

THE ASSIST NEWSLETTER

Association of Scientists and Scholars International for the Shroud of Turin, Ltd. Vol. 1, No. 1

ASSIST Announces the Acquiring of the Max Frei Collection for Shroud Research by Paul C. Maloney

On July 15, 1988 a small group of representatives from the Association of Scientists and Scholars International for the Shroud of Turin, Ltd. (ASSIST) and associates met with Dr. Max Frei's widow, Mrs. Gertrud Frei-Sulzer and her son, Ulrich, in Thalwil, Switzerland and signed papers taking possession of a most important collection for the continuing study of the Shroud.

The group included Dr. and Mrs. Alan Whanger who video-documented and photographed the entire proceedings. Dr. Benjamin Stone, chairman of the Dept. of Botany, The Philadelphia Academy of Natural Sciences, accompanied us to advise on the botanicals of the collection and their packing to ensure they could be shipped back to the U.S. without breakage. Representing the Atlanta International Center for the Continuing Study of the Shroud of Turin, Inc. and on behalf of the Holy Shroud Guild whose president, Fr. Adam Otterbein, was unable to attend, was Fr. Albert R. Dreisbach, Jr., who witnessed the transfer. I represented ASSIST, accompanied by my wife.

We made an initial examination of the entire collection with Mrs. Frei-Sulzer and Ulrich at the Hotel Thalwiler Hof in Thalwil. Both gave lucid explanations of each item while Dr. and Mrs. Alan Whanger videotaped the entire session. My wife helped unpack the cardboard boxes as the examination moved along. Dr. Stone examined some of the botanicals and offered comments. Finally, the microscope case with the sticky tapes was opened and Mrs. Frei demonstrated on the tablecloth exactly how Dr. Frei had impressed the tapes on the original Shroud. We secured the entire microscope case in a plastic bag and, using the ASSIST corporate seal with wax, we sealed the entire package and videotaped a close-up view of the package and seal for later comparison in the States.

Our group returned to Zurich with two trunks of materials pertaining to Dr. Frei's work including documentation, botanicals, microscopic slide and SEM

(Cont'd on p. 2)

The Carbon Date For the Shroud of Turin: The Position Statement of the Association of Scientists and Scholars International for the Shroud of Turin, Ltd.

On October 13, 1988, Church authorities formally released the information that the three radiocarbon facilities have obtained results placing the date of the sample tested between A.D. 1260 and 1390. In light of these results, the Association of Scientists and Scholars International for the Shroud of Turin, Ltd. (ASSIST) issues the following statement of position:

1. Given that the image on the Shroud of Turin has not been conclusively demonstrated to have been produced by an artist, that if painted it is not in the artistic style of the above noted time frame, and
2. Given that at least three researchers believe that chemical studies indicate the presence of blood on the Shroud, and
3. Given that STURP has accumulated evidence that the Shroud contained the corpse of a crucified victim, and that crucifixion was not practiced since the 4th century, and
4. Given that the Shroud contains medical information believed by many respected medically trained observers as medically accurate which details do not reflect the medical knowledge available in the 14th century, and
5. Given that there has, as yet, been no convincing demonstrable mechanism offered for the presence of the three-dimensional information coded onto the Shroud, and
6. Given that the pollen information on the Shroud implies the presence of the cloth, at one point in its history, in Israel, a position currently supported by specialists in palynology and botany in Israel, and
7. Given that the historical evidence appear to support that a cloth fitting or similiar to the desription of

the Shroud of Turin was extant at least as early as the 7th century, we therefore conclude that the new information relating to the date appears to be in serious conflict with the larger body of scientific and historical data collected since 1898. While we acknowl-

(Con't on p. 7)

In This Issue:

About Assist	P. 8
Verification of the Frei Collection	P. 4
Is the Shroud Really Medieval?	P. 5
News and Notes	P. 8

Statement of policy for "The ASSIST Newsletter"

"The ASSIST Newsletter," a publication of the Association of Scientists and Scholars International for the Shroud of Turin, Ltd., seeks to disseminate news, scholarly articles, and reviews representing varied viewpoints regarding recent scientific study of the Shroud of Turin.

ASSIST, as an organization, currently takes the position that no conclusions can be drawn regarding the authenticity or non-authenticity of the Shroud and its related issues without further scientifically controlled data obtained directly from the Shroud.

ASSIST protects the rights of individual members to hold divergent views.

No individual view published in "The ASSIST Newsletter" should be taken as representing the officially sanctioned view of the ASSIST Organization.

