collection, the personal archive of magic and the supernatural compiled by this century's best known skeptic.

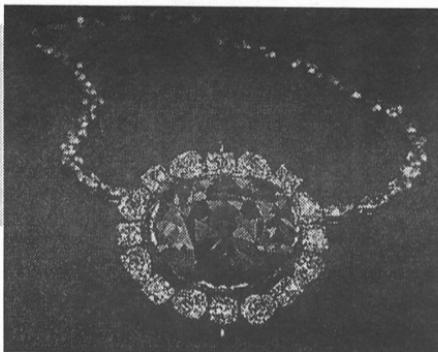
The Supreme Court Building at 1 First St. NE, stands on the site of the old Brick Capitol, which was used as a prison in the Civil War. The ghost of prisoner Mary Surratt (see the entry for the house at 604 H St. NW) was once heard weeping and moaning years after her execution.

Fort Lesley McNair, located at 4th & P Sts. SW, is also said to house the ghost of Mary Surratt, who seems to get around quite a bit. Although she was convicted of being a conspirator in Lincoln's assassination, there is still much controversy over how involved she really was in the plot. Her son, a close ally of John Wilkes Booth, escaped to Italy and was later acquitted of conspiracy charges. Mary, however, was hanged on the gallows of Washington Arsenal Penitentiary, now Fort McNair, on July 7, 1865. Her alleged ghost is seen as a black-clad figure.



Cancer the crab

continued on page 14



NCAS Skeptical Eye/Spring 1992

D.C.'s own tabloid psychic and astrologer for the *Washington Times*, Jeane Dixon, consults her crystal ball.



The "cursed" Hope Diamond rests in the Smithsonian Museum of Natural History.

**The Capitol Building** was the site of a UFO invasion in the 1956 film *Earth vs. the Flying Saucers*, inspired by writings by UFOlogist Major Donald Keyhoe. It is also in a photo once published in *Omni Magazine*. The photograph can also be seen in James Randi's book *Flim-Flam!* (Buffalo: Prometheus, 1982, pp. 90-91), in which the "saucers" are revealed to be lens flares. The Capitol Building is also said to be the most haunted building in Washington. Among the ghosts there lurk a demon cat, dancing statues, bloodstained stairs, and a stonemason accidentally sealed into the wall. The ghosts of Pierre L'Enfant and John Quincy Adams have also allegedly been spotted in the hallways.

**The Washington Monument** on the Mall is believed by some New Agers to be a mystical "power spot" where "ley lines" of energy converge.

**The Smithsonian Institution**, keeper of the "cursed" Hope Diamond and a crystal ball big enough to see several futures in, is also rumored to have John Dillinger's penis and Sitting Bull's skull. The first two items are located on the third floor of the Natural History Museum, in the back of the hallway of Minerals and Gems. The Warner Crystal Ball is cut from

crystalline quartz, weights 106-3/4 pounds and measures 12-7/8 inches in diameter. The legendary Hope Diamond is the largest blue diamond in the world at 45.5 carats. It was named for Henry Thomas Hope, a previous owner. Evalyn Walsh McLean of Washington (see the entry for the house at 2020 Massachusetts Ave.) was the last private owner. A New York jewelry firm acquired it from her estate in 1949, and it was given to the museum in 1959. Legend has it that the beautiful gemstone has brought tragedy to many of its owners. And in spite of the fact that Mrs. McLean had the gem blessed when she acquired it, some still attribute to it much of the misfortune in her life, such as the tragic deaths of her son and daughter, and her own stormy marriage. Alas, the Smithsonian does not have Dillinger's organ, much to the disappointment of the numerous schoolchildren who spread such tales, and Sitting Bull is actually buried, skull intact, at Fort Yates, North Dakota.

The Skeptics' Driving Tour officially ends at the Natural History Museum. Here you can turn your back on pseudoscience and silliness and instead enjoy the marvels of the real world we live in.

#### Option: Into the 'Burbs

Before our tour leaves the District and ventures out into Maryland you may want to stop at the nearest Church's Fried Chicken. Why? Because Church's Fried Chicken was once rumored to be owned by the Ku Klux Klan and to use spices to sterilize black men. These rumors began in the early 1980s, springing up in various cities, such as San Diego, Memphis, and Boston. The company has tried to fight these rumors by emphasizing that the restaurants in black neighborhoods are usually managed by local workers. The rumors could be related to the various "white conspiracy" theories in which guns and drugs are said to be planted in African-American communities to encourage the self-destruction of black males.

**Goddard Space Flight Center**, Greenbelt Rd., Greenbelt, Maryland, is the locus of a popular urban legend among Christian fundamentalists called "The Missing Day in Time" (see the summer 1991 issue of the *Eye*, pp. 4-5). Supposedly, while checking the positions of the planets by computer, space scientists discovered a missing day that coincided with the biblical tale of the sun standing still in the Book of Joshua. But the story is just a story. Published versions can be attributed to one Harold Hill, who claims to have been a consultant to the space industry. Hill's employment at Goddard involved diesel engine operations, not computer timekeeping. And NASA, which once did have to perform a reconciliation of different timekeeping systems, has yet to discover any "missing day." So once again space science has failed to confirm the Bible. (Visitors ready for a taste of real science, as opposed to pseudoscience, may want to stop at the Goddard Visitors' Center, open Wednesday through Sunday from 10 a.m. to 4 p.m.)

