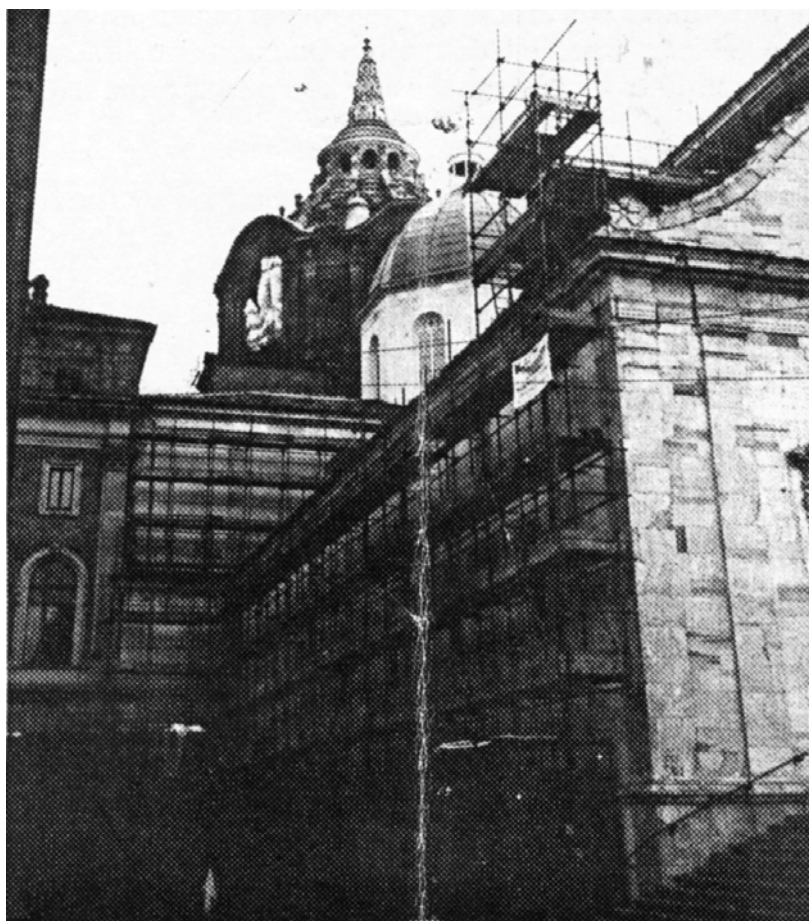




A NEWSLETTER ABOUT RESEARCH ON THE HOLY SHROUD OF TURIN
The most frequent Shroud-related publication in the English language
published in Australia for Worldwide circulation since 1980
edited by REX MORGAN, Author of several books on the Shroud

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The scaffolded wall of St John's Cathedral, Turin. At left blackened windows of part of the Savoy Palace and at top the cupola of the Guarini Chapel of the Holy Shroud almost destroyed in the fire of April 1997

[Pic: Rex Morgan, May 1997]

EDITORIAL

This issue brings a reprint of an important publication by the French CIELT group of the protocols they have developed for the appraisal of the Holy Shroud. Preservation and conservation are going to be the major issue during Shroud Year 1998. We already know that the authorities are not interested in allowing any further testing on the Shroud on account of the extraordinary politicking, sensationalism, subterfuge, profiteering and unprofessionalism which has surrounded tests themselves and testing programmes in recent years. Thus most Shroud researchers have continued to concentrate on ideas for conservation and on studying the wealth of information about its history and characteristics in their ongoing quest to discover the truth about this object.

There is also a most important article on the Oviedo Sudarium by Spain based researcher Marc Guscini. The Oviedo cloth is one of those amazing pieces of probable corroborating evidence for the age and perhaps the authenticity of the Shroud.

And by the time I prepare the next issue of *Shroud News* for April 1998 I shall, God willing, have been to the opening of the 1998 Exposition of the Shroud and will be able to report on that historic occasion. I greatly look forward to the opportunity of retracing those dramatic steps I took in 1978 which led me to twenty years of fascination, research and reporting, the intensity of which has not diminished over the years but rather has increased. Since that time I have been privileged to come to know most of the world's researchers and authors on the subject. Many have died during that twenty years but fortunately many are still alive and their ranks are being replenished by the arrival of younger men and women who share the terminal condition of Sindonology.

I hope that I shall have the opportunity during Shroud Year 1998 to meet many of the experts again as they and I journey to Turin and despite the expected differences of opinion, despite the little scandals and personal vendettas, despite the individual grandstandings and occasional pious arrogances, I hope that we shall nonetheless meet in love and peace and fraternity, drawn together by our thirst for knowledge and understanding and by the timeless mystique of one of the most remarkable and as yet inexplicable challenges of all time: the Holy Shroud of Turin.

REX MORGAN

THE SUDARIUM OF OVIEDO - ITS HISTORY AND RELATIONSHIP TO THE SHROUD OF TURIN

- Marc Guscín, Spain

Philological Preamble

Many different meanings have been read into the words used by John to describe the burial cloths. One source of confusion which should never be is the actual word "soudarion" or sudarium. Various people have interpreted this as being some kind of chin band, tied around the face to keep the mouth closed. There can be no doubt or hesitation in refuting this theory, as the Greek word does not support this translation. Even if it did, a chin band for such a purpose would not have been necessary, as the mouth would have remained closed due to rigor mortis.

The main argument used to prove the existence of a chin band is the fact that there is an area without image around the face on the Shroud. This was one of the questions put to John Jackson and Alan Whanger in an interview held in Madrid on 18 November 1996 by Anable Docal, a member of the Spanish Centre for Sindonology. Dr Whanger agreed with this theory, saying that a chin band would fit perfectly into this imageless area. Dr Jackson had other ideas, stating that a chin band would also have covered the hair which is, however, visible.

Whether or not there was a chin band is really quite irrelevant - the blank area around the face does not prove that there was, although there is nothing definite to prove that there was not. In either case such a thing would not be called a "soudarion" and is certainly not what John was referring to.

The chin band theory was upheld by Bernard Ribay and Robert Babinet in the International Symposium held by CIELT in Rome in 1993. In the symposium organised in Oviedo a year later, Enrique Lopez Fernandez agreed that the sudarium was not a chin band, but unfortunately he went on to claim that it was in fact a turban worn by Jesus and ignored by the Romans as it was worthless. This is a purely personal idea that lacks all historical justification and credentials.