ASSIST actively encourages the airing of multiple, divergent views about the Shroud.

ASSIST actively seeks peer review of all published and pre-publication materials.

Letters Policy for "The ASSIST Newsletter"

"The ASSIST Newsletter" will include letters from the membership and readership as a regular feature of its communication function. News items, suggestions, questions, and responses to published material are welcome. Letters to the editor should be typed and must fulfil the publication policy guidelines of the ASSIST Organization. The editor reserves the right to return letters containing materials of an "emotional/explosive" nature for revision and to edit letters chosen for publication.

Address Letters to the Editor to:

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Membership Information for ASSIST

Interested persons may apply for membership in one of the three divisions of ASSIST. Information will be provided in a future issue regarding the rights and privileges of membership: \$15 (North America)/ \$18 (Overseas). The ASSIST Organization depends on the contributions of its members and friends to meet basic operational costs. Contributions are used to promote the scientific study of the Turin Shroud and are greatly appreciated. All such contributions are tax deductible.

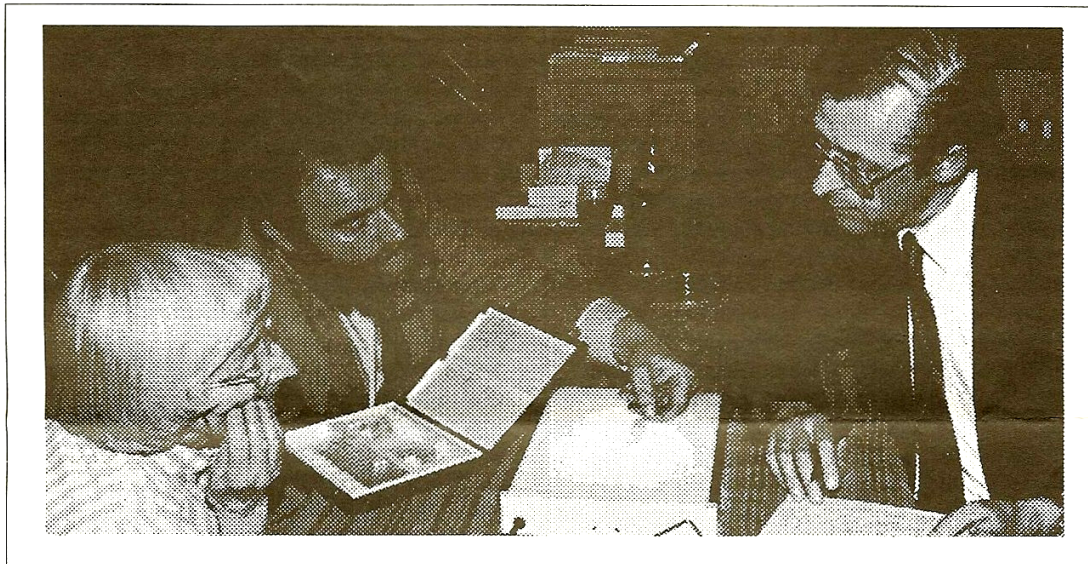
ASSIST Announces ... (cont'd from p. 1)

(scanning electron microscope) preparations. On July 16-18 we conducted an inventory of the entire collection and then returned to Thalwil to discuss our findings with Mrs. Frei. Fr. Dreisbach was particularly valuable in lending his knowledge of Shroud research in probing the subject of Dr. Frei's work. At this time we also obtained the 27 sticky-tape samples which Dr. Frei had taken from the Shroud in 1978. We left these with Mrs. Frei in the corporate-sealed packet for safekeeping until we were ready to take possession of them. They were then placed in a Swiss bank vault until we left Europe on Thursday, July 21, 1988.

The story actually begins back in 1982. I contacted Dr. Frei regarding his role in the 1978 testing. There was considerable puzzlement over why Dr. Frei had been able to obtain pollen from the Shroud in significant numbers (Dr. Frei had identified and published his findings of at least 58 different pollen types discovered from the 1973 and 1978 researches) while SIURP, also using a sticky-tape method,

was only able to pick up one single pollen grain. Some observers had even gone so far as to accuse Dr. Frei of fraud. I therefore wrote to Dr. Frei and he explained that the difference lay in the two separate methodologies of applying the sticky-tape. The STURP method used a "torque applicator" specially engineered to restrict the pressure on the Shroud to about (10) pounds per square inch. Dr. Frei used a simple tape dispenser and pressed each piece of tape down on the cloth with his thumb; he moved the threads laterally to raise the pollen to the adhesive surface of the tape.