**The "Exorcist" House**, 3210 Bunker Hill Rd., Mount Rainier, Maryland, is now just an empty lot. The incident that inspired the movie began in early 1949 when a 14-year-old boy became the center of poltergeist-type activity. Furniture supposedly moved about, and the boy spoke in an odd voice at night. A four-month exorcism followed, but it was unsuccessful. The boy was then sent to Alexian Bros. Hospital in St. Louis, where it is said that a Jesuit priest performed another, apparently successful, exorcism. Whether the boy's head ever spun around like Linda Blair's did in the movie is doubtful. (For another bit of *Exorcist* memorabilia, see an earlier stop on the tour, the *Exorcist* stairway.)

#### Second Edition?

NCAS would like to refine and extend the Skeptics' Driving Tour, with an eye to publication as a pamphlet or on cassette. If you take the tour, please let NCAS know how you liked it. Was the suggested route convenient? How long did the tour take? Did you drive by, or did you stop and visit any of the points on the tour? Do you know of any juicy sites that should have been included on the tour but weren't? Address your comments to NCAS, 8006 Valley St., Silver Spring, MD 20910, or leave a telephone message by calling 301-587-3827. Thanks for participating! □



## A Skeptic's Response

*This feature of the Skeptical Eye is designed to provide skeptics with brief, logical answers to questions that may arise in conversation. Do you have a question--or a response--that should be shared with other skeptics? Send it to the Eye.*

### What's in the Cards?

#### Reading the Tarot

By Seán O'Neill

*"And I saw in the right hand of Him that sat upon the Throne a book sealed with Seven Seals. And I saw a strong Angel proclaiming with a loud voice, 'Who is worthy to open the Book and to loose the Seals thereof?'"*

Would you like to have a book, sized conveniently for the back pocket, that could connect you with the primal and universal forces? Would you pay a few dollars for a tool that could answer any question and, by predicting the future, give you a leg up on all the competition? All of this and more is yours in the Tarot, according to believers.

Like the I Ching, the Tarot is a physical tool of divination; like astrology, it is a composite of careful mathematics and fuzzy thinking about causality. The modern era has now discovered the Tarot, making it very much a current event; there is even a 900-number "Tarot Hotline" available for on-the-go New Agers who wish to have a fast answer to a pressing problem and are willing to pay several dollars per minute for the convenience of a telephone consultation.

#### Obscure Origins

Even the name of the Tarot is veiled in mystery; it may come from the French *Tarau*, the Italian *Trionfi*, or even the Egyptian *tar* (road) and *ros* (royal). Some have seen a connection with *rota* (Latin for "wheel") via anagram.

The modern Tarot is a deck of seventy-eight cards that has four suits, as do modern playing cards. There is even dispute about which came first, Tarot or playing cards of other types (Crowley, 1988; Dummett, 1986). In the Tarot are four court cards (king, queen, etc.) instead of the usual three. In addition there are twenty-two cards called trumps, each of which is a symbolic picture with its own title.

The origins of the Tarot are discouragingly obscure. Some scholars trace the cards to ancient Egypt, but actual evidence can only substantiate their existence as early as the late fourteenth century (Kaplan, 1972). Others have seen similarities to early Eastern religious rituals, while still others place the birth date of the deck in the Middle Ages (Dummett, 1986). Interestingly, some people have even speculated that the Tarot evolved from the fifth-century Indian chess game

known as the Four Kings. At any rate, cards of some sort were known in Europe around 1417 (Waite, 1991); playing cards may have been an earlier Islamic invention. The Tarot suits of Wands (Rods), Cups, Swords, and Pentacles (Disks, Coins) seem to have originated in Italy; in about 1750 they gave way in playing decks to the now familiar French suit signs of clubs, hearts, spades, and diamonds.

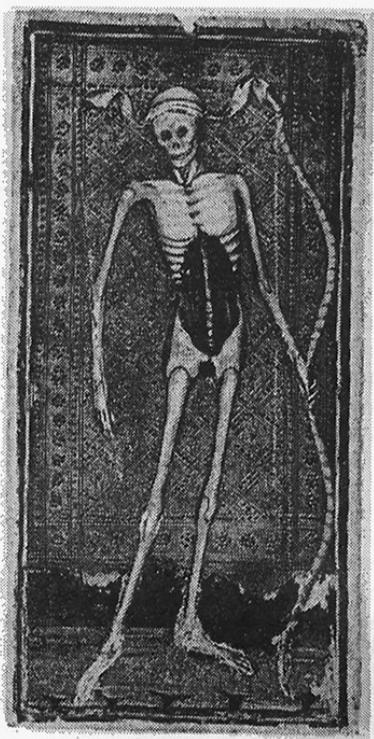
Originally, the Tarot itself was likely used for game playing, but by 1750 another change had taken place: The notion of occult divination using the deck was established in France. Numerous decks have been published over the years, differing primarily in the artistic representation of the trump figures. Popular decks today include the Golden Dawn, the Thoth Deck and the Waite Tarot, the latter being the most popular ever published.

