

A NEWSLETTER ABOUT THE HOLY SHROUD OF TURIN
edited by REX MORGAN, Author of several books on the Shroud
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ANOTHER OBSCURE PAINTING OF CHRIST, KNOWN AS THE CRUCIFIX OF SALERNO (1149). LEGEND HAS IT THAT THE EYES WERE ORIGINALLY CLOSED BUT WERE OPENED FOR A POOR SINNER WITH THE TEMPLARS. ONE NOTES THE TYPICAL RECEIVED LIKENESS AND THE SIMILARITY TO FEATURES OF THE SHROUD IMAGE.

[Picture supplied by Bro Michael Buttigieg, FSC, Malta]

EDITORIAL

During April and May my agenda took me chiefly to Europe and the United States and I was able to follow up several Shroud related matters. In London I met and spent a fascinating day with two exceptional researchers: Sylvia and Ras Bogdanescu. Both artists, they have done much research on the history of art and in particular an aspect relating to the Shroud which I hope to publish ere long. For the moment their work is being held as the quality of reproduction of their illustrations will have to be, and certainly deserves to be, very good.

I was again in Wareham, that ancient and fascinating English port associated with the possible transportation of the Shroud to England. Its possible stay in Templecombe was described in an earlier issue and its possible route from France via Wareham in an excellent article by Audrey Dymock Herdsman if our theory is correct.

Following Easter in Switzerland, where nothing ever happens, I found myself in Los Angeles where a great deal happened whilst I was there. I describe in this issue my exciting visit to Isabel Piczek's studio and other exciting events of that famous day.

There are also several pieces in this issue concerned with the ongoing argument over carbon dating which is bound to hold the attention of scientists and laymen alike until the matter of its accuracy is determined.

The information continues to arrive unabated and I am pleased to note that almost all the Shroud publications are continuing. Occasionally one hears of a failure or of someone just giving up but I think, rather, that the subject may be about to have a great revival.

And you will have noted already that I have changed the format of *Shroud News* for the first time since 1980. It has become increasingly quaint these days to use foolscap paper for anything at all and it seemed to make sense to move into A4 format. When other magazines change their format I always get annoyed as it interferes with my filing systems so I apologise for any inconvenience this might cause to any of my readers.

REX MORGAN

AS MYSTERIOUS AS EVER

An article from *Analytical Chemistry* Vol 61, No 2, January 15, 1989, by MARY WARNER, has only recently come to our attention. It contains a number of inaccuracies and contradictions but is, nevertheless, a substantial article in the Shroud literature. We reproduce it in full as a comment on the Carbon Dating exercise of 1988.

The Shroud of Turin is a piece of herringbone weave linen about 14 ft long and 3 ft wide that bears the faint image of a crucified bearded man. It is kept in a silver casket in Turin's Cathedral of St. John the Baptist and displayed only a few times each century. The Shroud first surfaced during the 1350s in Lirey, France, when a French knight named Geoffrey de Charny displayed the cloth at the opening of a new church, claiming that the Shroud was the long sought-after burial cloth of Christ.

Almost immediately the cries of forgery began. The Bishop of Troyes declared that the Shroud was a fake that had been painted by a local artist. The controversy continued through the next six centuries until 1978, when an international team of scientists known as the Shroud of Turin Research Project, or STURP, received permission from the Roman Catholic Church to study the Shroud. Twenty-four hours a day for five days, they probed the Shroud with every nondestructive technique they could think of, including X-ray fluorescence and ultraviolet and infrared spectrometry. They also received permission to use sticky tape to remove a few fibers from the Shroud for microscopic analysis.

In 1981 the STURP finally announced its results. The group, with one notable exception, concluded that the Shroud was not a forgery and that the red stains around the man's hands, feet, and side were blood stains testing positive for hemoglobin and serum albumin.

One member of the group, however, concluded that the Shroud was a fourteenth-century forgery. Walter McCrone of McCrone

Associates in Chicago, a microscopist specializing in the authentication of art objects, believed that the Shroud contained a pale, gelatin-based medium specked with particles of red ocher, which is made from a natural iron oxide and has been used as a pigment for thousands of years. He also found particles of a synthetic form of vermilion that was developed in the Middle Ages.

McCrone thus concluded that the Bishop of Troyes had been right and that the Shroud was painted by a fourteenth-century artist.

Radiocarbon dating

Although the STURP concluded that the Shroud was not a forgery, the controversy continued. The only apparent way to end the speculation about the Shroud's authenticity was to subject it to radiocarbon dating. Traditional means of such dating, however, would have required that a piece of the Shroud as large as a handkerchief be sacrificed, and Cardinal Anastasio Ballestrero, Archbishop of Turin and Pontifical Custodian of the Shroud, was understandably leery of such a prospect.

As radiocarbon dating technology advanced, and the emergence of tandem accelerator mass spectrometry (TAMS) dating methodology decreased the size of sample required for accurate dating, however, scientists again began to clamor for a chance to determine the age of the Shroud. In 1983 Umberto II of Savoy, the exiled king of Italy and owner of the Shroud,

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willed it to Pope John Paul II and his successors, clearing the way for the Church to respond to the increasing pressure for more scientific testing of the Shroud.