Dr. Frei had had plans to continue with his extensive research when he passed away in January of 1983. I maintained contact with Mrs. Frei. Late in 1985 I had written her requesting information on the type of tape Dr. Frei had used. ASSIST had also expressed interest in publishing Dr. Frei's unpublished manuscript (a project that is currently underway). So in January 1986 I was pleasantly surprised to receive two copies of Dr. Frei's manuscript on the pollen on the Shroud as well as five sticky-tape samples-four labeled and one unlabeled-taken from the Shroud in 1978.



Mrs. Gertrud Frei-Sulzer and her son Ulrich examining the Max Frei Collection of Tapes from the Shroud, along with Mr. Paul C. Maloney (r.) of ASSIST. Photo courtesy of Dr. Alan D. Whanger.

The actual microscopy of the loaned tapes may be said to have begun on Sunday afternoon, Feb. 16, 1986, at the biology laboratory of Elizabethtown College, Elizabethtown, Pa. Many of us involved in Shroud research had convened for a conference on the Shroud of Turin. I requested use of some microscopes from Dr. W. Wesley MacDonald, chairman of the Dept. of Political Science and convener of the conference, and that afternoon the first to examine the tapes (tape 10/9 Na, taken from the dorsal "side-strip") was Dr. Walter C. McCrone. It wasn't long before he announced, "There's a pollen." I put my eye to the optics and there in the center of the field was the golden orb of an echinate (floral) pollen grain! Following this many from STURP and other attendees of the conference were able to view this tape. Dr. Alan D. Adler examined a number of them at length.

In the ensuing months stretching out over the past several years I conducted an extensive survey of the materials of these five tapes which Mrs. Frei had so kindly loaned ASSIST. Here were representative particles from the Shroud; in addition to the pollen grains, there were cotton and flax fibers in abundance, as well as other particles some of which were very clearly silent testimony to the industrial emissions of the city of Turin. In a future issue of this newsletter we shall present details of our findings from these tapes, and we predict they will dispel much confusion over Dr. Frei's work.

From the above researches several reports were issued to the ASSIST executive council and copies of each were sent to Mrs. Frei. Based upon ASSIST's extended and consistent involvement in research into the five tapes, Mrs. Frei made an offer of permanent possession in July of 1987.

Discussions were commenced at that time culminating in the transfer of the collection to ASSIST on July 15, 1988.

But the question of how to verify the tapes as a scientific resource was a very important matter. It required a method of approach, whereby when any future scientific data from the tapes would be published, there would be no question whatsoever that these tapes did in fact represent the particle spectrum from the Turin Shroud. After exploring a number of alternate possibilities, I felt the very best way to achieve an objective analysis was to contact two scientists who had had extensive experience with the examination of the STURP sticky-tapes taken from the same 1978 research period. I therefore invited Dr. Alan D. Adler, chemist at Western Connecticut State University, and Dr. Walter C. McCrone of McCrone Research Institute in Chicago to attend a special private meeting in Philadelphia to examine the tapes.

Mr. Thomas Flaherty's report on this meeting follows in this issue of the newsletter.

FUTURE ISSUES OF "THE ASSIST NEWSLETTER"

Issue No. 2: The focus of this issue will be the research regarding the Byzantine tremissis mentioned in the current issue of "The ASSIST Newsletter." Also in Issue No. 2, the text of the document entitled, "A Request for New Tests on the Turin Shroud", which was presented to His Eminence Archbishop Giovanni Saldarini, the new Archbishop of Turin, by Fr. Peter Rinaldi on behalf of ASSIST.

Issue No. 3: This issue will include a report on the preliminary results of the pollen studies of the Max Frei Collection.

Verification of the Max Frei Collection
by Thomas Flaherty

On Saturday, July 23, 1988, a diverse group of Shroud scholars and investigators assembled in Philadelphia at a closed-doors meeting sponsored by the Association of Scientists and Scholars International for the Shroud of Turin, Ltd., (ASSIST).

The group of approximately twenty men and women had been invited to study the slide collection of sticky-tapes lifted from the Shroud by Dr. Max Frei during the 1978 examination. The collection, which includes the slides, Botanical specimens, and Dr. Frei's unpublished manuscripts, had been acquired just days before by ASSIST from Dr. Frei's widow, Mrs.

Gertrud Frei-Sulzer, and flown back to the United States. The host of the day's study was Dr. Benjamin Stone, chairman of the Dept. of Botany of the Philadelphia Academy of Natural Sciences, where the collection is now housed.