Much more difficult to explain are John's words about the position of the sudarium in the tomb - *eis hena topon*. The phrase is ambiguous and open to various interpretations. The three Bible translations that are generally accepted as the most accurate and meaningful are the *New Jerusalem Bible*, the *Good News Bible* and the *New International Version*, and all three of these interpret the phrase as meaning "in a place by itself, i.e., separate from the other funeral cloths.

THE SUDARIUM OF OVIEDO (cont'd)

Another possible interpretation is "in the same place". This can be paralleled in other Septuagint passages, e.g. Ecclesiastes 3:20, where the same words (albeit in a different order) mean "to one and the same place". Ribay and Babinet adopt this theory, extending it to mean that the sudarium was lying in exactly the same place as the other funeral cloths, i.e., inside the Shroud. This by itself could be possible were it not for the rest of the verse, where we are specifically told that the sudarium was separate from the other cloths. This is the only acceptable translation of the Greek "*choris*", although Ribay and Babinet go to great extremes to try and show that "*choris*" means "rolled up in a different way from the other cloths". Such complication is both unnecessary and incorrect.

Luis Garcia Garcia, speaking at the Oviedo Symposium, accepts the interpretation "in the same place", but understands this as meaning the same place where the cloth was left when Jesus was buried, i.e., to one side. This could be possible. What is not possible is that John is saying the sudarium was inside the Shroud.

Physical description and History

One of the relics held by the cathedral in the town of Oviedo, in the north of Spain, is a piece of cloth measuring 84 x 53 cm. There is no image on this cloth. Only stains are visible to the naked eye, although the microscope reveals more. The remarkable thing about this cloth and the stains is that both tradition and the studies carried out claim that the cloth was used to cover and clean the face of Jesus after the crucifixion. We are going to look into and present these claims.

Such a cloth is known to have existed from the gospel of John, chapter 20, verses 6 and 7. These verses read as follows, "Simon Peter, following him, also came up, went into the tomb, saw the linen cloth lying on the ground, and also the cloth that had been over his head; this was not with the linen cloth but rolled up in a place by itself". John clearly differentiates between this smaller face cloth, the sudarium, and the linen which had wrapped the body.

The history of the sudarium is well documented, and much more straightforward than that of the Shroud. The information comes from the twelfth century bishop in Oviedo, Pelagius (Pelayo), whose historical works are the *Book of the Testaments of Oviedo*, and the *Chronicon Regum Legionensium*.

THE SUDARIUM OF OVIEDO (cont'd)

According to this history, the sudarium was in Palestine until shortly before the year 614, when Jerusalem was attacked and conquered by Chosroes II, king of Persia from 590 to 628. It was taken away to avoid destruction in the invasion, first to Alexandria by the presbyter Philip, then across the north of Africa when Chosroes conquered Alexandria in 616. The sudarium entered Spain at Cartagena, along with people who were fleeing from the Persians. The bishop of Beija, Fulgentius, welcomed the refugees and the relics, and surrendered the chest, or ark, to Leandro, bishop of Seville. He took it to Seville where it spent some years.

Saint Isidore was later bishop of Seville, and teacher of Saint Ildefonso, who was in turn appointed bishop of Toledo. When he left Seville to take up his post there, he took the chest with him. It stayed in Toledo until the year 718. It was then taken further north to avoid destruction at the hands of the Muslims who conquered the majority of the Iberian Peninsula at the beginning of the eighth century, It was first kept in a cave which is now called Monsacro, ten kilometres from Oviedo. King Alfonso II had a special chapel built for the chest, called the "Camara Santa", later incorporated into the cathedral.

The key date in the history of the sudarium is 14 March 1075, when the chest was officially opened in the presence of King Alfonso VI, his sister Dofia Urraca, and Rodrigo Diaz de Vivar, better known as El Cid. A list was made of the relics which were in the chest, and which included the sudarium. In the year 1113, the chest was covered with silver plating, on which there is an inscription inviting all Christians to venerate this relic that contains the holy blood. The sudarium has been kept in the cathedral at Oviedo ever since.

Analysis of the Sudarium

All the credit for the investigations carried out on the sudarium must go to the Investigation Team of the Spanish Centre for Sindonology, under the leadership of Guillermo Heras. The medical part of the investigation was done by Dr Jose Villalain.

The stains in the sudarium show that when the cloth was placed on the dead man's face, it was folded over, although not in the middle. Counting both sides of the cloth, there is therefore a fourfold stain in a logical order of decreasing intensity.

THE SUDARIUM OF OVIEDO (cont'd)

The stains consist of one part blood and six parts fluid from a pulmonary oedema. This fluid collects in the lungs when a crucified person dies of asphyxiation, and if the body subsequently suffers jolting movements, can come out through the nostrils. These are in fact the main stains visible on the sudarium.

These stains in the nasal area are also superimposed on each other, with the different outlines clearly visible. This means that the first stain had already dried when the cloth was stained for the second time, and so on.

Dr Villalain had a special model made to reconstruct the process of staining and drying, and was thus able to calculate the time that elapsed between the formation of each stain. He conducted more than 6,000 experimental stains on linen.

The cloth was not wrapped entirely round the head because the right cheek was almost touching the right shoulder. This suggests that the sudarium was put into place while the body was still on the cross. The second stain was made about an hour later, when the body was taken down. The third stain was made when the body was lifted from the ground about forty five minutes later. The body was lying at the foot of the cross for about forty five minutes before being buried. The marks of the fingers that held the cloth to the nose are visible on the cloth.

The experiments with the model and the study of the stains also show that when the man died, he was in an upright position with his head tilted seventy degrees forward and twenty degrees to the right. This position further suggests that the man whose face the sudarium had covered had been crucified.

There are smaller bloodstains at the side of the main group. It would appear that the sudarium was pinned to the back of the dead man's head, and that these spots of blood were from small sharp objects, which would logically be the thorns that caused this type of injury all over Jesus's head.

The medical studies are not the only ones that have been carried out on the sudarium. Dr Max Frei analysed pollen samples taken from the sudarium, and found species typical of Oviedo, Toledo, North Africa and Jerusalem. This confirms the historical route described earlier. There was nothing relating the cloth to Constantinople, France, Italy or any other country in Europe.