The major force in modern Tarot came from the Hermetic Order of the Golden Dawn (the term *Hermeticism* refers to pseudo-Egyptian religion), an occult fraternity active in Europe from 1880 to 1900. It had Secret Traditions and Instituted Mysteries in the style of Rosicrucianism and Craft Masonry, and likewise claimed a deep and mystical past. For members of the group, the Tarot embodied symbolic representations of universal ideas and provided a mysterious link with the universe itself.

The Golden Dawn was surely a product of its time. This was the age of Wilde, Rimbaud, Van Gogh, and Ibsen. It was a time when many people felt that industrial progress and machine technology might overwhelm and destroy the spiritual and the individual. An occult backlash was an understandable, although perhaps not positive, reaction to these fears; it is not difficult to see this process at work in our time as well.

#### The Tarot Deck

In order to appreciate the Tarot's complexity, it will be helpful to understand a bit more about the cards themselves. The twenty-two trump cards, or major arcana, are thought to represent universal forces, or forces of the gods, if you will. They begin with zero, the Fool (counterpart to the modern joker) and run in sequence, by Roman numerals, to the final card XXI, the World or Universe. We may notice that the Hebrew alphabet has twenty-two letters, and that each trump card can be associated with a letter. For example, the Fool is said to correspond to *aleph* (א), the first letter, and so on. Each of the major arcana cards bears a descriptive title and a symbolic picture that should awaken in the diviner's mind a connected story to be applied to the querent, or questioner. The descriptive presentation on each card--Judgment, Death,



Death, from the Visconti-Sforza tarot deck (Italy, mid fifteenth century, now in the Pierpont Morgan Library).

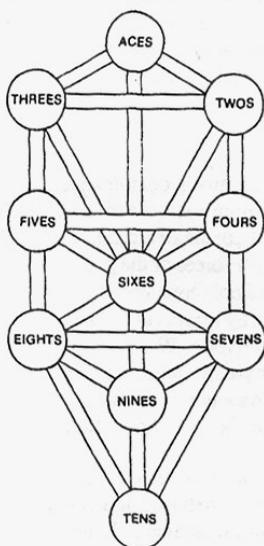
## Tarot, from page 15

the Tower, the Hanged Man, and so forth--has remained essentially unchanged for over five centuries (Kaplan, 1972).

The court cards represent the influences of real people in the life of the querent, and the personages are derived from the four elements, as follows: the King or Knight is active and is a fire card; the Queen is more modified, reflecting water; the Jack or Prince combines both and represents air, and the Knave or Princess implies full synthesis and is an earth card.

The remainder of the lesser arcana are the so-called small or minor cards, ace through ten of each suit; these cards also reflect the elemental suit designations: Wands/Fire, Cups/Water, Swords/Air, and Pentacles/Earth. Each number indicates a stage of the element; for example, fives always indicate imbalance and stress, whereas nines imply the full impact of the element in its most material sense. These small cards are said to represent blind forces acting on the querent. Some people have felt that the assignment of such interpretations is irresistible and compelling. Aleister Crowley (1988), an occult researcher of the early twentieth century, said, "The evidence is strong that there is something, not a little of something but a great deal of something, a something which excludes all reasonable theories of coincidence, in the correspondence between words, numbers and meanings. One is intellectually knocked down by the rightness of it." Specifically, Crowley refers to Gematria, an ancient study in which each Hebrew letter represents a number; words with the same number value are linked in meaning. For example, AChD (אחד), meaning unity ( $1+8+4=13$ ), and AHBH (אהבה), meaning love ( $1+5+2+5=13$ ) are held to indicate that the nature of unity is love. Furthermore, numbers can be seen as representing independent, individual ideas, as things in themselves, as spiritual and intellectual substances. Thus, each card of the Tarot, representing a letter and a number, becomes a unique individual.

Fig. 1. The placement of the numbered cards on the Tree of Life.



## Mystical Links

Modern Tarot diviners are fond of pointing to the presumed connection between the cards and the Qabalah (pronounced cab'-a-la, in Hebrew, קבלה). As understood today, Qabalah means a *tradition*, or *that which is received*, as well as implying a very specific system of metaphysics. There are two separate schools of Qabalah: that of Judaism, and one that is the product of Italian Renaissance thought, termed the Hermetic Qabalah. This latter system grew from the attempts of fifteenth-century philosophers to incorporate the essence of Jewish mysticism into Christian doctrine. In the nineteenth century, the Qabalah (by then largely de-Christianized) reached its fullest expression in the hands of the previously mentioned Order of the Golden Dawn. Both the Jewish and the hermetic Qabalah rely on the same Torah-based God names, Hebrew language, and primary texts.

The theosophy of both seems reminiscent of pantheism, the doctrine that equates God with the forces and natural laws of the universe, and both use the *Sepher Yetzirah* (Book of Formation) as the cornerstone of their literature. This book of six brief chapters, dating from about the third century C.E., describes the creation of the universe in terms of the letters of the Hebrew alphabet and in terms of symbolic numbers related to neo-Pythagoreanism. This juxtaposition of the elegant and the complex is summarized by Wang (1990) who, in stating that his book on the subject was difficult to write and not much easier to read, notes the irony "that the baroque and convoluted

system of ideas called the Qabalah leads to an inner reality of such beauty and simplicity that it could be explained to a child.”