Finally, on October 1, 1986, the Archbishop of Turin and the Pontifical Academy of Sciences jointly sponsored a meeting on radiocarbon dating of the Shroud. Participants in the workshop recommended a protocol involving both TAMS and the more traditional proportional counting technique by seven laboratories in Europe and the United States.

But even the design of the radiocarbon dating studies caused considerable controversy. In October 1987 the Archbishop of Turin notified the seven laboratories preparing to undertake the radiocarbon dating that only three — the University of Arizona, Oxford University in England, and the Technical University of Zurich — would be allowed to study the Shroud. The Archbishop contended that removing seven pieces from the Shroud, even seven small ones, would be too destructive. In addition, because TAMS requires a sample only one-third the size of that required for proportional counting, the Archbishop decided to limit the testing to laboratories experienced in dating archeological samples using TAMS.

The protests from proportional counting advocates as well as from the rejected laboratories came fast and furious, with claims that accelerator technology was not yet ready to do what the Church wanted it to do, primarily because of the frequency of spurious readings from small samples. Nevertheless, the Archbishop stuck to his plan to allow only three postage-stamp-sized samples to be taken from the Shroud. In January 1988 directors of the three selected laboratories met with Luigi Gonella, scientific advisor to the Archbishop of Turin, and Michael Tite, head of research at the British Museum (who had been asked by the Archbishop to assist in certifying the

operation), to accept the Vatican's decision to use no more than three samples in the interests of conservation of the Shroud. The University of Arizona was represented by geoscientist Paul E. Damon and physicist Douglas J. Donahue, joint directors of the National Science Foundation-Arizona Accelerator Facility for Radioisotope Analysis.

The procedures agreed upon by the three labs and the Vatican were as follows: Each laboratory would be provided with a sample from the Shroud, together with two control samples of known age, one of which had been independently dated by conventional radiocarbon dating. The samples would each weigh 40 mg and would be taken from a single site on the Shroud away from any patches or charred areas. Each sample, including the controls, would be weighed, wrapped in aluminum foil, and sealed in numbered stainless steel containers. Each of the three laboratories would then subject all three samples to radiocarbon dating by TAMS and submit their results to Tite at the British Museum.

TAMS dating

Radiocarbon dating is based on the slow decay of ^{14}C , which is produced when cosmic rays from space strike the Earth's atmosphere. Following production, ^{14}C is rapidly incorporated into atmospheric carbon dioxide and then becomes part of all living things, as plants take in $^{14}\text{CO}_2$, and the plants in turn are eaten by animals and humans. The ratios of the three carbon isotopes remain more or less constant during life, but when an organism dies, the decaying radioactive carbon is no longer replenished from the environment. The ^{14}C already present in the tissues continues to decay at a constant rate, however, and by measuring the ratio of ^{14}C to the stable isotopes in an object,

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scientists can determine the age of the object. The half-life of ^{14}C is ~5700 years, and, using current technology, researchers have found that radiocarbon dating can provide accurate dates for material as old as 45,000 years. As the TAMS method is perfected, scientists predict that it may provide accurate dates for materials as old as 60,000 years.

Radiocarbon dating using TAMS is a complex process involving combustion of the sample to convert the carbon in the sample to carbon dioxide, conversion of the carbon dioxide to graphite, compression of the graphite into target pellets, and analysis of the graphite pellets by TAMS.

A schematic of the TAMS instrument used at the University of Arizona is shown in Figure 1. TAMS is particularly sensitive compared with traditional proportional counting because this instrument can directly measure each ^{14}C atom in an object, whereas proportional counting can only measure the radioactive decay of the ^{14}C in the sample.

After the graphite targets (including NBS standard targets containing precisely known quantities of all three carbon isotopes) are loaded into the instrument, a beam of cesium ions is fired at the graphite target, transforming neutral carbon atoms into negatively charged ions. The ^{12}C , ^{13}C , and ^{14}C ions are pulled off of the graphite surface by a powerful electric field and sent toward a 90° injection magnet. Because the carbon isotopes have different masses and thus different energies, they are separated and move into the accelerator at different speeds. The negative ions are then sent into an argon "stripper," where the carbon ions collide with argon atoms, losing four electrons. (This step removes background ions that have the same mass as the carbon isotopes.) The C^{3+} ions then proceed through the accelerator toward a focusing magnet that deflects the ^{14}C ions through a foil and into a

solid-state detector. (The ^{12}C and ^{13}C ions are measured as a beam current using Faraday cups prior to the ^{14}C detector.) The ratio of the three carbon isotopes is then calculated, leading to an estimate of the age of the sample.