Paul Maloney, ASSIST Vice President and General Projects Director, announced the acquisition and set the day's agenda for the examination of the

sticky-tape samples. Mr. Maloney explained that in order to place the study of these tapes on a firm scientific footing, each tape would be carefully examined by two experts experienced in previous work on tapes taken by STURP from the Shroud. Mr. Maloney introduced the two gentlemen whose experience and expertise would be relied upon to verify the scientific value of the slide samples: Dr. Alan Adler and Dr. Walter McCrone.

The day's activities began with the video viewing of the acquisition of the collection, at which time the slides had been sealed in plastic with a wax seal. The sealed package was exhibited to all present and the seal was then broken by Mr. Maloney and the examination was begun. Mr. Maloney chose one slide at a time, announced the apparent labeling to the group, and passed it to Dr. Alan Whanger for still photography (both front-lit and back-lit) and video photography of the slide. Each slide was then handed to Dr. McCrone at the microscope who focused the slides variously at 100x and

200x magnification. The group was able to observe the microscope field on two video monitors as Dr. McCrone examined the slides.

Meanwhile, Mr. Maloney described the types of particles and fibers he had found present on the five sticky-tape slides which ASSIST had acquired on Joan from Mrs. Frei. He also compared the sampling methods of Frei, the STURP group, and Dr. Riggi and offered some insight into the variant results of these different sampling methods.

As a result of Frei's sampling method, virtually all the pollen are present in the first one-half inch of the sticky-tapes that have been examined. Also, the numbers of pollen found thus far varies greatly from one area of the cloth to another.

To determine the precise locations on the Shroud where

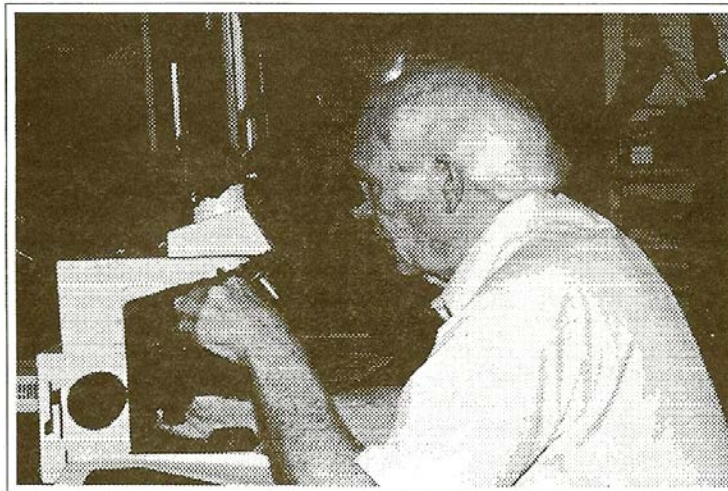
the sticky-tapes were applied, the photographic record of Barrie M. Schwartz, STURP photographer, is being studied and correlated with the label on the slides and the on-site map created by Ray Rogers and Bob Dinegar. The labeling and sample locations have been tentatively identified using the available data.

There remain some problems deciphering the nomenclature

and identifying the precise source locations of a few samples.

Dr. McCrone examined the slides with the microscope and described various particles and fibers including: flax and cotton fibers, red and blue silk fibers, scorched fibers, synthetic fibers, pollen, and various "artifacts," types of which have been described by various researchers as blood particles, "myrrh and aloes," or iron oxide particles. The pollens were of primary interest to all in the room, since the quantification and identification of the various species they represent is a major goal of the future research to be done on the slide samples. When a suspected pollen was detected in the field, the power was increased to 400x and often Dr. Stone or others present were able to broadly classify the pollen as echinate or gymnosperm pollen based on external features.

One of the more surprising revelations of the day was the presence of various kinds of plant parts and floral debris,



Dr. Walter C. McCrone examines a slide from the Max Frei Collection. Photo courtesy of Dr. Alan D. Whanger.

such as anthers, filaments, and vascular tissue on at least three of the tapes ASSIST had received on loan from Mrs. Frei. This evidence supports the hypothesis previously suggested by the internationally respected palynologist, Dr. A. Orville Dahl of the University of Pennsylvania, that actual flowers had been laid down on the Shroud at some time during its history. Such an occurrence would explain the high percentage of floral pollens on the Shroud as described by Dr. Frei.

Possible future studies of the collection and of the Shroud itself were discussed, including FTIR (Fourier Transform Infrared Analysis), spectroscopic tests, electron microprobe, further chemical analysis of structures and compounds, collaboration with pigment and paint experts, and characterization of fibers. Most people seemed to agree that while the Frei collection is a valuable resource that will provide a wealth of data for Shroud studies, other sampling techniques such as mini-vacuum suction and micromanipulation should be used in the future.