THE SUDARIUM OF OVIEDO (cont'd)

In 1994, an international congress was held in Oviedo, where various papers were presented about the sudarium. Dr Frei's work with pollen was confirmed, and enlarged on. Species of pollen called "quercus caliprimus" and "Tamaris" were found, both of which are limited to the area of Palestine.

The stains were also studied from the point of view of anthropology. The conclusion was that the face that had been in contact with the sudarium had typically Jewish features, a prominent nose and pronounced cheek bones.

Finally, the very fact that the cloth was kept at all is a sign of its authenticity, as it had no monetary or artistic value at all. All the studies carried out so far point in one direction, with nothing to suggest the contrary - the sudarium was used to cover the head of the dead body of Jesus of Nazareth from when he was taken down from the cross until, he was buried.

Coincidence with the Shroud

The sudarium alone has revealed sufficient information to suggest that it was in contact with the face of Jesus after the crucifixion. However, the really fascinating evidence comes to light when this cloth is compared to the Shroud of Turin.

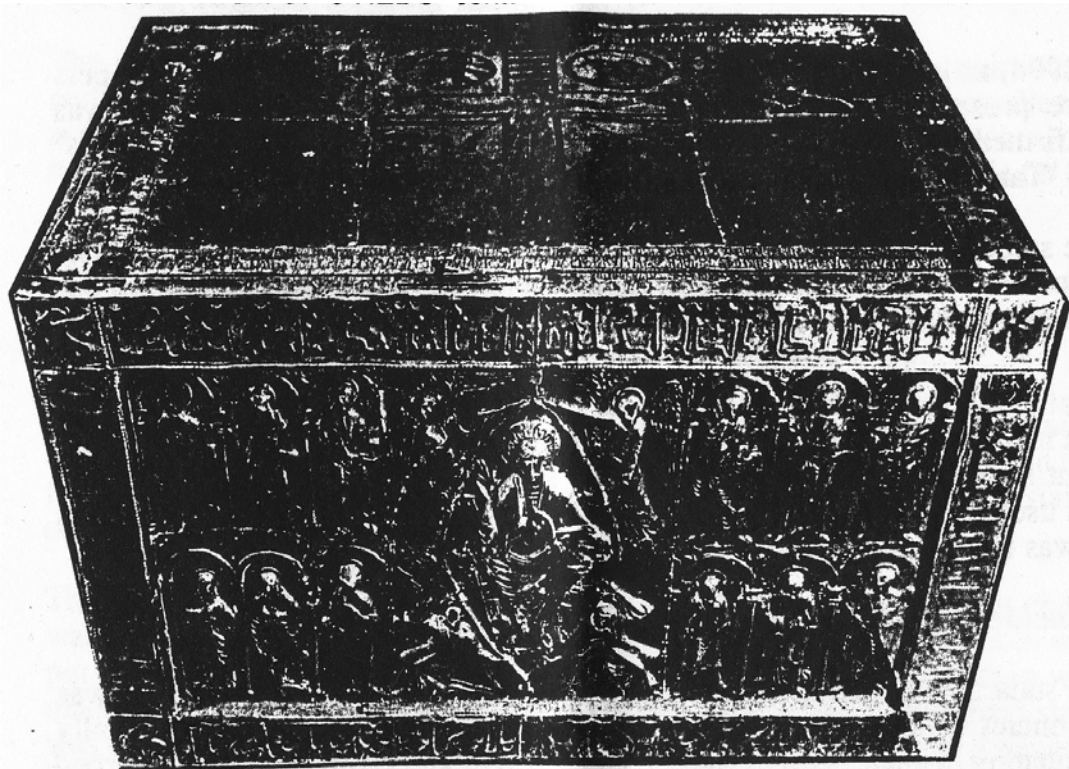
The first and most obvious coincidence is that the blood on both cloths belongs to the same blood group, namely AB.

The length of the nose through which the pleural oedema fluid came onto the sudarium has been calculated at eight centimetres, just over three inches. This is exactly the same length as the nose on the image of the Shroud.

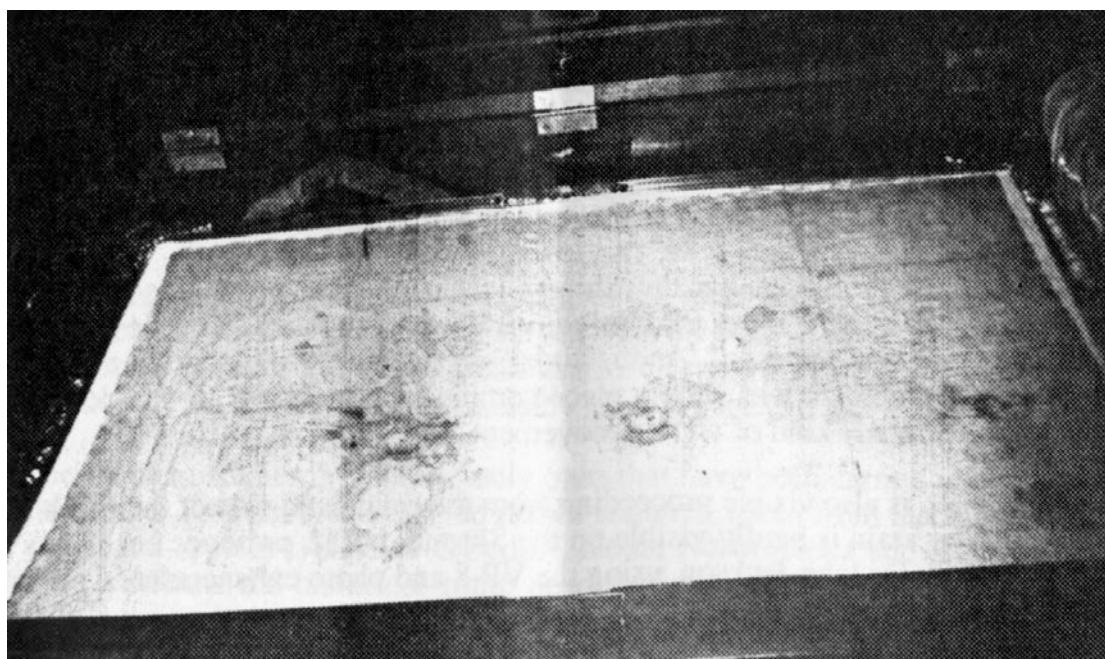
If the face of the image on the Shroud is placed over the stains on the sudarium, perhaps the most obvious coincidence is the exact fit of the stains with the beard on the face. As the sudarium was used to clean the man's face, it appears that it was simply placed on the face to absorb all the blood, but not used in any kind of wiping movement.