Testing the Shroud

Researchers at the three selected labs witnessed the cutting of the Shroud last April in Turin and soon began tests to determine the age of the flax in the linen. "We had originally planned that the test be a blind test," said Damon. "But it soon became apparent that the British Museum could not match the weave of the Shroud with appropriate control samples, and the concept of a blind test was abandoned." Although the scientists knew which sample was the Shroud, they did not know the age of any of the samples [sic - see page 17]

At the University of Arizona, scientists prepared eight carbon targets from the Shroud sample and measured two targets each on four days about a week apart. To ensure dating accuracy, each measurement was taken using twice the number of calibrating targets normally used. They statistically averaged their results and forwarded them to Tite's laboratory at the British Museum, where the final ^{14}C measurements submitted by each lab were averaged and converted to a calendar date. In August, Tite returned the statistical analysis and calendar date to all three labs. "The consistency between the University of Arizona results and those of the other labs was very good and gratifying," said Donahue.

Following approval by all three labs, a final report was sent by special courier to Turin, and Cardinal Ballestrero forwarded the results to Rome. Finally, on October 13, Ballestrero announced the results: The calibrated calendar age range of the Shroud at the 95% confidence

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level is 1260 to 1390 A.D. A detailed description of the study and the results is being prepared for publication by Tite and the representatives of the three labs.

The mystery remains

Although it has now been proven that the Shroud of Turin is not, as legend has it, the burial cloth of Christ, there are still questions about how the image on the Shroud was formed. McCrone (1) contends that the Shroud is a painting. Most investigators, however, believe that the image was not made by any known technique of painting or staining, and that it looks just like a photographic negative — produced centuries before photography was invented. "The problems of the origin of the image and its conservation are still left mostly unsolved and will need further research and study," said Cardinal Ballestrero in his statement announcing the results of the ^{14}C dating.

Although the church has never officially proclaimed the Shroud to be Christ's burial cloth, it hasn't discouraged those who chose to believe the legend. After announcing that the Shroud originated in the Middle Ages, the Church "reaffirmed its respect and veneration for this venerable icon of Christ, that remains an object of cult for the faithful in coherence with the position always expressed with regard to the Shroud." Until science comes up with a way to determine how the image on the Shroud was made, the Shroud of Turin remains as mysterious as ever.

Mary Warner

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Suggested reading

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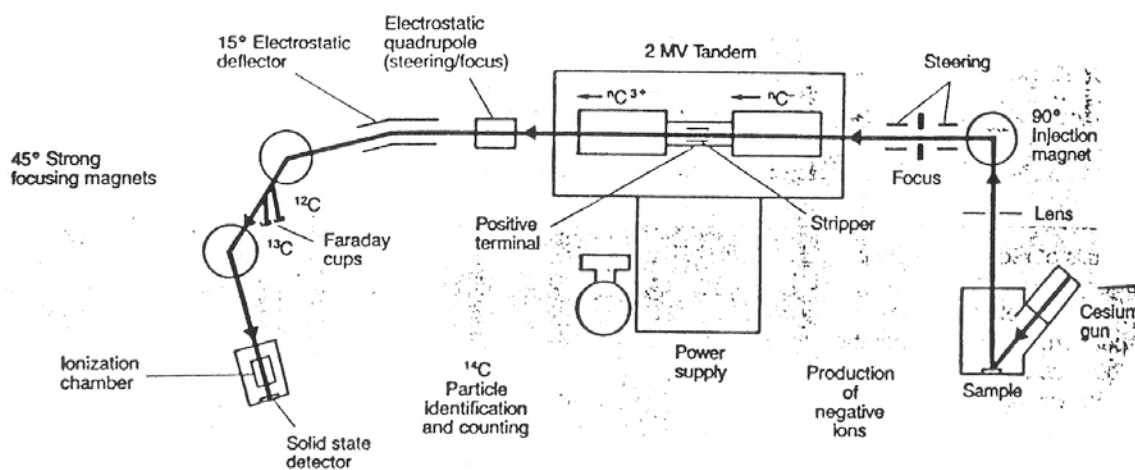


Figure 1. Schematic of the tandem accelerator mass spectrometer at the University of Arizona.

THE AMAZING WORLD OF ISABEL PICZEK - REX MORGAN

Isabel Piczek is a name by now well known to readers of *Shroud News* through the several articles and references to her work in this journal. She took the Shroud world by storm several years ago with her dramatic and remarkable lectures on the subject explaining some of her extensive research into it. As a qualified nuclear physicist and exceptional professional artist (winning the International Grand Award for painting in Rome at the age of fourteen) she is able to weave the multiple threads of science, art and religion together to produce her startling and fascinating theories about the Shroud and its nature. All her audiences are left spellbound after Isabel has delivered her papers illustrated with astonishing pictorial evidence of her research.

She leaves no doubt that the Shroud image cannot be a painting and has shown by experimentation that an image with the visual characteristics of that on the Shroud, let alone the scientific characteristics, simply could not have been created by human hand.

