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A NEWSLETTER ABOUT THE HOLY SHROUD OF TURIN
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Author of *PERPETUAL MIRACLE* and *SHROUD GUIDE*



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EDITORIAL

Bro Bruno Bonnet-Eymard of France has published several substantial papers in the past few years claiming the authenticity of the Shroud and taking to task many of the scientists who have suggested otherwise. His accusations against most of those who took part in the C 14 testing in October 1988 are well known and, indeed, many other writers have published critiques of that exercise from numerous learned points of view. We have published a number of them in *Shroud News*. Bonnet-Eymard pulls no punches with his claims and, indeed, one observer at the Paris Symposium last year declared that had the accusations been made in England a number of defamation suits would have followed. To date there has been none and Brother Bruno continues his crusade unabated. An extremely interesting paper he published in October 1989 in the regular journal of the *Catholic Counter-Reformation in the XXth Century* has now been published in English and runs to 46 pages of close-set type. Amongst a great deal of expert argument from scientists and scholars concerning the possible (definite according to Bro Bruno) substitution of samples at the 1988 testing and the improper and inconsistent reporting of the measurements of the samples used (with which many have agreed), Bruno also publishes in full, the article by Fr Werner Bulst published in *Shroud News* No 54, giving proper and fulsome acknowledgement to this modest journal. I regret that it has not yet been possible for me to prepare a summary of Bonnet-Eymard's fascinating arguments; perhaps I shall be able to later in the year. In the meantime, however, an interesting item refuting one of Bro Bruno's claims has come from Hilde Leynen, a Belgian researcher, whom I recall meeting in 1985 during the special showing for my benefit of the Lier Shroud copy attributed to Durer.

I have already commented on the great increase in Shroud study, literature and interest throughout the world since, and in spite of, the results of the C14 test of 1988. Since our last issue I have received the first two editions of a new *monthly newsletter published by the Centre International D'Etudes Sur Le Linceul de Turin* based in Paris and which organised the Paris Symposium. It is very encouraging to see this useful initiative from our friends in France. Another source of publicity for the Shroud was a recent exhibition by the Royal Photographic Society (of Great Britain). The exhibition, which ran from 9 December 1989 to 25 February 1990 was "The Unexplained - mysteries of mind, science and time" a general heading under which the Shroud is sometimes placed in popular literature. The exhibition was of the photographic record of unexplained phenomena. So amongst an array of photographs of ectoplasm, ghosts, the Loch Ness monster and the like, a full-size transparency of the Shroud was on display. I have not had any firsthand reports of the attitude taken by the promoters or the onlookers but the

fact that the image is again being presented to a wide audience, particularly in Britain where the media has usually taken a very jaundiced view of the whole subject, and where Britain's own C14 mogul, Tite, was jubilantly and smugly represented as the unmasker of the medieval forgery, brings this very serious subject to the sensible attention of many people.

REX MORGAN

P.S. I had this issue prepared by the end of March (!) but on 3rd April my car was run into by a bus going through a red traffic light. I was only slightly injured (a dozen stitches in the head, etc) but observers say that a split second later and I would have been killed. So great was the impact that the car (one of the best-built on the roads) has been written off. But you, my readers, do not wish to hear all this; I simply mention it because the issue is late. I thank God that I am spared for more work. RM



Another Shroud-inspired design by Fr John Conliss of Japan

PRELIMINARY DETAILS OF NEW EVIDENCE FOR THE AUTHENTICITY OF THE SHROUD: MEASUREMENT BY THE CUBIT

IAN DICKINSON, Canterbury, England

In early August, after arranging to attend the Symposium Scientifique International de Paris sur le Linceul de Turin for September 1989, I was looking through the material that I have on the Shroud, and it seemed to me that the measurements of the cloth looked odd, i.e., 14 feet 3 inches by 3 feet 7 inches. Searching through all the books, they did not even produce the same dimensions; some gave "approximately" 14 feet, others incorrect metric conversions, however the 14 feet 3 inches by 3 feet 7 inches appeared to be the most reliable reading. I later verified this with John Jackson at the Symposium, who took these measurements from the Shroud. After all the precise scientific calculations on the Shroud, these inconsistent dimensions of the cloth were incongruous; but they were all 20th century measurements, so obviously they would look odd. The reason: the Shroud was measured out in the 1st century A.D. in Jerusalem - by the cubit.