The slide labeled 4 Bd was unusual in that the tape had apparently been placed directly over a blood area of the Shroud. A great deal of red particulate material was present on much of this slide. This was of interest to all, especially Dr. Adler and Dr. McCrone, who each hope to do further chemical analysis of this material.

The day's events were recorded on videotape by Dr. and Mrs. Alan Whanger.

The verification of the 1978 Max Frei Collection proceeded quickly and was completed earlier than anticipated. The conclusion of both Dr. Adler and Dr. McCrone was that twenty-seven of the twenty-eight slides could be demonstrated as definitely having contacted the Shroud of Turin. Dr. McCrone believes that the particle spectrum on the one unlabeled slide shows that it did not originate from the Shroud. Both Adler and McCrone state that these tapes contain more particulate matter than the STURP tapes.

ASSIST plans to publish Dr. Frei's final manuscript and to eventually make the collection available for study after creating a photo-inventory of the slides. The investigators departed with hopes of participating in the many studies that doubtlessly will be based on this valuable collection of microscopic evidence from the Shroud.

Is the Shroud of **Turin** Really Medieval?
by Paul C. Maloney

The radiocarbon results of the recent testing of the Shroud of Turin have been released in the British journal NATURE (Vol. 337, Feb. 16, 1989, p. 611). As announced on Oct. 13, 1988, the testing produced results which all three labs place between A.D. 1260-1390. The authors conclude: "These results therefore provide conclusive evidence that the linen of the Shroud of Turin is mediaeval." (op. cit. p. 614).

On the face of it one might conclude that these results are final. However, the Shroud has been subjected to scientific investigation since the exhibition of 1898 when Secundo Pia photographed it and discovered that the image was actually a negative. The growing body of scientific data appeared to have supported a conclusion that the cloth once wrapped a corpse. Yet, if the date is 1260-1390, we should expect that the Shroud is actually a painting and, indeed, this is the conclusion which Dr. Walter C. McCrone of McCrone Research Institute in Chicago reached as early as 1979. ("Light Microscopical Study of the Turin 'Shroud'" I & II, THE MICROSCOPE 28, 1981, pp. 1-13; "Light-Microscopical Study of the Turin 'Shroud'" III, THE MICROSCOPE 29, 1981, pp. 19-38).

But the Shroud is anything but simple. Unfortunately, Dr. McCrone's conclusions are seriously questioned by other investigators who believe that the larger body of data support the hypothesis of the presence of a corpse in the cloth at one time. Dr. McCrone's entire work was based upon STURP's sticky-tapes, and it is now recognized by many that it is extremely difficult to determine from the tapes exactly what had once been loose on the Shroud and what had once adhered to it.

The question is important. More than 52 copies of the Shroud were painted by artists over the centuries and these were laid down on the original cloth. (L. Fossati, "Copies of the Holy Shroud": Part I, SHROUD SPECTRUM INTERNATIONAL, no. 12, Sept. 1984, pp. 7-23; idem, Pt. 2, SSI no. 13, Dec. 1984, pp. 23-39). Unquestionably, artist pigments must have been transferred back to the original from these copies, and the distribution of such contaminants must have been statistically significant in the image areas of the Shroud. For this reason the proposal that the image on the Shroud was painted needs further research to verify it.

On the other hand, if a corpse was actually once wrapped in the cloth we have a serious problem. Placing the Shroud in the 14th century puts it about 1000 years removed from the time when crucifixion was practiced. Moreover, if we accept that the Shroud is an artistic production, as Dr. McCrone believes, we must then discover how this artist became so familiar with crucifixion and all the intimate and highly detailed medical features associated with it. By implication, the artist must have experimented again and again with living victims before he perfected his technique.

Using Ockham's Razor, it is simpler to place the Shroud back in a time when crucifixion was practiced—sometime between the 4th century B.C. and the 7th century A.D. Are there cogent reasons, therefore, to doubt the radiocarbon testing results?

Robert de Clari, writing of the Fourth Crusade, tells of seeing a cloth alleged to have been the Shroud, which was hanging from the chapel of My Lady of Blachernae in

(Cont'd on p. 6)

Constantinople, on which appeared the "figure of Our Lord." (Quoted from Ian Wilson, *THE SHROUD OF TURIN: THE BURIAL CLOTH OF JESUS CHRIST?* Doubleday, 1978, p.145). Unfortunately, there are no further details in de Clari's writing to explicitly tie the Shroud of Turin to the cloth which de Clari saw. But if they are the same then it would place the Shroud in a Byzantine (hence Eastern) context.