In one of her fields of expertise, Time Physics, she demonstrated an extraordinary theory at the St Louis Symposium in 1991 as well as giving a separate paper on her artistic experiments. Both of these papers appear in the excellent symposium proceedings, *History, Science, Theology and the Shroud* published by The Man in the Shroud Committee of Amarillo, Texas.

I had met Miss Piczek at recent conferences but was hardly prepared for the day I spent as her guest in Los Angeles on 29th April (yes, the 29th April) this year. She is an Hungarian born American who lives and works in Los Angeles and has examples of her works of art in more than 400 buildings in seven countries on three continents. Her principal media are stained-glass, murals and mosaic work and she is engaged on professional assignments, mainly in churches, to create massive walls of stained glass, or painting or mosaic ceramic work. It is astonishing that books have not been devoted entirely to her and her work as one of the foremost large-scale artists of the century.

And it is, of course, this understanding of and working in large scale, which gives Isabel a unique insight into the image on the cloth whereby she can demonstrate that it is impossible for a normal human being to produce the image exactly as it is on the Shroud and, indeed, working from a ladder (dangerously) high enough to see a human body with the perspective and foreshortening evident in the Shroud image it is physically impossible to

THE AMAZING WORLD OF ISABEL PICZEK (cont'd)

produce other than a small drawing or painting.

On that day in April I had the rare privilege of visiting no less than seven of the buildings in the immediate greater Los Angeles area housing Isabel Piczek's work. In the course of that day I was able to admire vast stained glass windows, huge murals taking up whole walls of churches and mosaic paintings of superb quality both large and small.

As one of the foremost prizewinning artists in the world, Isabel Piczek could be expected to be rather more than the quiet, modest, self-effacing person she is. But, as all of her acquaintances know, she goes about her significant and widespread contributions to the world of art, religion and science with no fanfares or exotic behaviour.

Our day finished with a privileged visit to her studio to see, amongst other things, the original sketches she made in her research on the Shroud image.

And, although the next matter has little to do with Shroud research, I feel I must record that during the evening of that 29th April we were having dinner at the Japanese owned New Otani Hotel just 100 yards from the Los Angeles City Hall where the riots began. Indeed, we were there, at the moment they did begin. I was the involuntary witness of the first mob moving along the by now closed off street past the hotel. I heard and felt, from the relative safety of the fourth floor restaurant, their smashing of the hotel lobby under us, one presumed because of its connection with Asians, and then watched (and photographed) the rioters setting what must have been the very first fire of the four thousand in Los Angeles that next few hours and days as the riot police looked on.

It was an experience I shall never forget. Belief was suspended for several hours as I beheld scenes far worse than those I knew in the Second World War in England. Here were Americans killing Americans. War I think I can understand: we might not like it but it has a certain amount of logic in its performance. The Los Angeles Riots I could not understand. The experience left me with a deep sadness for the American people. Later that night Isabel and I were able to escape through the smashed plate glass and furniture of the trashed hotel lobby and then out through the debris strewn streets and upturned vehicles out of the area which very shortly afterwards was declared off limits to all for days.

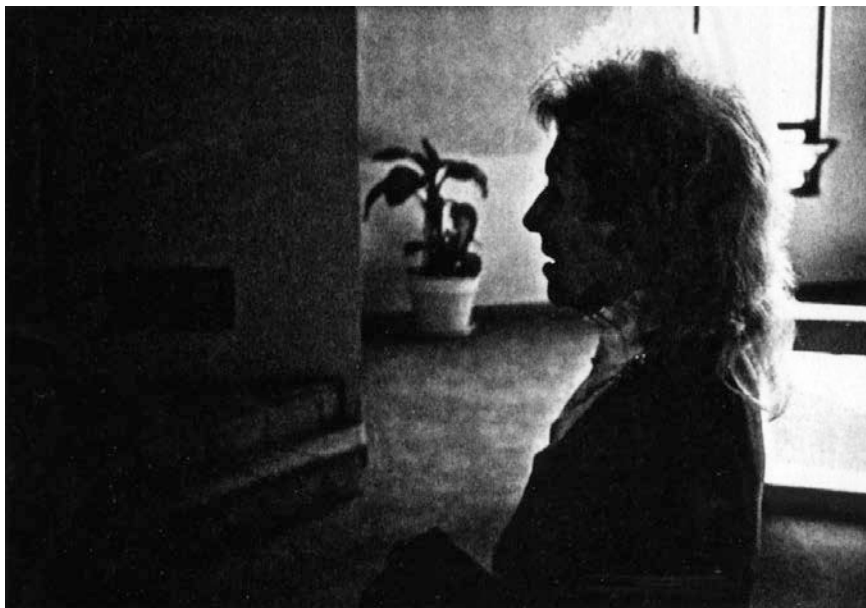
It was an extraordinary end to an extraordinary day which I shall long remember for both reasons.