During the 1st century there were several cubits in use; after some quick checking, the cubit of the Shroud was clarified as near enough 21.6 Inches. This gave the following calculations:

Length 21.6 X 8	=	172.8	inches
Shroud recorded length	=	171.0	inches
Difference	=	1.8	inches
Width 21.6 X 2	=	43.2	inches
Shroud recorded width	=	43.0	inches
Difference	=	0.2	inches

The Shroud's measurements are put into inches for easier comparison. Any small differences can be accommodated, especially over 1956 years of the Shroud's existence, by shrinkage or stretch for example - but the effect of the side seam down the length would help prevent stretch, - and also would have contracted a small part of the length of the cloth by the pull of the stitching, i.e., when the seam was made. Again, creases in the Shroud contract a fraction of an inch, but as will be seen, archaeology and cloth-finish together provides answers.

I contacted Ian Wilson to see if any research had been done on the Shroud's dimensions, and, as I was by then not surprised to learn, nothing was known beyond the extant measurements in his book, "The Turin Shroud."

In researching cubits of the Scriptures, metrology was involved, an exact science; but again, I was amazed to find errors in calculations, e.g., conversions of metric to imperial, and records of measurements seemed to contradict. Until the 20th century there was no agreement amongst metrologists for certain Biblical measurements. However, evidence for various cubits appeared. In the Louvre Museum Paris can be seen the Royal Egyptian cubit of 20.67 inches. The Egyptian cubit is closely connected with the Royal cubit of Ezekiel, Ch40:v5, now recorded as 20.51 inches. The Ezekiel Royal cubit was a sixth greater than the normal standard cubit, which was used for the Siloam tunnel in Jerusalem, i.e., near enough 17.58 inches, calculated from the excavations at Megiddo and other sites in the Holy Land on this multiple.

Important discoveries and excavations began in 1888 in a place possibly identified as the Palace of Caiaphas. At any rate, here were found, under what is now the ecclesiastical building of St. Peter in Gallicantu, Jerusalem, sets of 1st century A.D. weights and measures, used by the Jewish authorities. What makes these so significant is the inscription on a door lintel found within the palace rubble. Not all the inscription is clear, but one word is: "*Korban*," in square

MEASUREMENT BY THE CUBIT (contd)

Hebrew characters of the 1st century A.D. This is the Hebrew for "offering", i.e., to God; and this word is found in the Gospel according to Mark, Ch7:v11 and in Matthew Ch27:v6. These weights and measures then, were part of the official bureau de change for sanctuary standards. Jewish coins found with the measures confirm a 1st century date prior to the destruction of Jerusalem. No cubit rods were found, in any event, they would probably have disintegrated if made from wood; but they are recorded as part of Temple standards, as will be seen.

So there were cubits for Temple use, and various other applications; but it is a particular cubit of the market place that is connected with the Shroud, the cubit that is known as the Assyrian cubit; the widely used, indeed, international standard of that time for merchants of the Near East, and had been so for centuries. This cubit of commerce was carried with the *lingua communis* that stretched from the Euphrates to the Mediterranean, the language of trade and diplomacy, the tongue that became the common language of the Jew, Aramaic - the language of Jesus. Aramaic had been the communication medium of the Assyrian Empire, and Israel had been a subject of Assyria. Another important connection of history is the tracing of this Assyrian cubit to Babylon. Assyria annexed Babylonia; the height of Assyrian power was the 7th and 8th centuries B.C. In 597 B.C. Jerusalem fell to the then-expanding Babylonian Empire, and so began the Jewish Exile. Now during the 19th century, Oppert and Petrie, by measuring ancient buildings in Babylon, found the metrological value of the Assyrian cubit to be almost 21.5 inches; other archaeologists read just over 21.6 inches, so the Assyrian cubit has been recorded as 21.6+0.2 inches - and this is what the Shroud conforms to.