However, there is a most interesting document known as the Hungarian Pray Manuscript which is firmly dated to 1192-1195. An artist has presented us with his interpretation of the burial of Jesus in the Gospels which contains, in two registers, some very specific details which lead us to believe that the Shroud was definitely in Constantinople. In the upper register Jesus' body lies naked on a length of cloth similar to the Shroud and, as on the Shroud, his hands are crossed over his loins. In the lower register the resurrection has already occurred. An angel sits at the left end of a bench which has been decorated with small crosses by the artist to show that the Crucified once lay there. The three women on the right have come to complete the burial of Jesus. The Gospels tell us of two artifacts in the tomb: the cloth which wrapped Jesus' body and the cloth which went around his head. The artist has naturally depicted the face cloth as the smaller of the two; it is lying on top of the larger cloth. The latter is depicted with a peculiar stepped pyramidal pattern. We believe this is the artist's attempt to show the 3:1 twill herringbone pattern.

By itself this is not conclusive evidence to show that the artist had the Shroud in mind. What does convince us, however, are four tiny circles drawn on the cloth which were noted a few years ago by the French scholar, Fr. A. M. Dubarle, O.P. He suggested that these four tiny circles were actually the "L-shaped burns" which are still seen today on the Shroud from a fire pre-dating the fire of 1532 and recorded on an artist's rendition of the Shroud drawn in the year 1516. All these features (the burn holes, the herringbone pattern, the crossed hands, the naked body of the Lord lying on a length of cloth similar to the Shroud) argue that the Shroud was indeed in Constantinople when a pilgrim artist saw it and recorded it from memory in the Hungarian Pray manuscript. (The information on Fr. Dubarle's interpretation of the Hungarian Pray Manuscript is not available in English - the comments provided here about the "L-shaped burn holes" are through private communication channels).

Critics have made a case against the antiquity of the Shroud by harking to the "missing 1300 years". In 1978 Ian Wilson provided an explanation for this by suggesting that in the earlier years the Shroud was actually the "Image of Edessa" or the "mandylion" of which literature contains scores of references. (Ian Wilson, *op. cit. passim*). The problem there, critics pointed out, was that the "Image of Edessa" or "mandylion" is seen as a picture of the face

only, not the whole body. However, Prof. Dr. Gino Zaninotto of Rome, searching through the Vatican archives, has discovered Greek manuscript 511, a letter of Gregory the archdeacon and referendarius who witnessed the bringing of the Image of Edessa to Constantinople in A.D. 944. Although a definitive translation of this manuscript is not yet available in English, it is interesting to note that there is clear reference not only to the face but also to the wound in the side and to the fingers. It seems likely, then, that the archdeacon Gregory could see a large portion of a frontal image which fits the description of the Shroud and demonstrates that Wilson's reconstruction may not be far off track. (See provisionally G. Zaninotto, "Una Conferma dell'Identita tra l'Immagine Edessena e La Sindone?", *COLLEGAMENTO PRO SINOONE*, Mar.-Apr. 1988, pp.14-25).

Wilson had thought that the Shroud was thus kept in some kind of grillwork where the Shroud was folded in four and only the face was exposed. With this in mind, it is of no small interest to note here that 88 pollen grains were counted in approximately 2 square centimeters on a dorsal "sidestrip" tape taken in 1978 by Dr. Max Frei, that 163 grains were counted on the same size area on a tape from the left arm, but an astounding ca. 300 grains were counted on a tape taken from near the face in a comparable size area. This implies that the face did indeed receive greater exposure than anywhere else on the Shroud. (The above information is taken from the unpublished microscopy notes of the author of this article. To ensure an accurate count each grain was photographed at 200x as part of the archiving process).

Support for an even older date comes from a Byzantine tremissis in the Wilburn Yarbrough collection dating to ca. A.D. 690. This coin is the first in a series of evolutionary developments which saw the appearance of the bust of Christ on coinage. Introduced by the Emperor Justinian II, this coin shows striking similarities to the face on the Shroud of Turin. There are some 20 different features on this coin which are clearly connected to the Shroud. But one of these, a line connecting the eyebrows to the pupils (there are no eyelids on the tremissis) is exactly matched on the Shroud due to a weaving flaw in the cloth. (P.C. Maloney, "The Shroud's Image and Numismatics in Byzantine Culture," unpublished manuscript).