A corner of Isabel Piczek's imposing studio in Los Angeles



The Resurrection. Central panel of Isabel Piczek's 1,300 sq ft mural at Holy Cross Mausoleum, Los Angeles



Isabel Piczek contemplates a chapel where she has been commissioned to create a huge mural



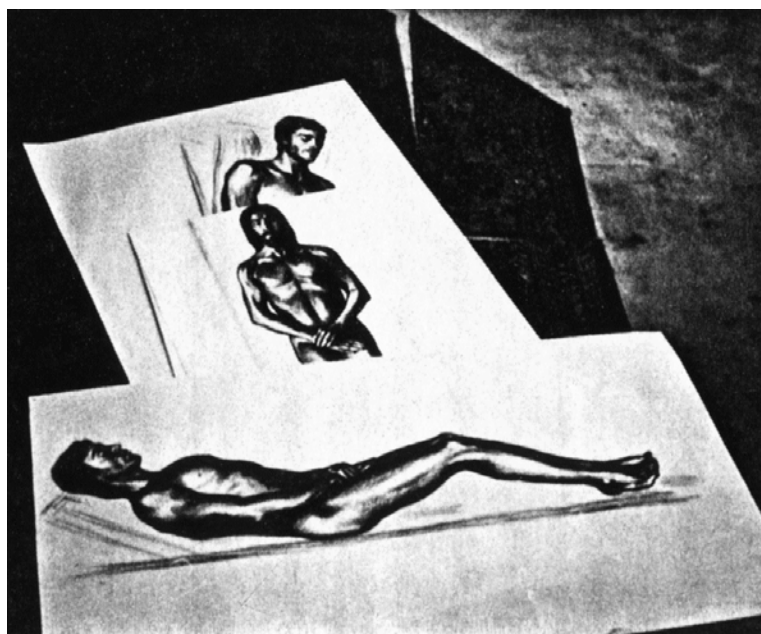
Isabel Piczek discusses one of her Shroud research sketches



Isabel Piczek describes a series of mosaic panels she created in Los Angeles



Isabel Piczek talking with Rex Morgan at her studio



Some of Isabel Piczek's sketches from her Shroud research work

ACCURACY OF CARBON DATING?

The debate about the accuracy of carbon dating continues in numerous scientific journals. If expert opinion finally determines that there are inaccuracies in the method this will have bearing on the results of the 1988 carbon tests at Turin, the announcements about which have seriously distorted logical and objective argument about the Shroud.

This important article by **BRIAN DONAGHY** is reproduced directly from *Australian Campus Review Weekly* May 14 - 20, 1992

NEW LIGHT CASTS SHADOW ON ARCHAEOLOGISTS' CARBON DATING

It's called thermoluminescence, and sometimes it doesn't work.

TL cooks the light out of old rocks and pots and over the past 10 years the light has cast a somewhat critical shadow over the archaeologists' beloved carbon dating.

Just as a comparison with carbon 14 dates revealed flaws in TL, so TL has reminded the scientific world that carbon 14 dating sometimes doesn't work.

Indeed if you are not careful, carbon dating can "prove" that a modern pot was made in the future.

TL had the opposite problem, suggesting that your modern pot was hundreds or thousands of years old.

Professor John Prescott of the University of Adelaide, one of the pioneers of TL, says they have now solved the difficulty with zero dates and refined the TL techniques with older materials to the point where "the ball really is back in the carbon 14 court.

But Mr John Head, deputy director of the radio-carbon dating research unit of the ANU's Research School of Pacific Studies, does not agree.

TL works because SE materials are exposed to background radiation.

With some materials, the radiation over time knocks more and more electrons off the molecules of the basic material.

The older it is the more electrons will have been displaced.

Those electrons can be counted by heating the material and recording the minute flashes of light emitted as they are shaken loose again.

One of the complicating factors in the TL equation is that background radiation varies considerably.

They have found sand in the Gawler Ranges in South Australia which is almost completely devoid of radioactivity — it is virtually pure sand.

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The sand being mined for rutile and other minerals on Queensland's Sunshine Coast; however, contains quite a lot of thorium and is quite radioactive.

"What happens," Prescott explains, "is that a beta ray from the background radiation penetrates a piece of quartz and knocks an electron off its atom.

The electron wanders around in the crystal until it finds an electron trap.

"It's like someone wandering around a field full of old mine shafts and suddenly falling down a hole."

The traps vary according to the material, but in quartz it would usually be a place where a silicon atom had been left out, perhaps due to a trace of aluminium or more likely germanium.

One of the problems is that the traps will eventually all be full and will stop capturing electrons, which makes TL pretty useless for dating purposes with very old samples — say three or four million years old.

TL counts all the trapped electrons which means it dates material to the time when it had no trapped electrons.

In practice that means to a specific event that released all the trapped electrons at some time in the past and effectively reset the TL clock.

Pottery shards are ideal because their trapped electrons would all have been released when the pot was fired.

Hearthstones will give you the date they were last heated by a fire — a fact that has been successfully used to date old Aboriginal settlements.

The ultraviolet light from as little as 12 hours of strong sunshine can also be enough to "reset the TL clock" in surface sand -giving a method of dating different layers in a sandbank.