Taking the lower limit of 21.4 inches, the results are:

21.4 inches X 8	=	171.2 inches
Shroud recorded length	=	171.0 inches
21.4 inches X 2	=	42.8 inches
Shroud recorded width	=	43.0 inches

An observation is here to be made; a small part of the cloth would have been used in the rolled edges, and this comes under further research on the Shroud, especially the nature of the side strip. So the Shroud is now provided with a margin of cloth to give an original cubit length approaching 21.6 inches, i.e., before the edges on the cloth were made. This all indicates that the Shroud cloth was very carefully measured to be so exact over such a length - and this is another strong piece of evidence, because fine linen was very valuable merchandise and would have been cut with appropriate precision. So valuable was fine linen, that it ranked with gold, silver and silk, was associated with sacred use in the Temple, and prescribed for the robes of priests, the material of the rich. Linen was associated with very holy persons, cf. Daniel, Ch10:v5. And so it was, that about 4:30 p.m. on Friday 3rd April, 33 A.D., Joseph of Arimathea purchased in the cloth quarter of Jerusalem, a fine linen Shroud of 8 cubits by 2 cubits, for the burial of Jesus.

Jewish law was also precise, "You shall do no wrong in judgment, in measures of length or weight or quantity", Leviticus Ch19:v35. For merchants in Jerusalem this was a two way reminder, because fine linen was imported, from Egypt and also from Eastern regions. Also, in Israel's history, fine linen was produced and even exported to Egypt; linen flax was grown in the Jericho area. Parts of linen burial shrouds have been identified in the Essene cemeteries, along with coins of Herod Agrippa I, in skulls. The archaeological evidence is - that 1st century Israel acquired additional burial customs.

The Mishnah, which encodes laws and traditions held to be of Divine origin, and closely associated with pre-destruction Jerusalem, legislates for the dimensions of the "*kokim*", or "loculi" of a rock-cut tomb, *Baba Bathra* 6:8. Where the body is to be laid - must be 4 cubits

MEASUREMENT BY THE CUBIT (cont'd)

long; and the Shroud, when folded in two so as to cover a body, is 4 cubits long. The significant figure is 4; ancient tradition referred to the stature of a man as 4 cubits, a nominal height. As the origins of the cubit, the distance from the elbow to the furthest finger tip, varied, standards had to be agreed upon, and special standards developed, e.g., a cubit plus one palm. So it would be difficult for man to be referred to as nominally 5 cubits, as the Gospel according to Matthew infers, Ch6:v27, "but which of you by being anxious can add one cubit to his stature". So here is the "*pechun*" cubit, in the teaching of Jesus. The cubits used for rock-cut tombs c. 1st century A.D., comes under further research.

Now the Mishnah in *Kelim* 17:9,10, refers to two cubits as part of the Temple standards (in this instance the second Temple) kept at the gate of Shushan of the sanctified Outer Court. These controlled a difference of 0.38 inches between the small and normal cubit in respect of goods passing in and out of the area. A cubit of Moses for the first Temple is also mentioned:

Cubit 1.	Moses, first Temple	16.85	inches
Cubit 2.	Small, used for second Temple	17.20	inches
Cubit 3.	Normal standard (long)	17.58	inches

So again, evidence for various cubits used for specific purposes and prescribed precision, runs through Jewish history, and there can be little doubt that this care was taken on the day the Shroud was cut according to the trading standards of Jerusalem. In the international market place, "the measure you give, will be the measure you receive". This cubit runs through to the Talmud, which records a cubit measure at 21.8 inches, and the Talmud was associated with Palestine, and the Diaspora of post-70 A.D. in Babylon - the source of the Assyrian Cubit of 21.6+0.2 inches.