A final necessary concept in understanding the Tarot is the putative Tree of Life. The Qabalah posits a primordial schema with ten positions connected by twenty-two paths. This Tree is believed to be the only comprehensible form of God and to reflect the creation of the universe. The ten positions, or *Sephiroth*, are connected by the paths, which again correspond to the number of letters in the Hebrew alphabet and hence the number of trump cards in the major arcana.

This synthesis was discovered by Eliphas Levi, a nineteenth-century Tarot mystic. His interpretations yielded such unity of cards, letters, numbers, and paths that each word could be provided with a wealth of meanings. For example, the letters of the word *Jehovah* correspond to the Tarot in this manner: the first letter, *yod* (י), represents both Wands and the Kings; *he* (ה), the second letter, corresponds to Cups and Queens; *vau* (ו), the third letter, is Swords and Knights (Princes); and the final *he* stands for Pentacles and Knaves (Princesses).

It seems probable that the Qabalists who invented the Tree of Life were inspired by Pythagoras and shared his mystical view that reality is best described by numbers and their interplay. The *Sephiroth* stand for the small cards of the lesser arcana (fig. 1) and for the court cards as well (fig. 2). The mathematics behind the *Sephiroth* is convoluted, but may be summarized as follows.

External to the Tree is the boundless one, the universal force. This is zero, representing the annihilation of imaginary opposites, or nothingness:  $(+1)+(-1)=0$ . One, the top circle on the Tree, represents the point, or position only. The second point comes with the second position, making possible the line. Three points creates the surface or the triangle (still no substance in the universe, only distance and angular measurement). The next step creates the actual, as the fourth position formulates matter by providing dimension, making possible the solid. The fifth *Sephira* represents time providing consciousness through past, present, and future. The sixth is self-consciousness, the seventh is essence, the eighth is thought, and the ninth is the capacity for bliss. The tenth *Sephira*, the final idea of the universe, is understanding. Notice that the paths between the *Sephiroth* symbolize the major arcana (fig. 3) and connect the astrological planets into a hexagram (fig. 4). The Tarot, therefore, is claimed to be a pictorial form of the Qabalistic Tree of Life, and thereby of the whole Qabalah and the universe itself.

### How It Works

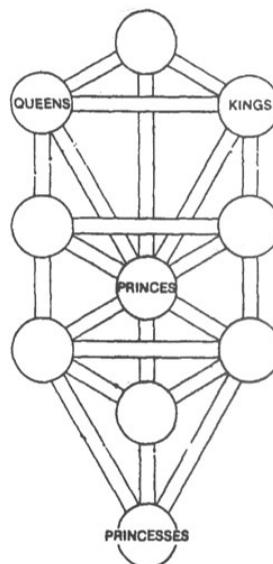
What makes a Tarot divination work? Believers say that an individual becomes a part of the ancient tradition by contacting “inner teachers”; furthermore, in order to understand any given card in context one must identify oneself with it completely for the moment, so as to induce the Intelligence ruling the card to manifest in the mind during the divination. Since the cards, like all objects, possess a spiritual nature (similar to the alchemical precept that substance in its natural state is mysteriously living), then by tuning in, as it were, a sensitive person can read the implication of a particular card.

*continued on page 18*



Death, from the tarot deck designed by Aleister Crowley (British, 1875-1947).

Fig. 2. The location of the court cards on the Tree of Life.





The Old Man (the Hermit) from the Visconti-Sforza tarot deck (Italy, mid fifteenth century, now in the Pierpont Morgan Library).

## Tarot, from page 17

In reality, it seems likely that the technique of cold reading--typical of "psychic" readings--plays a part. In a cold reading, the medium makes general statements and draws general conclusions from the supposed mechanism--cards, coins, palmistry, or whatever. Monitoring the reactions of the subject, the medium moves from the general observation to specific remarks, pursuing statements that elicit positive reactions (verbal, expressive, or postural). With practice, a person can seem astonishingly accurate using this technique. A further operative element in the Tarot is projection, or the tendency of the human mind to see in abstract stimuli a reflection of its own thoughts and concerns. The famous Rorschach inkblot test operates on precisely this principle. So do newspaper astrology columns. If the stimulus is general enough, we can always find something in it that seems to apply to us.

As an example, let us say that I, as a Tarot diviner, am trying to answer a question that you, as querent, have asked about a relationship that you are involved in. In the position of the house (influence of family and friends), I lay down the five of Wands. This card, the Lord of Strife, indicates quarreling, competition, or cruelty. You are having some issue with your relationship, of course, or you wouldn't have asked me about it in the first place. And yet in the context of the divination, you would likely be amazed that the Tarot could be so precise in speaking to your situation personally, even though you are filling in the gaps yourself.

In the only controlled study on the Tarot that I am aware of, Blackmore (1989) found that subjects could not identify their own readings from a group of readings answering other questions. And yet, even supposedly skeptical people can be of two minds on the subject due to the psychological subtleties involved. They will say, perhaps, that their interest is not in the occult and that they do not use the cards for fortunetelling, but rather admire them as art objects, and so forth. But in the next breath they may note that, properly employed, the Tarot can yield "a perceptive revelation of events clearly associated" with the person

Fig. 3. Arrangement of the major arcana on the Tree of Life.