One of the difficulties is being sure that it has not been partially reset—buried sand which is exposed only briefly to sunlight before being buried again may be partially reset and subsequent dating estimates could be wrong by as much as 2000 or 3000 years in a sample which was actually 8000 years old.

Dating is only one aspect of the Adelaide research.

The main aim is pure research into the physics involved, in part by using specialised equipment to analyse the spectrum of light emitted by different materials and the rate at which it is released.

The resulting three-dimensional graphs consistently give different but still largely unexplained profiles for different materials such as quartz, feldspar and moonstone.

But dating became important again when carbon 14 tests on an Aboriginal site sharply contradicted TL dates and further checking suggested that TL was indeed exaggerating the age of the samples significantly.

There are three senior people on the Adelaide team: Prescott, Dr John Hutton, a retired soil chemist from the CSIRO, and Dr Gillian Robertson.

Between the three of them, they have had the equivalent of one person working full time on the TL dating techniques for a year.

The battleground is a large rock shelter first investigated by ANU scientists, including pre-historian

ACCURACY OF CARBON DATING?

Dr Mike Smith at Puritjarra, in the Cleland Hills 500 kilometres west of Alice Springs.

Carbon dating, Prescott says, suggested that it had been occupied over 20,000 years ago, which if correct would make it the oldest occupied inland site in northern Australia.

"One of the reasons we became involved in it was that there was some concern that some of the carbon 14 dates at the bottom of the profile were a bit on the young side ... the material at a depth of about a metre should have been much older than it was for that depth.

"And we were astonished to discover — we were not only astonished, we were alarmed — to find that we were not getting the same dates as the carbon 14.

"We undertook a thorough review of all of our procedures, from which we were able to identify some possible reasons why we were getting answers that were older than the carbon 14.

Prescott says the Adelaide team have modified their methods so much that it is now almost a new technique...

Modern surface material should give a zero age reading.

The TL techniques of 10 years ago did not "but our technique now at least satisfies that criteria," Prescott says...

"We have now almost certainly resolved the (dating) problem for perhaps the top 20 centimetres of material in the shelter."

Prescott believes the pollution factor is of about the right order to explain the TL/carbon 14 differences in the younger deposits at the top.

"It is not so easy to explain the differences at greater depths. It may require a rethink on how carbon 14 dates are assessed in dry climates or desert environments," Prescott says.

At ANU, where they are now working on both TL and carbon dating, Head does not agree that the ball is in the carbon 14 court.

In June, ANU will have two postdoctoral fellows working on TL in conjunction with carbon 14.

It will also be working with dating by electron spin resonance.

"There are a lot of problems with both techniques ... it is something in which will be ongoing research. There is still a lot of work being done to sort out external (radiation) dose rates." Head says.

Head says Smith and his team had proved that there was contamination by younger materials even at the lower levels in the rock shelter: Burrowing animals, for example, could carry recent material into the lower levels.

Head says he is confident the problems will be solved.

He himself has done a considerable amount of working correlating the dates obtained from the two techniques, particularly on sites in China, "and we have been doing very well."

He "finds it hard to believe" the nuclear contamination theory, arguing "that contamination from nuclear tests would stuff up TL dates more than carbon 14 dates."

While nuclear reactors might generate some carbon 14, they did not do so to any great extent, he said.

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The increase in radioactivity in the atmosphere since the bomb testing began was known and had been measured very accurately, he said.

The biggest problem was obtaining a sample which had not been contaminated by all sorts of environmental and organic factors: "We have even found pesticide residues 12 feet below the surface in sediments laid down about 35,000 years ago," Head says.

Prescott is cautiously confident about with the progress he and his colleagues have

made with TL

"We believe we have resolved the zero age problem completely.

... It remains to be seen just how the older samples, 20,000 to 30,000 years old are resolved," he says.

"It may well be that carbon 14 dates are too young. If they turn out to be right, we will need to have another think." He gives a wry grin, and adds: "A really *big* think"

BSTS NEWSLETTER

In Ian Wilson's *Newsletter* No 31 of April/May 1992 he has had to spend much of the space taking to task members of the Shroud Crowd who have annoyed, ignored or opposed him recently. First to be dealt with was Ian Dickinson whose letter to the Pope (in the *Shroud News* version beginning "Dear John Paul") was represented as the view of the British Society for the Turin Shroud which it was not. Dickinson is a good researcher and has made some interesting contributions even if he is brutally frank from time to time. (I wonder if he addresses his letters to the Queen as "Dear Elizabeth")?

Next in the firing line is his old adversary Dorothy Crispino who has published a paper mis-dating a "lost" manuscript of which she found a copy in Paris whereas the original is, as known to Wilson, in the Pierpont Morgan Library in New York. Also to feel the sting of Ian's pen yet again is Bro Bruno Bonnet-Eymard, this time for his latest excellently produced "conspiracy theory" booklet with, according to Ian, "not the slightest serious evidence to back it up." Wilson then "urges all in the Shroud field to think extremely carefully before giving space and/or a conference platform to the Bonnet-Eymard school of argument. The hurling of wild and libellous allegations against well-accredited scientists (their Britishness notwithstanding), contributes not a scintilla of credit to Shroud studies."