More research will add to the evidence, checking dimensions, and finer details of the Shroud, and signs of its past as piece of measured merchandise. To date, the evidence is that the Shroud has remained at its present dimensions, the side strip cloth being originally part of the whole cloth. The fact that the body image is divided equally, into two parts on the cloth, gives the whole a symmetry. The holiness of the Shroud would also tend towards preservation of wholeness, a tradition that prevented earlier proposed carbon 14 dating tests, until the latest attempt in 1988, when the cloth was pulled over some scientists' eyes, causing tunnel vision. The overwhelming amount of credible evidence for the authenticity of the Shroud is obvious - to those who have eyes to see. Because it is the Shroud that covered the body of Jesus, more and more evidence will be found.

CONCLUSION. The measurement of the Shroud cloth was made according to the Assyrian cubit of a mean value of c. 21.6 inches giving the original dimensions of:

8 cubits	=	c. 172.8	inches
2 cubits	=	c. 43.2	inches

The ratio of length to width is a whole number, i.e., integer, evidence that a standard unit was used to measure the Shroud cloth.

Canterbury, September, 1989

N.B. Alternative dimensions have been received since writing on the cubit of the Shroud. Gabriel Vial of Lyon, has recorded the length of the Shroud as 4.30 m (169.29 inches) and width 1.08 m (42.52 inches). With these readings another more localised cubit becomes viable - after stretch has been accounted for. According to Julian of Ascalon, the Philetarian cubit, calculated at a geometric 20.67 inches, was in use in Palestine and Egypt during the 1st century (cf. Egyptian and Ezekiel cubits). With

MEASUREMENT BY THE CUBIT (cont'd)

this cubit, the results are:

20.67 x 8	=	c. 165.36	inches
Shroud recorded length	=	c. 169.29	inches
Difference	=	c. 3.93	inches
20.67 x 2	=	c. 41.34	inches
Shroud recorded width	=	c. 42.52	inches
Difference	=	c. 1.18	inches

Again, more checking and data will reveal answers - but access to the Shroud is vital for a proper grid measurement, and examination of the cloth for all signs of deviation, plus a host of other factors yet to be researched.

Preliminary Details of THE ORIGIN AND REASON WHY THE SIDE STRIP IS PART OF THE SHROUD

On present available data, which I need to improve upon by examining the Shroud itself, I can say that the side strip on the Shroud - has never been removed and therefore never replaced; it was there before the body of Jesus was placed centrally on the Shroud; it has come from the same looms and place of manufacture, and was made within days or hours of the main Shroud.

The answer to the mystery of the side strip is this - the whole Shroud itself is a side strip. The Shroud as we know it was cut from a larger sheet of linen. This larger sheet was made up of strips, sewn together, along the whole length of each strip, forming a huge sheet of linen. Thus, when Joseph bought the Shroud, it had been measured out at 2 cubits and cut, and that width of 2 cubits, i.e., c. 43 inches, included one of the sewn seams which held the larger sheet together. This explains why the material of the side strip is so similar to, but indicates minute differences from, the main part of the Shroud. (For details on the cubit see article above).

So, each manufactured length of linen was joined to another in a repeated process, in a central production area, until a large roll of linen was completed; there would have been many looms producing lengths for joining, and so each strip would be of the same weave and material, but would differ very slightly in characteristics.

The fine linen cloth production of large sheets was a normal part of 1st century commerce. Large linen sheets were used for various purposes, including of course, in the Temple Itself. Since early Hebrew history, large fine linen sheets are recorded - the Tabernacle of the Book of Exodus, Ch26:v1-6, 31; 36:v8-13, the ten linen curtains. These each measured 28 cubits high by 4 cubits wide, and five of these linen curtains were joined together into one, and the remaining five into another. The Gospel according to Matthew Ch27:v51, records how the "*katapetasma*" veil of the shrine, was torn from top to bottom, the cloth of the Temple, i.e., Tabernacle, the Holy of Holies. The old Temple had finished, its sanctity gone. Within hours, a new clean linen veil was purchased by Joseph of Arimathea, to cover the new Temple. This veil is still with us today.