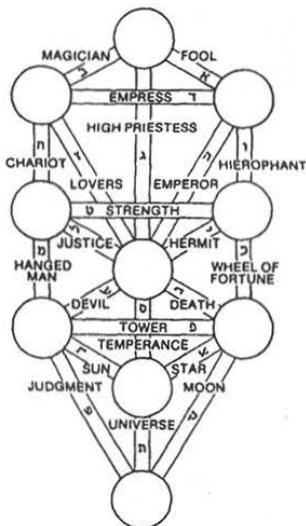
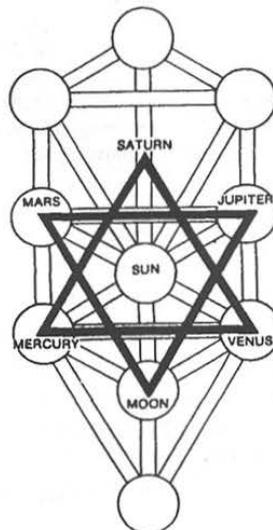


Fig. 4. Astrological attribution on the Tree of Life.



asking the question (Kaplan, 1972). This ambivalence is understandable, given the power of the psychological mechanisms involved.

### A Typical Divination

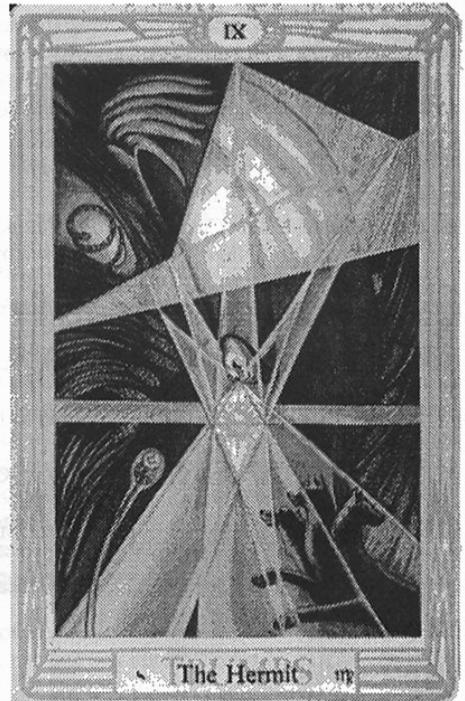
Here is what you may expect to see in a typical divination. The querent and the diviner sit on opposite sides of a table; then the querent asks aloud the question that is to be answered. At this time the querent shuffles the cards three times, while the diviner silently invokes the universal force to affect the card arrangement. The querent then cuts the cards into three piles, and the diviner takes the pile that is the farthest to the querent's left. The other cards are set aside. A card is selected to represent the querent--this can be done by the personality characteristics of the querent, if known, or by his or her physical appearance. For example, a forty-year-old woman with an intellectual nature, brown hair, and green/gray eyes would be the Queen of Swords. This card, called the Significator, is placed face up on the table.

At this time the diviner says, "Now begins the divination," and proceeds to lay out the cards. There are several traditional spread patterns using various numbers of cards, but the commonest is the Celtic Cross (fig. 5). The diviner continues as follows: "This covers him (or her)," laying card number one over the Significator. This card indicates the current situation regarding the question. Then the diviner says, "This crosses him," laying number two across number one. This card indicates oppositional forces. "This crowns him," says the diviner, placing the third card as shown, revealing the querent's unfulfilled hopes. "This is beneath him," placing number four, which indicates the long-term past influences. "This is behind him," with number five, demonstrating the recent past situation. "This is before him," positioning number six to indicate the immediate future. "This is himself," placing card number seven. With this card the Tarot manifests the mind of the querent on the subject. "This is his house," says the diviner next, placing card number eight into position, revealing the attitudes of friends and family. "His hopes and fears," laying down card number nine. This card shows the secret wishes and nightmares of the querent. "This is the synthesis," or outcome, placing card ten. This card summarizes all of the preceding cards and directly displays the final outcome.

The diviner then discusses these results with the querent in light of the question that was asked. Such nuances as the effect of nearby cards and the influence of a card that is upside down are frequently observed and alter the nature of each interpretation. If the significance of a particular card seems mysterious or unclear, it is possible to repeat the entire procedure using that card as the Significator; this will reportedly assist in its clarification.

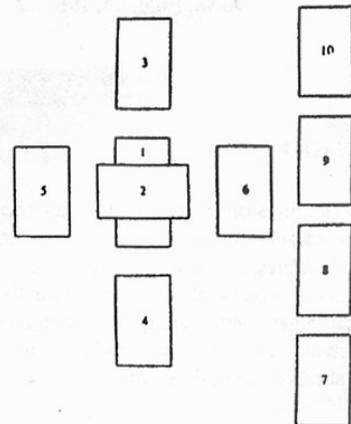
### An Allegorical Journey

Viewed in context, the Tarot represents an allegorical journey, each card being an experience along the way, each one manifesting significantly human emotions and life situations. Much of the mythology of human beings shares this model of the life journey, from "Star Trek" to *Gilgamesh*. As such, the cards represent



The Hermit, from the tarot deck designed by Aleister Crowley (British, 1875-1947).

Fig. 5. Tarot card layout using the Celtic Cross divination.



## Tarot, from page 19

ourselves and our struggles to understand both whatever light exists within us and our place in the vastness of the cosmos. And, as I promised, all in that book you can fit in your back pocket.

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## Psst! Wanna Build a Bomb? Then You Need Some Red Mercury...