A small stain is also visible proceeding from the right hand side of the man's mouth. This stain is hardly visible on the Shroud, but its presence has been confirmed by Dr John Jackson, using the VP-8 and photo enhancements.

THE SUDARIUM OF OVIEDO (cont'd)



The Camara Santa in Oviedo. The silver covered casket containing the Sudarium [Pic: from Giulo Ricci, *L'Uomo della Sindone e Gesu*. 1985]



The Sudarium of Oviedo [Pic: Michael Minor 1994]

THE SUDARIUM OF OVIEDO (cont'd)

The thorn wounds on the nape of the neck also coincide perfectly with the blood stains on the Shroud.

Dr Alan Whanger applied the Polarized Image Overlay Technique to the sudarium, comparing it to the image and blood stains on the Shroud. The frontal stains on the sudarium show seventy points of congruence with the Shroud, and the rear side shows fifty. The only possible conclusion is that the Oviedo sudarium covered the same face as the Turin Shroud.

The Temporal Aspect - The sudarium before the Shroud

The sudarium has no image, and none of the facial stains of dried or drying blood visible on the Shroud, especially the stain on the forehead in the shape of an inverted three. The stains were made by a less viscous mixture.

This, together with the fact that the fingers which held the sudarium to Jesus's nose have left their mark, point to a short temporal use of the cloth and eliminate the possibility of its contact with the body after burial.

Jewish tradition demands that if the face of a dead person was in any way disfigured, it should be covered with a cloth to avoid people seeing this unpleasant sight. This would certainly have been the case with Jesus, whose face was covered in blood from the crown of thorns and swollen from falling and being struck.

It seems that the sudarium was first used before the dead body was taken down from the cross and discarded when it was buried. This fits in with what we learn from John's gospel, which tells us that the sudarium was rolled up in a place by itself.

Conclusions

The studies on the sudarium and the comparison of this cloth with the Shroud are just one of the many branches of science which point to both having covered the dead body of Jesus. The history of the Oviedo cloth is well documented, and the conclusions of this for the dating of the Shroud need no further comment.

[For extensive earlier comparison work on photos of the Sudarium and the Shroud see Giulio Ricci: *L'Uomo della Sindone e Gesu* (1985). Further reports in *Shroud News* No 86 (December 1994) - Ed]

SHROUD RESEARCH REVEALS INTACT MUSCLE FRAGMENT

A report on the work of Dr Eugenia Nitowski reprinted from *Intermountain Catholic* 21 March 1997

- **Barbara Stinson Lee, USA**

SALT LAKE CITY -- As modern technology is applied to old mysteries, studies of the Shroud of Turin, believed by many people to be the actual burial cloth of Christ, continues, even as the image itself fades. Now, it seems, scientists have determined that within area 3BB of the shroud, a view of the back of a man who was crucified, is a microscopic muscle fragment. Evidence suggests that the ancient piece of cloth is not only authentic, but that it holds an actual piece of the human body of Christ.

Archaeologist and Scholar Dr. Eugenia Nitowski has spent the better part of her life working to document the authenticity of the Shroud of Turin. Convinced beyond a doubt that the 14-foot-long-by-three-feet-wide piece of cloth is indeed the burial cloth of Jesus, Dr. Nitowski, despite poor health and little funding, continues her research.

"I am certain of the shroud's authenticity," Dr. Nitowski said in a March 6 interview with the *Intermountain Catholic*. "The weight of the evidence is so strong."

The archaeologist, who said her study of the shroud is fuelled by her love for God, was converted to Catholicism within the course of her shroud studies. She received her Ph.D. from the University of Notre Dame, where she kept 77 skulls in her dorm room for continued study.

"I never locked my door," she said. "No one wanted to come in."

INTACT MUSCLE FRAGMENT (cont'd)

Dr. Nitowski's continued work and her growing confidence in the authenticity of the shroud eventually drew her to the Carmel of the Immaculate Heart of Mary in Holladay, where she lived a cloistered life. Now recovering from two massive strokes she suffered in 1991 after being fired upon by a sniper during one of her archaeological digs in 1989, she finds herself faced with restudying research, even her own.

Her 1979 doctoral thesis was a reconstruction of Christ's tomb for which she sought out rare, rolling stone tombs throughout the Jerusalem countryside. When she began her thesis research there were only four extant tombs like the one in which Joseph of Arimathea gave over to the burial of Jesus Christ. When she was finished with her studies, there were 22.

Her efforts have taken her to countries all over the globe. From Salt Lake City to Turin, Italy, where the shroud has been stored in a cathedral since 1578, to Jerusalem and points in between. They have included detailed studies of microscopic bits of pollen found on the shroud, definition studies of the image itself, classes in forensic pathology and embalming, and a 1986 experiment in which an image much like the one found on the shroud was duplicated with some success.

Dr. Nitowski is one of only a few scientists whose research has concentrated, not so much on the cloth itself, but on the environment in which the man of the shroud was buried and the significant physical details of his death.

INTACT MUSCLE FRAGMENT (cont'd)

"After his cruel whipping, his crowning with thorns, and his barefoot walk to the place of his crucifixion, Jesus was very close to death by heatstroke," Dr. Nitowski said. "He was bleeding and sweating profusely. Medical science bears out that the body temperature of a person dying of heatstroke can rise to up to 108 degrees, and at the moment of death can rise another nine or ten degrees in what is called a postmortem fever or caloridity."

Dr. Nitowski's theory is that the intense heat of the body of Jesus and its chemical changes, the rapidity with which he had to be buried according Jewish custom, and the environment of the tomb itself led to the production of the image on the cloth, which took place, not on the cloth surface, but in the actual cellulose of its fiber. In a 1986 experiment, in a Jerusalem tomb of the same type and structure as the one believed to be Jesus' tomb, Dr. Nitowski, with a team of scientists forming the Environmental Study of the Shroud of Jerusalem, using a medical 'mannequin filled with water at 119 degrees, created a similar image.