Large sheets of linen were of such common knowledge, that Luke records in the Acts of the Apostles Ch10v11, in Peter's vision on house top, "*othonen megalen*" a great linen cloth, here used as a simile - something everyone would know about. The Greek here used for sheet or linen is *othonen*; and in the Gospel according to John Ch20:v5-7, the Greek used for the Shroud is "*othonia*", linen cloths; see also John Ch19:v40. Now this noun (*othone*), i.e., fine linen, a linen sheet, is derived of thread, yarn, or linen; so this would be a natural word to use (*othonia*) in his Gospel Ch24:v12, to describe the Shroud. Also, in rock-cut sepulchres in Egypt, great sheets 60 feet long were placed; linen cloth was found with life and death. So one thing is certain, seams were part of normal manufacture for large sheets of linen and pieces of

MEASUREMENT BY THE CUBIT (contd)

linen cut off larger sheets, such as the Shroud was, would contain seams.

Now, as has been explained, 1st century large linen cloths were normally produced with seams. Most clothes were woven in two or three pieces before being sewn together so anything unusual would stand out. The Gospel according to John Ch 19:v23 records such an unusual piece of cloth. Just a few hours before the burial of Jesus in the Shroud, the soldiers divided his clothes amongst themselves - now the "*chiton*" tunic, i.e., linen undergarment next to the skin, was "*araphos*", seamless, from top to bottom, being woven throughout. This was then, a piece of linen material which would be more valuable as a whole garment; the soldiers immediately realised this, and the tunic was kept whole - this veil was not torn. If it were a normal tunic with seams, it would not have been mentioned by John.

There remains the question of the missing corners at the ends of the Shroud side strip. Only one answer explains this - the missing pieces were cut off to become relics. But, as the Shroud is so precious, it would be very difficult for this to happen, except only if some exceptionally important persons had been involved, and there are candidates. It is also possible that these missing pieces of the Shroud still exist.

CONCLUSION. The Shroud was made from a piece of fine linen cut off a large roll of cloth. This large roll of cloth was made up of loom woven strips joined together by seams; one of these seams is part of a 2 cubit measurement of c. 43 inches that became the Shroud, and this is why the seamed side strip is part of the Shroud that covered the body of Jesus.

Canterbury, 13th October, 1989.

From: INTERNATIONAL AMBASSADOR (the house journal of 3M)

Warren, 3M Italy receive high honor

Milan, Italy — The insignia of Knight Commander of the Order of St. Gregory the Great was conferred on Joseph Warren, vice president, Europe, by Pope John Paul II, at the behest of the Bishop of Savona, Monsignor Giulio Sanguineti. Warren was awarded the insignia March 23 while serving as senior managing director of 3M Italy.

Warren received this prestigious recognition for the significant contributions 3M Italy has made in protecting important Italian cultural works. These include several multi-screen video

productions and publications on the historic mosaics at the Basilica of St. Mark in Venice, Italy; the frescoes in the Scrovegni Chapel in Padua painted by the 14th century artist Giotto; for 3M Italy's support to the recent scientific research on the Shroud of Turin; and for 3M Italy's contribution to the European Economic Community's (EEC) campaign against cancer.

The Order of St. Gregory the Great was founded in 1831 by Pope Gregory XVI to recognize people that have made major contributions to the Roman Catholic Church.

NEW RESEARCH FINDINGS ON THE ORIGIN AND DATING OF THE SHROUD OF TURIN**Prof ALAN WHANGER, Duke University, and MARY WHANGER**

September, 1989

At an international Symposium on Science and the Shroud in Paris in September, 1989, we presented new findings in our ongoing research to determine the Shroud's origin, nature, history, and identity; and spoke to many scientists and scholars, including people who in 1988 conducted the controversial carbon dating tests on a section of the Shroud and concluded that it originated during the medieval period.

We presented some of our most recent findings, which are among the earliest research focused on off-the-body images on the Shroud. Most past studies, including our own artistic and historical research, has focused on the mysteriously-formed Shroud image.

We also presented new evidence shading a major defect in the sample taken from the Shroud last year for the dating which we feel profoundly affected the outcome of the testing.