Salespeople throughout Eastern Europe have a hush-hush new product to offer governments interested in building a nuclear bomb. It's called "red mercury," and a few pounds might go for \$200,000 cash. Those who peddle it claim it's a "radioactive or explosive substance used for nuclear weapons in the former Soviet Union," according to an article by Peter Maass in the *Washington Post* (March 7, 1992).

In fact, it's a fake whose composition varies according to the initiative and available resources of the peddler; most often, it's normal mercury with red dye added, but one salesman didn't bother to add the dye, he just painted the vial with red nail polish.

The International Atomic Energy Agency says the only substance that resembles "red mercury" is fulminate of mercury, a poisonous, reddish substance that is not radioactive and is not used in nuclear applications. It is, however, used in small explosives and was once used in rocket propulsion systems.

The "red mercury" entrepreneurs are attempting to capitalize on the rumors that an international market exists in Soviet nuclear weapons technology, following the breakup of the Soviet Union.

Police forces in Eastern Europe have taken the "red mercury" claims seriously. Police in Hungary, Bulgaria, Czechoslovakia, and Italy have made raids in an attempt to catch the traders. Hungarian police have arrested at least 15 people for trying to sell the substance. □

## 'Nuff Said

Compilers of biographical dictionaries do their utmost to summarize a person's identity in the fewest possible words, and sometimes they succeed to admiration. For example, if you open the *St. Martin's Press Dictionary of Biography* (New York, 1986) to the C's, you'll find this capsule description of Aleister Crowley, who is mentioned elsewhere in this issue in the "Skeptic's Response" on Tarot: "**Crowley, Aleister** (1875-1947). British charlatan, who liked to be known as 'the wickedest man in the world'. He devised a form of Satanism, which involved many obscure and repugnant rituals, and attracted a small number of eccentric disciples." Congratulations to compilers Barry Jones and M. V. Dixon. □



## Past Life Reporting

JHU Seminars

By Chip Denman

Last fall NCAS and Johns Hopkins University Program of Continuing Studies inaugurated a five-week series of skeptically minded seminars. Held on the JHU campus in Baltimore, the series was so well received that the university requested NCAS to organize an all-new series for the spring. So, beginning Thursday, March 19, "Science and Pseudoscience: Mysteries of the Mind" featured seven weekly talks by NCAS members, concluding with James Randi.

As both coordinator and lead-off speaker, I had wanted the fall series to be a hit. Class evaluations had been positive, but the statistician in me doesn't put much faith in such poorly collected data. The real evidence came in the spring enrollment of 43--twice the size of the fall class and including many familiar faces.

Whereas the fall series had dealt directly with remarkable claims and the evaluation of physical evidence, the spring classes looked at such claims within a context of history, society, and human psychology.

I began with a history of seances, mediums, and modern spiritualism. Born in upstate New York a century and a half ago and more than just an odd religion and quaint Victorian pastime, spiritualism involved prominent intellectuals and scientists in the pursuit of evidence for the hereafter. This movement gave rise to organizations that today are the backbone of the field of parapsychology.

At the very same time that seances were trying to look beyond death, Darwin and Wallace were looking toward the beginning of life. A veteran debater of creationists, Steven Shore described the contention between the evolution theorists and the literal biblical creationists. The battle is still fought today, in the courts and in the schools, as creationists try to insinuate their religious beliefs into public school science programs.

In the 1800s "Mesmeristic seances" helped pave the way for spiritualism. Today modern "mesmerism" or hypnosis has led some to look for another kind of evidence for a life beyond death through "past-life regression." Seán O'Neill, a registered hypnotherapist, pointedly detailed the shortcomings of hypnosis as a way of revealing hidden memories. Under hypnosis a subject may sometimes recall actual events, but false or confabulated "memories" of previous incarnations, abductions by extraterrestrials, or nonevents are even more likely. An actual mass hypnosis of the entire audience helped demystify the concept of "hypnotic trance."

In 1584 an Englishman by the name of Reginald Scot wrote a controversial book in which he skeptically questioned the powers that were attributed to so-called worshippers of Satan. In the book *The Discoverie of Witchcraft* Scot offered nonsupernatural explanations for supposed cases of Satanic enchantment, including mysterious murders and supposed transformations into "woolves, ferrets, coves" and other animals. Four hundred years later, TV talk-show host Geraldo Rivera tells us that secret societies of Satanists are kidnapping and murdering children, sacrificing animals in the name of the devil.

Randy Lockwood, vice president of field investigations at the Humane Society of the United States, was asked but declined to appear on Geraldo's show. However, he was more than willing to speak for this series on his investigations and the evidence that lies behind these claims. He has worked closely with the FBI and shares its opinion that no such Satanic conspiracy exists. Rather, a few disturbed individuals have committed crimes of cruelty for reasons having nothing to do with devil worship.

The following week Lockwood took a wild and woolly look at the stories that link human beings with other animals, in a talk called "Werewolves, Vampires, and Wildmen: The Beast Within Mankind."

Another word about Scot's *Discoverie of Witchcraft*: the later chapters contain what is regarded as the first published English descriptions of how to perform conjuring tricks. He was trying to make clear that very often simple sleight of hand and sneakiness can be confused with supernatural powers. Fittingly, this series concluded with talks from two modern-day conjurers who continue Scot's tradition of blending magic and skepticism.