I was glad to find that I was not amongst those to be castigated but, rather, Ian has kindly reproduced one of the photographs from the publication in the proceedings of the St Louis Symposium showing my actual reconstruction of the Templecombe Panel (Ian's discovery) as the lid of a box which housed the Shroud (my theory after Audrey Dymock). As always the *BSTS Newsletter* is interesting and informative.

ACCURACY OF CARBON DATING?

Letter in *NATURE* Vol 349- 14 February 1991

Shroud dating still questioned

SIR — Damon *et al.* (*Nature* **337**, 611-615; 1989) asserted that radiocarbon dating performed in 1988 provided conclusive evidence that the linen of the Shroud of Turin was mediaeval. However, most of the scientists involved in the studies on the Shroud clearly showed at the Paris International Symposium (7-8 September 1989) that they utterly disagreed with the conclusions of this article; the main reason was the lack of reliability of the results due to several methodological inadequacies. On a matter of such wide interest, it is important that the scientific community should be seen to come to a definitive conclusion about the value of the published dates. For this reason I would like to re-open the debate.

As a matter of fact, survey protocols have to be performed according to a method capable of avoiding investigator bias, in order to achieve relevant and accepted conclusions (F. Ederer. *Amer. J. Med.* **58**,295-299; 1975). In the case of the radiocarbon dating of the Shroud, the procedures were neither blind nor controlled, contrary to the assertions of M. S. Tite (*Nature* **332**, 482; 1988). As a result, the following questions have to be asked: (1) What were the scientific reasons for abandoning the blind procedure and the full documentation by video film and photography (I showed at the Cagliari conference that a true blind radiocarbon dating was feasible)? (2) What was the methodological need for giving the ages of the control tissues to the laboratories before the radiocarbon dating procedure? (3) What

were the detailed data of the carbon measurements in each series of analysis? (4) What were the detailed data of the statistical analysis supervised by the "G. Colonetti" Institute? (5) What was the scientific reason for asserting without any discussion that the results obtained provided conclusive evidence that the linen of the Shroud was mediaeval, whereas it is in complete disagreement with every result obtained previously by scientists in the past 90 years?

All these important questions should have been discussed at the scientific conference held in Cagliari (29-30 April 1990), since its topic was precisely the Shroud dating. It was reasonable to expect some of the scientists involved in the dating performed in 1988 to attend. And above all, the paper to be presented by Professor Hall on "An attempt to answer criticisms concerning the dating of the Shroud" was eagerly anticipated. Unfortunately, none of the 21 authors of the article quoted previously was present in Cagliari, including Hall.

So, the international community of scientists interested in research on the Turin Shroud is still awaiting answers from Hall and Tite to these questions.

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ACCURACY OF CARBON DATING?

Letters in *NATURE* Vol 352 - 18 July 1991 and Vol 353 - 17 Oct 1991

Sampling error?

SIR — Others have drawn attention to serious anomalies in the procedure undertaken for radiocarbon dating the Shroud of Turin (Damon *et al.* *Nature* **337**, 611-615; 1989).

Your readers should know that anxiety about the procedures followed has been heightened by a recent declaration of Professor Wolfli, one of the 21 co-authors of Damon's report. In a short interview published in the French monthly journal *Contre-Reforme Catholique*, Wolfli asserts that the size and weight of the shroud samples mentioned in Damon's paper were erroneous. According to the French journal, he declared: "Nobody (among the authors) has seen this error. We were under pressure, but that is not an excuse." So far, this statement has not been challenged in any way by the first author, Damon. Because sampling procedures have always been regarded as critical in the dating of the shroud, this situation is most disturbing.

This unique archaeological artefact deserves more serious attention. Logically, scientists who question this procedure should be allowed to review the original records, including the videotapes recorded during sample collection in Turin in April 1988. How can this be achieved?

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Shroud of Turin

SIR — Pierre Busson laments the various problems arising from the radiocarbon dating of the Shroud of Turin (*Nature* **352**, 187; 1991). As I see it, there is only one problem: the dating itself. The Shroud of Turin is a religious object and, as such, it should never have been subjected to scientific scrutiny.

When Bill Libby developed the radiocarbon dating method, he had a steadfast rule: never to accept for dating anything related to religion. Radiocarbon dating has now shown that the Shroud was woven in the fourteenth century. So what? Scientists will say that that proves that the Shroud is a fake. Believers will say that it is an even greater miracle — the wrapping of the body of Christ in a shroud that was woven 1,300 years later.

Religion is perfect and unchangeable, the work of God. Science is imperfect, ever changing, and, I suspect, the work of the Devil. The two should never be mixed. The scientists who participated in the dating of the Shroud of Turin should repent and promise never to do anything like that again. Creationists are even more guilty, for they have been mixing science and religion for years and years. They should abandon their evil practices forthwith, lest the wrath of God descend upon them like a ton of bricks.