These new studies on off-the-body images revealed faint but definite images of flowers banked around the head and torso of the Shroud figure. These images were often incorporated by early artists using the Shroud image as a model.

Although it isn't clear what role flowers would have played in Christ's burial or in the burial of other Jews of the time, the presence of flowers would help explain the interesting background markings on the Shroud as well as the large quantities of pollens on the fabric.

Our associate, physicist Oswald Scheuermann of West Germany, in 1983 observed what seemed to be flower-like patterns around the Shroud face, but at the time we were unable to see them. Then, a couple of years later while examining one of our photographs of the Shroud with a large magnifying glass, Dr. Whanger suddenly saw out of the corner of his eye the image of a large chrysanthemum-like flower on the frontal anatomic left side, about 15 centimeters lateral to and 6 centimeters above the midline top of the head.

These flower images, many hundreds of which are found on the Shroud, were obviously such more visible in the earlier centuries of the Shroud's existence, since they have been highly accurately copied in a number of the early iconographic and other artistic depictions of Christ in many media, including Byzantine coins, between the 3rd and 10th centuries. The similar background markings on the Shroud and on paintings and coins are the result of iconographic artistry in which the original or prototype was reproduced as accurately as possible.

NEW RESEARCH FINDINGS (cont'd)

These painstaking reproductions would have occurred only if the artists felt the background to be original and significant. Otherwise, they probably would have left unpatterned or symmetrically patterned backgrounds; and coin makers, who had to be highly skillful to fashion the tiny floral images and marks, would have struck coins with smooth or unstructured backgrounds, which they sometimes did on coins not derived directly from the Shroud image.

In 1986, we released research we believe indicates that the facial image on the shroud provided the model for depictions of god-like figures in the Middle East as early as 31 A.D. These findings date the Shroud to the time of the Crucifixion, set by many historians and theologians at 30 A.D., and show that the image on the Shroud was well known and represented the deity to the people of the time. Earlier, we demonstrated the presence of images of a coin over each eye, and by the polarized image overlay technique showed that these images are highly congruent with two lepton coins (the Biblical widow's mite) struck by Pontius Pilate in 29 A.D., thus showing that the Shroud image is self-dating to the first century.

In our recent research, we Used data gathered by botanist Max Frei before his death in 1983. In 1973 and 1978, Frei pressed specially prepared "sticky tapes" to the Shroud. He was able to identify from materials on those tapes 58 kinds of pollen, a great many of them from plants found in the region of Israel. In more recent studies of the tapes, archaeologist Paul Maloney has located and photographed hundreds of pollens. Most of the varieties are from insect-pollinated plants rather than from those with wind-blown pollens, indicating that flowers have been in direct contact with the Shroud.

(Flowers have been in contact with the Shroud many times over the centuries, but the flower images indicate that flowers were in contact with the Shroud at the time the image was made.)

Using as a guide Michael Zohary's six-volume Flora Palaestina, the definitive study of botany in Israel, Dr. Whanger began to systematically examine off-the-body images, slowly identifying shapes that look like flowers.

Meanwhile, Scheuermann worked on confirmation of the flower identifications. In order to more accurately identify the flower, branch, leaf, stem and fruit shapes and patterns:, he worked with real plants to create coronal images (images formed by a high energy discharge that spreads like static electricity) of flowers similar to those we were finding on the Shroud.

Although we found vague or partial images of hundreds of flowers on the Shroud, our research yielded reasonably clear visual images of 28 different flowers, small bushes and thorns, all of which are found in Jerusalem or within a 15-mile radius of Jerusalem. This area is probably the one place in the world in which desert, mountain and Dead Sea plants exist within easy walking distance of each other. The majority of these plants do not grow in European countries.

Research on both the general appearance and coronal images of wilting flowers indicates that the Shroud images were formed probably between 24 and 36 hours after the plants were picked.

NEW RESEARCH FINDINGS (cont'd)

Another accuracy check in the research involved comparing the apparent identity of the plant images present on the Shroud with the pollen types Frei found earlier in the particles he removed from the Shroud. Of the 28 plants, 25 matched closely with those whose pollens Frei had already identified.