"No one working on the shroud had ever looked at it from the standpoint of the tomb," she said. "I had excavated 17 tombs, and I continued my studies.

In a video presentation made during her 1986 experiments, Dr. Nitowski is heard saying that any study of the shroud, "should have started here -- in a tomb."

But it was just that study that might have eclipsed an even greater find, she said, the tiny piece of muscle which had been identified by Nitowski and others in 1978.

Citing the work of Kathleen Kenyon, who during her excavation of Middle-Bronze Age tombs dating as far back as 1850 to 1550 B.C., found intact meat left in the tomb as food for the dead to help them in the next life, Dr. Nitowski said it is entirely possible that organic material could be intact and identifiable on the shroud, which is 1500 years younger than Kenyon's samples.

INTACT MUSCLE FRAGMENT (cont'd)

Dr. Nitowski's studies of the actual shroud show that the man who was eventually wrapped in, it had been brutally whipped from the shoulders to the knees with a scourge made of leather with lead pieces implanted in the ends. He wore a full cap of thorns, and that human hair, flesh, and muscle were torn away during the whipping. "The shroud is a testament to the agony of the man of the shroud," Dr. Nitowski said.

Although under normal conditions, a blood clot with its attending muscle fragment dried on the skin, will not transfer to cloth, she said, "With heatstroke, coagulation of the blood breaks down, allowing a transfer of the blood to the cloth."

Additionally, the shroud shows no signs of physical decomposition of the body.

"The body left the shroud within 36 hours of death," Dr. Nitowski said.

Only continued study of the shroud will bring the rest of the world to the degree of certainty of authenticity as that of Dr. Nitowski. Today's technology, though, may not be moving fast enough for the image on the shroud.

The Turin cloth, a linen of a tightly woven hounds tooth design, has suffered much over the centuries. When first found it was displayed outdoors, subject to the sun's damaging ultraviolet rays and the weather. It has been damaged by fire, and its location was unknown for a number of years. As it is, the image is fading in some places, darkening in others, and changing. It will be discernible only for another 20 to 25 years unless something is done to preserve it, said Dr. Nitowski.

Erika W. Martinez contributed to this story.

This article is reprinted from *Revue Internationale du Linceul de Turin* (no 6) of the French based CIELT

Principles and rules for the expert's appraisal applied to the Turin Shroud

In issue No. 19/20 dated July/August 1991 of its Monthly Newsletter, the CIELT published 8 pages of a study. Raymond Souverain set out the principles and rules of an expert's appraisal and their application in the case of the Turin Shroud. This study is again presented below, but in more condensed and updated form.

Foreword

Throughout the world, the Shroud still attracts much interest as an archaeological object. In his letter dated April 27, 1993 addressed to the CIELT prior to the opening of the Rome Symposium (cf. Proceedings p. 405), Cardinal Saldarini indicated that the Church was not opposed to new examinations but that further development was needed. Then, on October 30, 1994, he launched the opening of a data bank including the past and the future. It is managed by the "Centro Internazionale di Sindonologia" in Turin. An expert's appraisal means precisely the principles and procedures which after much consideration have been established in order to obtain the surest guarantees of veracity, and have therefore undergone the desired development. Hence the necessity of recalling the importance of the expert's appraisal. It is a guide for the necessary examinations, past and future.

PRINCIPLES AND RULES OF THE EXPERT'S APPRAISAL

1.1 - Definition of the expert's appraisal

The expert's appraisal involves a set of operations enabling a qualified investigator to formulate a technical opinion on a material, a product or an object for which he is consulted on the subject of criteria such as composition, properties, qualities, defects, storage, compliance, authenticity, age, value.

1.2 - Types of expert's appraisal

The expert's appraisal can be private, amicable or judicial.

- The expert's appraisal is private if it meets a simple request for information, e.g. the owner of a painting which needs to be identified goes and asks an art gallery, which turns to an expert for advice.
- The expert's appraisal is amicable if two parties agree to entrust an arbiter the decision on a question that is common to them both, the arbiter having to consult an expert, e.g., 2 individuals have inherited a stamp collection and agree to ask a solicitor to see to the sharing out of the stamps following expert advice.
- The expert's appraisal is judicial if it is a court (commercial, civil, penal) which must make a ruling in a litigation, the court needing clarification on a technical aspect through an

PRINCIPLES FOR APPRAISAL (France) (cont'd)

expert's appraisal. In this case, in most countries, there are procedural codes which set very precise rules for the expert's appraisal. These codes are a source of precious information since they determine the route to be followed in order to demonstrate a technical truth.

It should be noted that the expert's appraisal is only of relative value, it is merely an element of evaluation in a judgment which will have to take into account events, circumstances, persons involved, social effects, etc, A court is not bound by the conclusions of an expert's appraisal.

1.3 - Summary of the French code for a penal procedure

See articles 156 and the following. Power of jurisdiction to order an expert's appraisal choice of capacitated experts - mission given to the experts - conditions of sampling and of examination procedure - compiling of an expert's report which is presented to the court Clerk's Office with the remaining samples - presenting of the conclusions of the expert's appraisal to the interested parties - possibility for the parties to request a second expert's appraisal - finally, judgment of the Court. If there is an expert's appraisal in the case of a prosecution for fraud, the conditions for the expert's appraisal are more stringent, in particular as concerns the taking of representative samples of the batch, the compiling of sampling reports, the putting under seal, the designation of the experts, the choice of analytical methods, the establishing of conclusions.

1.4 - Summary of the French code for a civil or commercial procedure

The rules for an expert's appraisal are prescribed in articles 143, 232 et sq., 264 et sq. They are

rather similar to the previous rules but are simpler. There is only one expert instead of two and his role is restricted to providing information on the technical aspects of the litigation.

1.5 - The four phases of a bio-physico-chemical expert's appraisal

The four phases of the expert's appraisal are the preliminary specific evaluation - selection and taking of samples - analysis - conclusions

1.5.1 Preliminary specific evaluation

It is necessary to know exactly what is to be examined, what criteria are to be measured, the means employed. This therefore requires careful observation of the material that is to undergo expert appraisal and consideration of the methods to be implemented, which must be tried and tested methods.