NCAS cofounder Jamy Ian Swiss presented a version of his talk, "ExtraSensory Perception or Expert Sensory Deception?" forcefully illustrating Scot's warning with demonstrations of his own psychic-like abilities.

Finally, professional charlatan and world-renowned psychic investigator James "The Amazing" Randi gave an account of his 30 years of personal investigations into cases of science: good, bad and silly.

With the spring series, NCAS members reaped a benefit beyond the satisfaction of bringing a program of science and skepticism to the Baltimore public. In return for NCAS's work in cosponsoring and promoting the series, JHU waived the \$10 admission for all NCAS members who attended Randi's talk.

Portions of this series were recorded by WJHU, the Hopkins National Public Radio affiliate, for possible inclusion in an upcoming program on science and pseudoscience. □

## Book Review

Huber, Peter W. 1991. *Galileo's Revenge: Junk Science in the Courtroom*. New York: Basic Books. vii+274 pp. \$23.00.

This book is a critique of the role of the expert and the dangerous symbiosis between experts and liability attorneys. Its main point is to demonstrate the various ways in which science has been subverted by the American legal system.

Huber's main target is the profession that has sprung up from liability legislation and decisions. He argues that society has been manipulated and fundamentally affected by the increase in litigation over consumer products. Huber uses several specific examples, some of which are peripheral to the skeptical movement, but all of which can be useful illustrations of the effects of accepting claims without demonstration. He hammers on the point that the huge increase in liability litigation has been powered by public unwillingness to accept blame for improper use of products.

Huber uses the example of the Audi lawsuit, in which plaintiffs argued that the car had a dangerous tendency to slip inexplicably out of gear and that it failed to respond or even lurched forward when the brake was being depressed. He then (I think convincingly) argues that the cases were the result not of product defect but of operator error—that a few drivers for some confused reason depressed the accelerator pedal instead of the brake in critical situations. In one instance, a child was killed; in another, a house was seriously damaged.

Although readers may wonder how the Audi case, dealt with at some length early in the book, relates to “junk” science, since it does not specifically involve scientific testimony, Huber effectively uses it as a paradigm for some of the more technical and pseudoscientific cases. An excellent and timely example of “junk” scientific testimony comes in Huber's discussion of medical litigation. He focuses on the growing popular idea of the toxic environment producing “chemical AIDS,” an induced immune deficiency resulting from the body's defenses being overwhelmed by products in the environment that are not only deadly but subtle. He illustrates very well how the clever manipulation of the public's ignorance of AIDS has created a powerful, terrifying, and wholly imaginary ailment. This chapter suggests answers to some of the questions frequently asked of skeptics, such as “what harm does belief in crazy/crank ideas do?”

One of the most important aspects of the book deals not with science but with the deliberate processes by which scientific understanding is subverted by the law. Huber contends that the standards of scientific evidence are ill suited to the law.

The shades of uncertainty and the qualified responses required for standard research are irrelevant in the courtroom. If a scientist has even a moment's hesitation on the witness stand, this is a perceived weakness in the testimony that will be exploited by a clever attorney to his or her advantage. In short, as Huber shows through many specific examples, the word *probably* is banished from the legal lexicon where expert testimony is permitted.

Natural selection would almost seem to be at work here, however, because a species has appeared that has successfully displaced the “uncooperative” research scientists. These are the experts-for-hire. This large group, Huber maintains, is composed of many populations. Some are freelance consultants who, for large fees, will provide the testimony required in a given case. His examples remind me of a short tale once related to me by a geophysicist friend that told of a group of oil explorers who wanted to know how deep they should drill their wells. After consulting with engineers, petrologists, and field geologists, they called in a geophysicist. This fellow walked into the room, closed the door, looked around carefully, and whispered to the head of the group: “What do you want the answer to be?” Huber sees these private guns as being the real danger because they come completely credentialed. In fact, their very participation in a successful lawsuit adds to their list of credits, making them more sought after.

Other experts are drawn from the academic community, marginal professionals who have been considered discredited by their colleagues and their profession. Many of these people are procured by specialized firms, “body shops” that supply experts for tailored testimony to an unsuspecting audience—jurors. Huber gives several examples of experts who float in and out of different cases, whose department in a courtroom gives an air of respectability to the most ludicrous and unsupported cases, and who have been able to distort and even lie about their research and that of others. A group of unschooled laypeople cannot make informed decisions about technological and scientific matters in cases involving huge sums of money and far-reaching legal and social consequences. Trial law was never designed to deal with such things. Such cases have become increasingly dependent on expert analyses, in consequence of which jurors have become unwitting pawns of lawyers.

I was struck by two omissions from the list of specific cases and individual experts. One is Jeremy Rifkin. Rifkin's rise in public visibility and legal, if not scientific, credibility has been a textbook example of the “junk” science phenomenon that Huber discusses. Here is a “pseudoscientist,” an anti-scientist and anti-technologist, who began as the author of *Entropy* and has ended up as a leader in the movement to prevent genetic engineering experiments. He has been lionized by the press, especially in magazines like *Omni*, and has been presented as a courageous outsider fighting against the scientific priest-

hood. Velikovsky, with whose works Rifkin's books and articles share many traits, never occupied a position of such prominence as to influence legislation.