The research also shed some light on the time of the year in which the Shroud figure might have been crucified and buried. 27 of the 28 flowers identified bloom in March and April, which would correspond to the time of Passover and the Crucifixion.

The question of the age of the Shroud remains, especially since the carbon 14 dating in 1988 indicated that the fabric originated most likely between 1260 and 1390 A.D. Observations we have made during a frame-by-frame analysis of a videotape made of the taking of the sample reveal a major flaw which would greatly affect the dating process.

Every recommendation agreed upon by a group of 21 carbon dating experts and archaeologists who met in Turin in 1986 to set up a rigorous protocol for testing the Shroud was discarded, including the recommendation that 3 to 5 samples be taken from different areas on the Shroud. Only one sample was taken, and this was divided among the three laboratories that did the testing, so that all the tests were on the same small piece of cloth. All three laboratories agreed fairly closely on the data they obtained, indicating that their work was accurate. But accuracy is not the same as validity, as a defective sample can only yield an inaccurate result.

A number of significant questions have been raised about the sample taken, but as yet are unanswered, including the possible effects of additional contamination on the Shroud by all the exposures over the centuries to carbon-containing materials, by the fire of 1532 which burned many holes in the Shroud and exposed the fabric in a superheated atmosphere to the smoke of the 16th century fabrics in which it was wrapped, by the fact that the specimen was from one of the water stain areas on the Shroud, and by a neutron flux which may have occurred during the mysterious image forming process. As the effects of any or all of these would be to make the cloth test younger than it actually is, all of these areas could and should have been tested for, but were not.

On studying the photographs and videotapes of the sample taking, we noted that the sample, which was cut from the edge near one end of the Shroud by the frontal anatomic left foot, included the heavy seam that runs the full length of the Shroud. The function of this seam and when it was put in are not clear. The earliest that we could clearly identify this seam in the many artistic copies made of the Shroud was in the late 17th century. There is what appears to be a rectangular patch in each end of the Shroud on the side of the seam, but this is actually the Holland cloth backing that was added to the Shroud after the fire of 1532 to reinforce and protect it. The seam apparently fastens the Shroud to the backing cloth, and we speculate that the seam was put in to reinforce and protect the Shroud when it was held up for display or carried in procession. It was always held up by the same side, and the two corners would logically get the most contamination and the most stretching or tearing.

NEW RESEARCH FINDINGS (cont'd)

Detailed observations show about 10 to 12 fibers per centimeter extending from the side seam as weft fibers for 3 to 5 centimeters out into the body of the shroud which are visible only on frame-by-frame videotape analysis of the cutting of the sample. These fibers display a stiffness after cutting which would suggest that they were possibly starched, which would have made a reweaving process much easier. Starch was found in one of the fibers from the so-called Raes sample which was cut from the same area in 1973. Since the Shroud has about 35 weft threads per centimeter, up to a third of the weft threads in the area from which the sample was taken could have been from repairs and reweaving which may have occurred as late as the latter 17th century. The seam itself was trimmed off before the sample was divided for the laboratories, but these numerous threads appear to be interwoven in the fabric and hence would have been included in the samples which were dated.