1.5.2 Selection and taking of samples

Sample selection is the control method by sample, that is, by the making of a small portion which will be representative of the product concerned and which will undergo analysis. The material to be evaluated, e.g. a pile of sheets or a piece of cloth, even if it appears homogeneous, is not strictly identical in all its different parts. A given character of the material, e.g. the weight per cm², will present different measurement values depending on the region being examined. Selecting samples on statistical bases makes it possible to obtain a representative sample, within a set confidence interval. If the material is heterogeneous, sample selection must be conducted on several levels, in proportion with the disparities observed. A sample

PRINCIPLES FOR APPRAISAL (France) (cont'd)

selection plan must be established. If in order to evaluate the steel of a ship's hull, a sample is taken only from the edge of a porthole, you cannot say that you know all about the ship's steel. For industrial and commercial materials, where sample selection is of primary importance, there are large manuals of rules to be followed.

Sample taking means what is says, that is, it is how the samples are taken. It is limited to the observation of rules: putting under seal before witnesses, compilation of a report of the operations.

1.5.3 Analysis

The experts receive the samples to be analysed under seal. In their report, they must draw up an inventory and give a description of them in order to prove that they have worked on the product in question. They proceed with the analysis in person (with assistants, if necessary). They use the method imposed by the rules or by commercial agreements. If there is no imposed method, they choose the method from amongst those established by international or national bodies such as the ISO (International Standard Organization), IUPAC (Union Internationale de Chimie Pure et Appliquée), AOAC (Association of Official Analytical Chemists), AFNOR (Association Française de Normalisation), CGDUMA (Commission générale d'Unification des Méthodes d'Analyse) or uncontested methods commended by associations attached to the development of a particular product.

Blind analysis - A laboratory can act as its own control by conducting the analysis of a known control product at the same time as it carries out the analysis of the unknown product. This control is essential when automatic apparatus is involved (e.g. 1 test out of 10 is conducted on a known control). - A laboratory works in double-blind conditions when it analyses the unknown

product and at the same time a similar product which is unknown to it but which is known to the person or body requesting the analysis. The laboratory is therefore being controlled by this person or body.

1.5.4 Establishing conclusions

The experts finally compile a report which details all the operations conducted, the methods used, the results obtained. They answer all questions asked and draw up justified conclusions. The report is limited to questions of a technical order, it formulates no judgment on law. In a judicial case, the report and the objects remaining are presented to the Clerk's Office, which issues a statement reporting this act.

1.6 - International aspect of the expert's appraisal

There are no formal, or written international rules for expert appraisals, which are conducted in accordance with conventional deontology between scientists. Indeed, the scientists are internationally known through their research studies, their publications and their meetings at congresses. The laboratories where these scientists work acquire their reputation by taking part in international chains of analysis. A consensus is formed on what should and should not be done, in line with the principles and rules of expert appraisal mentioned earlier, with a view to research on a technical level of what conforms with the truth.

International chains of analysis. Plurality of laboratories. - When there is simultaneous consultation between several laboratories, it is advisable to refer to standard ISO 5725 dated 1981 - taken up in France by NF X 06-041 dated 1982 - which in 46 pages describes the

PRINCIPLES FOR APPRAISAL (France) (cont'd)

organisation of a trial conducted between laboratories in order to determine the accuracy of a method (close agreement of results). A committee of experts is set up, including a statistician and an executive manager. The committee sets, in detail, all the conditions of operation procedure: in particular, the number and designation of the laboratories - preparation and distribution of samples - number of trials to be conducted - number of significant figures expressing the results. In each laboratory, there is a director in charge and one or more operatives. Each director establishes a full report of the trials and results. The statistical expert conducts an overall statistical analysis in compliance with the outline imposed by the standard. He compiles a report, indicating if there are some laboratories presenting anomalies and what will become of suspect or aberrant results, as well as the possible explanations concerning them. - The committee discusses this report and makes the final decisions of adoption, return for further discussion or rejection.

1.7 - The expert's appraisal can be fallible

The cases are rare, but nonetheless they exist, where the expert's appraisal is made null and void by error or by fraud.

There is error in the expert's appraisal when a second appraisal or an examination demonstrates a fault in evaluation, an error in the method or a fault committed by the operative. In the famous Pont-Saint Esprit toxic bread case, in August 1951, I saw an expert condemned by the court because, through culpable negligence, some samples had been lost and hence the enquiry had been compromised.

There is fraud when the analyst knowingly

fiddles the results. For example, in the United States, there was a huge scandal in 1983 when it was demonstrated that an eminent toxicology laboratory, the Bio-Test Laboratory of Northbrook, was producing invented trials. (*Le Monde*, 23.01.1984). The journal "*Nature*", in April 1989, denounced the fossil frauds of the Director of the Punjab Institute of Palaeontology - A book "*La souris truquée*" by W. Broad and N. Wade (*Le Seuil*, 1987, 282 pages) lists the cases of rigged experiments and results, not to bring discredit on science, but to remind us that there are human weaknesses and that we should remain on our guard.

It is so that expert appraisals retain all their value and to avoid dispute that so many precautions must be taken and that so many formalities must be fulfilled.

APPLICATION OF THE PRINCIPLES AND RULES OF EXPERT APPRAISAL IN THE CASE OF THE TURIN SHROUD

2.1 - Deepening of scientific knowledge about the Shroud

The religious authorities have neither the role nor the capacity to give a verdict on scientific questions. Over the years, there has been growing pressure from public opinion to be informed on this strange cloth bearing an image which is a presence, as Claudel said, the moving, serene and majestic image, of a man who was tortured, crucified. It evokes Christ's Passion in all its details, and it is venerated by many Christians as being inscribed on the Lord's Shroud itself, the Holy Shroud. The Shroud is not an article of faith, and faith has

PRINCIPLES FOR APPRAISAL (France) (cont'd)

no need of a physical representation, of a tangible relic. But if it is highly probable that it is a relic, it is normal to want to know and this reinforces one's inner conviction. Hence the conducting of examinations.