Thus, in both the Hungarian Pray Manuscript and in the Yarbrough tremissis, the *traits and peculiarities* of the Shroud image and cloth are represented by artists to show that it is highly likely that the Shroud now in Turin was once in a Byzantine context at least as early as the 7th century!

Whenever there is a question about the results of carbon dating one looks at the following:

1. The equipment used (in this case the accelerator mass spectrometer [AMS]).
2. The chemical pretreatment employed-

i.e., the method used for cleaning contamination from the samples.

3. The sample tested.

Current on-going analysis appears to show that the AMS has provided highly precise results. Moreover, all three labs used different methods of pretreatment with closely matching results, hence there is no hint that any modern contamination might have been introduced during cleaning.

There is, on the other hand, very serious reason to be suspicious of the sample itself. This was removed from the so-called "Raes Corner," known at least since 1973 as an area of the Shroud which might once have been subjected to repairs. This corner was also handled very heavily. During 99% of all exhibitions of the Shroud clerics held it up for viewing using the two corners on the same side as the "side-strip" where the sample was taken. Worse yet, when the cloth was folded into 48 layers and stored in the silver reliquary in Chambery, France, this corner lay precisely in the area where the super-heated water settled when the fire was doused to save the Shroud. Silver melts at 960 degrees centigrade so the Shroud must have been subjected to "pressure-cooker conditions" which would have dissolved any contaminants and transported them into the very molecular structure of the flax fibers. In the words of retired British textile technologist John Tyrer, the carbon 14 contents of the Shroud would have been "topped up" and make it appear younger than other evidence suggests it to be.

Science likes controls for testing any given hypothesis. Prior to the April 21, 1988, sample removal it had been urged that more than one area of the Shroud be sampled. This was not permitted. Small pieces of cloth could have been removed from beneath the 1534 patches for carbon dating and this would have provided the needed controls against which the three labs could have compared the date they retrieved for the "Raes' Corner" samples. We urge that this must yet be done so that science will have that point of comparison.

If the Shroud is truly older than the carbon dates indicate no one yet knows why such a date was obtained. Most recently Dr. Thomas J. Phillips, formerly at Harvard University's High Energy Physics Laboratory and now at Fermilab in Batavia, IL, has proposed another intriguing line of exploration. What if the Shroud really is nearly 2000 years old and present at the resurrection, would it not be possible that during this unique event - an event which science cannot examine - the Shroud might have been bombarded with neutrons? If so then might it not have been possible that some of these neutrons were captured by carbon 13 to become carbon 14 thus raising the amount of carbon 14 in the cloth making it appear to be younger than it actually is? The suggestion is testable. (NATURE, Vol. 337, Feb. 16, 1989, p.594).

While we do not yet have the answers to all these questions, research continues and new tests are being proposed and requested to elucidate the mysteries surrounding the Shroud of Turin.

Science can never prove that the Shroud is the Shroud of Christ. But it *can build* a case that is either consistent with that belief or it can poke holes in it. Until we have pursued all paths science can offer we cannot say that the carbon date provides "conclusive evidence that the linen of the Shroud of Turin is mediaeval."

Carbon Date (cont'd from p. 1)

edge that numerous facets of the above points deserve further careful-examination, we would like to make the following observations about the carbon dating test just completed:

1. No detailed and extensive chemistry has ever been conducted to determine the kinds of contaminants present on the Shroud, methods of such detection, and methods of their removal complete with scientific controls for same.
2. There was no peer review by the radiocarbon community of the three-lab plan prior to the radiocarbon tests.
3. There was no random selection of sample sites; at least two other sites ought to have been carbon dated, and such sample as was tested came from the single most contaminated place on the Shroud and may represent an anomaly; sites beneath the patches, effectively protected since April 17, 1534, were by-passed for testing.
4. There was no blind testing; each test sample was delivered to each laboratory completely intact, and each control cloth identified as to the century within which its date should fall.

Because the carbon date does not dovetail with the older data we believe that further scientific investigation is called for. Either the Shroud of Turin must be explained in terms of the 14th century date (in which case scientific investigation should be able to discover conclusive evidence that it was a painting) or a new investigation should uncover the reasons for the carbon 14 results obtained. Therefore, it is currently the position of the Association of Scientists and Scholars International for the Shroud of Turin, Ltd. that

1. Extensive scientific testing should be conducted to probe the nature of the cloth including the possibility that some historical factor might have affected the outcome of the dating. Is it possible that some feature about the Shroud or the place from which the sample was taken has affected the outcome? There should be a complete investigation of the possible contaminants on the Shroud and these should be documented. Controlled testing should be conducted to establish a procedure for guaranteeing their complete removal during pre-treatment.