The other omission in Huber's book is the "scientific creationism" movement. Here trash science and a religious agenda have merged into a potent political and social force. Judges, not educators and scientists, have been put in the position of deciding what is or is not science and what should or should not be taught as science. The few judicial decisions that have been handed down have been squarely on the side of the scientists. But this is a historical accident. There was no reason to expect rulings that support the scientific point of view. With skillful manipulation and the proper audience, the results of the Arkansas and Louisiana cases could easily have been different. The process that Huber exposes is at work in the legal effort of the "scientific creationists" just as it is in product liability cases; only the venue and the cast of experts has been transformed, not the method.

Huber saves his most incisive statements for his final chapter, "Science and Certitude." In it, he makes a valuable and powerful argument, rooted in a deep conviction of justice and an understanding of the process of science. I can do no better in summary than to quote Huber directly: "The rule of law is a grand thing, but not half so grand as the rule of fact." This is an important book. Read it, and keep it in mind when you read or hear the headlines.

—Steve Shore

"...judges should, at the very least, ensure that science in court has more in common with *Scientific American* than *The National Enquirer*."

Peter W. Huber  
*Scientific American*  
June 1992

### In Search of:

NCAS would like to find possible facilities for future events. Can you suggest locations? Rooms of different sizes are sought which could accommodate 75-500. Metro accessibility, parking, audio-visual equipment, and weekend availability are all factors which need to be considered. Please phone Joe Himes at 703-280-2503.

### Keep Your Eye Open

Send your articles, letters, and original artwork for future publication in the *Skeptical Eye*. Contributions should be short (500-1000 words maximum, or two to four double-spaced pages) and typed, not handwritten. If you use a computer, please send hard copy along with your floppy disk (5.25" or 3.5", WordPerfect or ASCII). Please be sure to include your name, address, and telephone number. Send all contributions to *Skeptical Eye*, 8006 Valley Street, Silver Spring, MD 20910.

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## The Last Word

By Lys Ann Shore

Faking holy relics can be a fascinating hobby, as chemist Mike Epstein shows in his article "Better Blood Through Chemistry," on page 1 of this issue. Could it be, he muses, that the technique for producing "miraculous" liquefying blood was being spread through Italy in the fourteenth century? In this context, it's helpful to recall the case of the shroud of Turin, as presented by CSICOP Fellow Joe Nickell in his book, *Inquest on the Shroud of Turin* (Buffalo: Prometheus, 1983).

The cloth now known as the shroud, Nickell says, is first known to have appeared in the small town of Lirey in north-central France "sometime in the middle of the fourteenth century" (p. 11). Within a few years of its appearance, it was being exhibited to throngs of pilgrims (medieval tourists) as the genuine burial sheet of Jesus. It was not long before its authenticity was questioned, and the bishop of Troyes conducted an official investigation of the claims about the relic. One of his successors about thirty years later, in 1389, described the results of the investigation: "Eventually, after diligent inquiry and examination, he discovered the fraud and how the said cloth had been cunningly painted, the truth being attested by the artist who had painted it, to wit, that it was a work of human skill and not miraculously wrought or bestowed" (quoted by Nickell, p. 13).

Neither the bishop's investigation nor the artist's confession halted the successful career of the fake, as we see from its reputation today. Nor is the knowledge of how to manufacture liquefying blood likely to interfere with the popularity of the holy blood of San Gennaro. It's in this that we find the real "miracle" of such cases--in the fervent eagerness of people to believe in miracles, regardless of debunkers and their explanations.

A group of capital-area skeptics recently witnessed a vivid instance of this truth when we made a field trip to St. Elizabeth Ann Seton Church in Lake Ridge, Virginia, to check out the extraordinary claims of weeping statues (described by Joe Himes on p. 1 of this issue). We sat quietly through an uneventful service in the unremarkable modern building, then joined the small crowd that had gathered around the statue of the Virgin Mary.

No, we didn't see the statue weep--but we saw people waiting, hoping, praying that it would. What did they think it would mean, for them, the church, or the world, if the statue did weep? For some, it might be taken as a personal sign in answer to a wish or prayer, while others might interpret it as reassurance of the presence of a caring deity in this modern world. In any case, a demonstration of the various ways in which such a phenomenon can be faked would have been irrelevant, an attempt to answer a burning question with a non sequitur.

This is all too often the case with attempts at debunking. To return to a fourteenth-century example, the learned French bishop Nicole Oresme debunked astrology with scientific arguments so good that skeptics still use them today. If those arguments are so strong, why haven't they succeeded in convincing people not to believe in astrology? As Geoffrey Dean recognized in his important articles in the *Skeptical Inquirer* (Winter 1986-87, pp. 166-84; Spring 1987, pp. 257-73), astrology doesn't need to be true to provide what believers want, that is, in order to "work" for its adherents. The same holds for the shroud of Turin, the blood of Naples, and the weeping statue of northern Virginia.

This is not to say that investigators shouldn't attempt to identify fakes and to demonstrate how the fakery is accomplished. But skeptics shouldn't be surprised when a critical investigation and demonstration fail to shake the belief of the faithful. We need to recognize that the key doesn't fit the lock. As any "Jeopardy" fan can appreciate, "It was manufactured in the fourteenth century" is *not* the answer to the question, "What is the meaning of the universe, and what is my place in it?" □

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