2.2 - Examinations carried out on the Shroud

The Shroud is a fragile archaeological object, which is unique. It belonged to the House of Savoy, which bequeathed it to the Holy See in 1983. The Shroud has been subject to scientific examinations for a century, but it has never undergone an expert's appraisal in the sense that has been described above. The examinations were the following:

- May 1898, photograph taken by Secondo Pia, which triggers the medical studies and the iconographic and historical studies suggested by the photo.
- May 1931, photograph taken by Giuseppe Enrie, continuation of the studies
- June 1969, examination by the special scientific committee designated by Cardinal Pellegrino (colour photos, in UV and IR)
- November 1976, exposition on world television and sample taking by Professor Max Frei (pollen), Professor Raes (textile) and several Italian professors
- October 1978, sample taking of several threads for Professor Bollone (blood analysis), then 5 days of direct examination by 30 American researchers from the STURP (Shroud of Turin Research Project). There have been around 40 subsequent scientific publications. The results were presented on October 10, 1981 at the New London Assembly (Connecticut).
- April 21, 1988, removal of samples for radiocarbon dating, studies coordinated by the British Museum, authorised by Cardinal Ballestrero, report published in the journal "Nature" dated February 16, 1989.

- September 7, 1992. At the request of Cardinal Saldarini, verification by 4 experts of the Shroud's state of conservation.

2.3 - Observations on the 1988 experiment

The aim of all part 1 of this account was to show that the principles and rules governing an expert's appraisal provide strong guarantees for the establishment of the truth. There is no obligation to comply. Let us see what happens when there is deviation from them, as happened in the radiocarbon dating experiment on the Shroud. This dating technique, developed by Libby around 1950, was put into practice in the 80s in a new piece of apparatus, the Tandetron, an object of pride in the world of science. The method's fervent admirers want it to be used in a prestigious operation. Through the intermediary of the British Museum, they request an operation on the Shroud.

2.3.1 First phase: the preliminary technical evaluation

The study schedule is set out at two meetings giving rise to successive protocols (Trondheim in June 1985 and Turin in September 1986). A decision to proceed with the operation is made in April 1987, taking very little account of the earlier protocols. The only method selected is obviously that using the Tandetron. Although it is not a universally recognised method, there is no question for the moment of having reservations about it.

2.3.2 Second phase: selection and taking of samples

No plan for the selection of samples was established, as the STURP, which had experience

PRINCIPLES FOR APPRAISAL (France) (cont'd)

in the matter, was ousted from the procedure. Such a plan, in order to be suitable, would have required a very lengthy preliminary study. In its absence, samples were selected from one place only, at one end of the sheet. This was a gross error. It is certain that in the case of a heterogeneous sheet of cloth like the Shroud, in accordance with the rules, samples should have been selected from several areas. The sample taken cannot be considered representative.

This judgment of principle is furthermore corroborated by the facts. Mrs. M.G. Siliato (cf. Proceedings pages 243 et sq) shows, by studying the weight of the cloth per cm², that the sample given to the analysts was that of a piece that had been over 40% restored. Its dating is nonsense.

As for the control samples, for which the origin and approximate age are known, there is no information on their representative value, and this also is a grave error.

Concerning the taking of the samples, the witnessing of the act was disastrous. There was a video and photos, but they do not show everything. We have the accounts of the operatives themselves, accounts which differ somewhat. (Cf. "Sample taking on April 21, 1988 - *Les Cahiers du Linceul*" published by OEIL Paris 1990, 106 pages). We also learn that the samples were not put publically under seal and that the reserve sample has disappeared. There should have been present three observers (scrutineers) responsible for the compiling of a statement witnessing the taking of the samples and their putting under seal.

In short, selection of samples was not representative and their removal was not correctly witnessed. The experiment is flawed right from the start, and all that follows is invalid. We could leave it at that, but we shall go on, to learn some lessons from the operation.

2.3.3 Third phase: the analysis

All three laboratories, Arizona, Oxford and Zurich, forwarded the study report to Dr. Tite, their coordinator at the British Museum, who compiled the 4-page report published in "*Nature*" (337, 16.02.1989, p. 611/615), having had his statistical interpretations approved by Professor Bray from the Colonetti Institute of Metrology. The conclusion is that, within a confidence interval of 95%, the linen of the Shroud dates back to a period of time ranging from 1260-1390, making it mediaeval.

There have been numerous, relevant criticisms made of this report and its conclusion.

They can be found in the works and journals which published them, in particular the *Proceedings of the Rome Symposium 1993*, published by Guibert, Paris 1995, p. 17/19, p. 189 to 255 and p. 374. Simply from the point of view of non-compliance with the rules governing an expert's appraisal (points 1.5.3, 1.5.4, 1.6 of this account), the following failings should be noted:

- The report in "*Nature*" is a collection of information for the general public. For the scientific community, the full reports should have been communicated to the laboratories (raw results) and that of the Colonetti Institute. This was requested but never obtained and constitutes an inconceivable lack of transparency.
- In the course of the study, the laboratories did not comply with their own discretionary protocol (communication of their results between themselves and to third parties).
- The procedure under blind conditions was abandoned, as the laboratories received information on the dates of the control samples.
- The reserve sample and the cutting fragments of April 21 1988 were not returned. In a letter dated September 1995 (Cf. Monthly newsletter No. 69/70 and RILT No. 1 p. 24), Cardinal

PRINCIPLES FOR APPRAISAL (France) (cont'd)

Saldarini warned against any use of material said to come from this sample. - In the statistical evaluation of the dates, the report in "Nature" provides an embarrassed explanation for the surprising figure of 6.4 mentioned in the χ^2 test, a value which demonstrates that the sample was not representative (for an explanation of χ^2 , see CIELT Monthly newsletter No. 3). It is the third time in this account that the sample is confirmed to have been non-representative.

2.3.4 Fourth phase: conclusions

The protocol of the radiocarbon analysts group did not provide for the whole of the study to be submitted for approval by a contradictory body, for control and discussion, which constitutes a lack of openness with regard to the other scientific disciplines. In such a case, there is the risk of being accused of over-confidence, and of having excessive power.

The text of the report was therefore given directly to Cardinal Ballestrero, to the journal "Nature" and to the media. We have noted all the grave failings resulting from this.

In future, a committee of scientists, working in accordance with the modes of an expert's

appraisal or of any other similar protocol, should come to a decision regarding the possibilities and conditions of dating the Shroud.

Conclusion

The principles and rules of an expert's appraisal are a model of the conduct to be followed when examining a material, product or object. These rules are found in a country's codes of judicial procedure or in the standards of international organisations.