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2. We are pleased to learn that further investigations into the nature of the image will be permitted. Other methods used to date the cloth should be examined more closely. For example, Prof. Dr. Werner Bulst, S.J. of Darmstadt, West Germany, suggests attempting to determine the presence of copper particles in the eye area where previous researchers have indicated the presence of a coin dating to the time of Pontius Pilate.

3. We urge that a meeting of the scientists recommended in our private communication of March, 1988, be convened to discuss with all participants the various facets of the carbon test including a full evaluation of the results after these are formally published.

4. We urge that a new radiocarbon test eventually be considered, guaranteed by rigorous scientific controls, by taking at least two additional samples at random elsewhere from the Shroud.

When one body of scientific data conflicts with another it is the domain of science to address the issues and resolve them with proper testing and peer review. We encourage this process to become a public one so that Shroud research can become a truly reviewed field of endeavor.

Finally, we conclude that given the questions about contamination and the nature of the sample itself, and the lack of other controls from the Shroud, a date for the Shroud in the medieval time frame is not yet scientifically tenable.

About ASSIST

The Association of Scientists and Scholars International for the Shroud of Turin, Ltd. (ASSIST) is an organization dedicated to promoting the continuing scientific study of the Shroud of Turin. ASSIST is composed of three divisions: The first is the ASSIST Investigations Group which consists of researchers who are actively pursuing original research -- especially directly on the Shroud or on samples taken from it, or who apply their special field of expertise in pursuing research projects in libraries or other special facilities around the world. Members represent fields including forensic anthropology, archaeology, art history and analysis, botany, chemistry (iron oxides, textile, blood), computer applications, geology, history, holography, forensic medicine, micrography, numismatics, palynology, photography, physics, sindonology, textile technology, and many others. A second division, ASSIST Associates, is composed of individuals who support the research functions of ASSIST in such fields as, for example, data and word processing, bibliographics research, clerical and archival assistance, translation, etc. The third division is Friends of Shroud Research (FOSR) composed of persons (lay and professional) interested in Shroud research who are helping in

some way or another with the financial support of the ASSIST organization in its technical research and daily operational expenses. ASSIST was organized on April 7, 1983 by a group of individuals who wished to see the peer review dimension brought to the field of Sindonology (study of the Shroud.) The acronym "ASSIST" reflects the group's philosophy in collaborating and cooperating with members of other Shroud research organizations around the world. ASSIST functions to support and encourage the on-going scientific and historical study of the Shroud and represent a comprehensive view of proposals for future investigations in Turin and in lab and library and to publish these research findings for peer review and public comment. Because of ASSIST's emphasis on the need for continuing research, the organization takes no official position regarding the issues surrounding the authenticity of the Shroud except to say that the current C14 testing results do not scientifically decide the medieval date suggested by those findings.

News and Notes:

Conferences on the Shroud of Turin

1. The Second Annual Humanities, Science and Technology Conference (with a section entitled "Carbon Dating Controversy: The Shroud of Turin") was held at Ferris State University in Big Rapids, Michigan, on April 7-8. Dr. Daniel C. Scavone, Fr. Albert R. Dreisbach, Jr., and Mr. Paul C. Maloney presented papers.

2. An international Conference on the Shroud and Iconography was held in Bologna, Italy, on May 6-7. Dr. Alan Whanger presented "Shroud-Derived Images on Early Icons and Coins as Demonstrated in Detail by the Polarized Image Overlay Technique." Fr. Dreisbach presented a paper on behalf of Mr. Paul C. Maloney entitled "The Shroud of Turin: Traits and Peculiarities of Image and Cloth Preserved in Historical Sources with special examination of the Yarbrough Tremissis."

3. There will be a conference at the Centre Chaillot-Galliera, Paris, France, on Sept. 7-8 entitled "The Paris Symposium on the Shroud of Turin." Those wishing further information may contact:

Msr. Andre van Cauwenberghe
9, rue de l'Aqueduc
75010 Paris, France

Paul Maloney will be presenting findings relevant to the pollen studies of the Max Frei Collection.

Recently Published

Dr. Frederick T. Zugibe, "Two Questions About Crucifixion: Does the Victim Die of Asphyxiation? Would Nails in the Hands Hold the Weight of the Body?," Bible Review, Vol. 5, No. 2, (April, 1989), p.34.

In this article, Dr. Zugibe presents the results of anatomical and physiological research on the effects of crucifixion.