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One of our readers, the German Ambassador to Ireland, sent us the brochure of a Pictorial Exhibition about the Shroud held in Dublin last year. The exhibition and brochure were sponsored by 3M (Ireland) Limited. Readers will recall that 3M provided much material for the 1978 Turin scientific investigation especially the Mylar tape used for particulate sample removal. The brochure was well presented and provided a balanced summary of historical and scientific aspects of Shroud study. It had this to say about 3M:

3M and The Holy Shroud of Turin

As technical sponsor of the Shroud of Turin Research Project (STURP) in 1978, 3M had a very significant contribution to make.

Thanks to 3M technology the scientists, using pure hydrocarbon adhesive tape specially developed by 3M, were able to lift those fibres essential to their analysis. Following the extensive microanalysis of the blood fibrils came this conclusive statement.

"The chemistry is saying the same as the forensics. There is only one way that this kind of chemistry would appear on the cloth. This cloth

had to be in contact with the body of a severely beaten human male".

Dr. Alan Adler, West Connecticut State University addressing Chemistry Department, Queen Mary College University of London, July 1984.

In addition 3M, renowned for their expertise in photographic film and processing supplied the film and processing ability which were used during the analysis and to record the experiments on view here today. 3M (Ireland) Ltd. are proud to present this unique exhibition to the Irish public.

Poem from *The Tablet* 14 Jan 1989

Carbon 14 and after

So much for the Shroud,
A trick, a predictable fraud,
Sneer the headlines,
The high Oxford chemists.
Those guys were just con men:
They'd sell you a duck feather
The Archangel Michael
Let fall from Heaven.

With impeccable tweezers,
The pluckers and sealers
Of linen have sent for,
And received, a reply:
These fibres have failed their exam.
The exam was on "Linen".
No questions were set
On "Figure and detail,
A sham?"
The world sighs,
Half in mirth, half regret.
"While some mutter "and yet,
And yet".

And yet
What of the shadowed
Impress, of pain, of death
Which is not death
On that undefeated,
Brow? What of the gaze,
Though shrouded, stilling
Even the chariest beholder:
Was this a thing contrived?

Shrewd chemist, unlock
This puzzle too. Seek
New rays from the innocence
Of space, to pry, to pierce
The seal so strangely pressed
Upon the linen: then,
When you breach that gate, disown
The force whose stamp
Each heart could wish his own.

Rosalind Ingrams

Shroud News began in 1980 when Rex Morgan, author of three books on the subject of the Holy Shroud (*Perpetual Miracle*, *Shroud Guide*, and *The Holy Shroud and the Earliest Paintings of Christ*) started putting together a few notes about current developments in Sindonology (the study of the Shroud of Turin) for a small circle of interested people in his home country of Australia. He didn't expect it to go beyond a few issues.

The bulletin now reaches subscribers all over the world and it is written and produced and the information disseminated more quickly than most news-sheets of a similar kind or the more prestigious Shroud publications. It contains information, news, articles and illustrations gathered from sources of Shroud study worldwide through Rex Morgan's extensive network of personal connections with what has been described as the "Shroud Crowd".

Rex Morgan is a frequent traveller overseas and this has given him the opportunity to keep abreast of latest developments in Shroud study and research at first hand. He was present at the world media preview of the Shroud itself in August 1978 in Turin, Italy and has met with numerous Shroud researchers in many countries. His quest for Shroud information became, as he described it, "a passionate hobby". He brought the world-famous Photographic Exhibition created by Brooks Institute, California, to Australia, New Zealand, Hong Kong, Macau and Canada and during those tours it attracted more than 600,000 visitors. The exhibition was subsequently donated by Brooks Institute to the non-profit making organisation, The South East Asia Research Centre for the Holy Shroud (SEARCH) of which Morgan is President. He is also a member of the Board of Directors of the USA based Association of Scientists and Scholars International for the Shroud of Turin (ASSIST) and was a member of the scientific team which conducted environmental experiments in a Jerusalem tomb in 1986 (The Environmental Study of the Shroud in Jerusalem). He has made several original contributions to the research of the Shroud, has presented papers at international conferences, has written many articles and given numerous broadcasts and telecasts on the subject in many countries.

The list of *Shroud News* subscribers continues to increase internationally and the publication has been described many times as one of the best available. Its production is obviously privately subsidised as we still request a subscription in Australia of only \$6 for six issues posted. *Shroud News* comes out six times per year. The USA subscription is \$US 6 (posted surface mail) or \$US 12 (posted airmail). Postage to other countries varies. ALL back issues are available at \$1 (US or Aust) each plus postage charges except the famous 50th issue which is \$3 plus post.

Please encourage those of your acquaintance to take out their own subscription rather than borrow your copies since the more genuine subscribers we have the more we can improve the bulletin and the longer it is likely to survive.

All information and opinion in this newsletter is published in good faith. It is edited (and mainly written) by Rex Morgan and published by:

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