In the 1988 determination of the Shroud's age using the radiocarbon method, these principles and rules were seen to have been contravened, on several points. In particular, the selecting of samples conducted without any supporting study, without a plan and from one place alone negates all validity of the operation. This is incontestable: if the sample is not representative, its analysis is devoid of significance. The 1988 trial enters the sad history of scientific wrongdoings. Public opinion was and still is duped by the peremptory publication of an invalid dating. The experiment should only be repeated if the required guarantees are met. ■

Shroud News has heard of the recent deaths of two more Shroud researchers, Miss Hilde Leynen of Belgium and Revd Bro Michael Buttigieg of Malta. As I had met them both over the years and had collaborated with Buttigieg I shall prepare obituaries for a forthcoming edition

REX MORGAN

Reprinted from the *Sydney Morning Herald* 18 October 1997
 (it has been claimed that the Shroud image was a self portrait created by Leonardo in the 1350s more than a century before he lived)

Was Da Vinci work recycled?



Self-portrait (authentic) Leonardo da Vinci, circa 1516.

By AISLING IRWIN
 In London

Leonardo da Vinci's sketch of a bicycle, studied by scholars and transformed into models for international exhibitions, is a doodle from the 1960s, according to a German academic.

The faded brown drawing is possibly the work of Italian monks, says Professor Hans-Erhard Lessing, a museum curator from Mannheim.

The sketch, of a machine with chain and pedals, was "discovered" in the 1960s when the artist's manuscripts were being restored in Italy. The manuscript, known as the *Codex Atlanticus* was made at the end of the 16th century by a conservator who tore out the pages and glued them to new backings.

Professor Augusto Marinoni, a lexicographer, led a group of monks restoring the manuscript at the Catholic University of Milan. In 1974, he announced that the monks had unpeeled one of Leonardo's pages from its backing to find, on its reverse, some obscene graffiti and the diagram of the bicycle.

He decided the sketch was not by Leonardo but was a pupil's reproduction of a lost original by the master, glued onto another piece of paper to hide the crude graffiti.

Professor Lessing says an Italian art historian saw the Leonardo manuscript before Professor Marinoni and held the page up to the light. "What I saw was not a bicycle," the historian told *New Scientist* magazine.

The Telegraph, London

Reprinted from *The Catholic Times* (UK) 20 April 1997

Shroud: a relic, icon or hoax?

JOHN ALLEN

THE authenticity of the Turin Shroud is again at the centre of scientific debate. Even before last week's fire at Turin Cathedral, which left the relic unharmed, the publication of the latest in a rash of new studies dismissed the possibility of the shroud as being Christ's actual burial cloth.

In 1988, three laboratories, acting independently of one another, used a scientific process to date the shroud.

Each arrived at the conclusion that the flax was harvested between the years 1260 and 1390.

Now Harry Gove, author of *The Shroud of Turin: Relic, Icon, or 'Hoax?*, who developed the technology that was eventually used on the shroud, regards the issue as settled.

"These were three first-class labs," Gove said. "The result corresponds very closely to the known historical date (of the shroud's first appearance), which makes the date very solid."

Defenders of the shroud's authenticity, however, dismiss the 1988 results. Artist Isabel Piczek, involved in shroud research since 1989, argues that no artistic technique could produce such an image on the garment.

And Donald Lynn, who did much of the imaging for NASA's Viking and Voyager probes, and who was part of a 1978 team which investigated the shroud, also thinks the balance tips in favour of authenticity.

The tests carried out in 1988 relied on measurements of carbon-14, a chemical element which decays at a steady rate. By burning a sample of an object and detecting the amount of carbon-14 it releases, the object can be dated within range of approximately 50 years.

Dissenters point to, a new analysis, which suggests that microbiological contamination of the shroud could be so extensive as to invalidate the 1988 results.

This theory is based on the work of US physician Dr Leoncio Garza-Valdes.

Garza-Valdes has shown that bacteria and fungi attach to ancient linens and produce a coating which infuses young carbon into the cloth. Such a veneer is not

removed using conventional cleaning methods such as those applied to the shroud sample in 1988, according to Garza-Valdes.

"There is no doubt that there are living organisms on the shroud, and no doubt that they have formed a plastic polymer which coats the shroud. The sample which was carbon-dated was, therefore, a mixture of textile and plastic coating."

Although the shroud escaped damage last week it was scorched in the mid-1550s which could have been another possible source of contamination.

Theoretically, the fire could have introduced new carbon to the shroud. The sample used in the carbon-dating, critics argue, came from an area of the cloth damaged in the fire.

Meanwhile devotees and critics alike remain unconvinced that scientific claims to have isolated genes from DNA, apparently said to have come from blood stains on the linen, are accurate.

And as for the ultimate concern — cloning — monitors dismissed it as impossible.

"Only in fantasyland," said Dr Jennifer Smith, chief of the DNA Analysis Unit for the FBI.



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*) and editor of several others, began sending a few notes about current developments in the study of the Shroud of Turin (Sindonology) for a small circle of interested people in his home country of Australia. He didn't expect it to go beyond a few issues.

Today, the bulletin, now highly acclaimed, reaches subscribers all over the world and is written, produced and disseminated more quickly than any other Shroud publication in the English language. 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 which gives 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 and knows numerous Shroud researchers in many countries. His quest for Shroud information became, as he described it, "a passionate hobby". He took 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 700,000 visitors. The exhibition was subsequently donated by Brooks 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 Board member of the US 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 (ESSJ). He has made a number of original contributions to Shroud research has presented major papers at international Shroud conferences has written numerous articles and has given hundreds of broadcasts and telecasts on the subject in many countries.

The list of *Shroud News* subscribers continues to increase internationally and it has been described many times as one of the best available. *Shroud News* comes out six times a year. Its production is obviously privately subsidised as we request a subscription in Australia of only \$6 for six issues posted. The USA subscription is \$12 (posted airmail - there is no longer any surface mail from Australia). Postage to other countries varies. ALL back issues are available for \$1 (US or Aust) each plus postage. The famous 50th issue is \$3 plus post. Customers should note that as it costs us \$8 to negotiate each foreign cheque we request all payments be made in currency banknotes of your country or charge to Visa, Master or Amex cards.

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