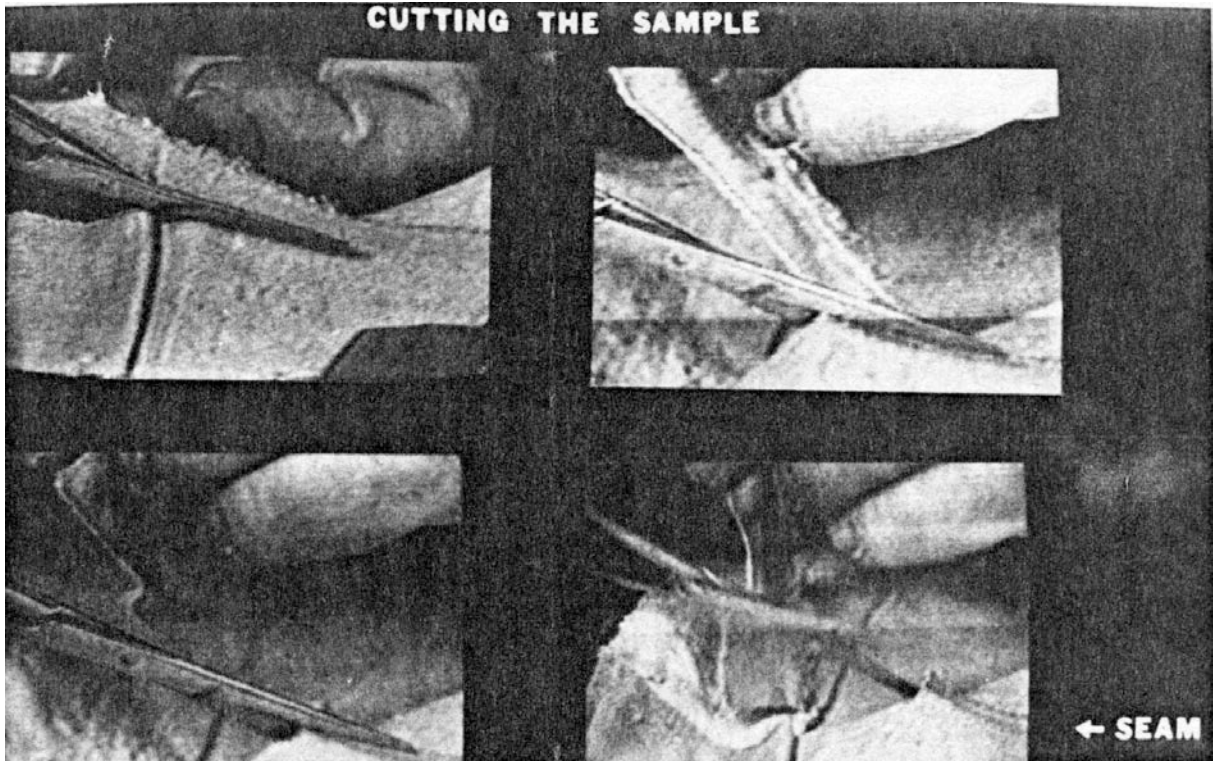
Those who insist that the medieval date of the Shroud is correct either have to ignore the incredible image which is on the Shroud or postulate that there was some clever medieval artist who produced it. This clever artist would have to have produced a unique image using no pigment, with the qualities of a photographic negative, with three-dimensional data incorporated into the image which is anatomically and physiologically correct. This artist would have had to paint with human blood the correct appearance of blood clots in the vertical position before death and in the horizontal position after death, and would have had to paint or produce the blood stains and the body image at different times as separate events. He or she would somehow have had to depict the correct images of wilted plants which grow in the Jerusalem and Dead Sea areas and also would have had to liberally dust the Shroud with their pollens. In addition, his/her work would have had to inspire artists to produce hundreds of highly accurate derivatives and copies of his/her masterpiece in every known media in the thousand years before he/she even produced it.

We agreed with the majority of those attending the Symposium on Science and the Shroud that no such clever artist existed in medieval times, nor exists today with all our technology. There were, however, clever weavers and restorers in medieval times who could make almost undetectable repairs, and we feel that the sample taken for the carbon dating likely included a generous specimen of their work.

The Shroud, which has been preserved in the Cathedral of St. John the Baptist in Turin, Italy, since 1578, has been the subject of debate since 1357, when it was displayed in a small French parish. This cloth bears the faint, blood-stained image of a whipped and crucified man. Some contend that the Shroud is the burial cloth of Christ, while others continue to dismiss it as a clever medieval forgery.

We agree with the majority of investigators who feel that further detailed and carefully conducted tests need to be done on the Shroud, including adequate carbon dating. The Shroud is already the most extensively studied single object in history, but new mysteries and findings are opening up, such as the multitude of flower images in the non-body image areas and the quantities of pollens and plant fragments. The Shroud of Turin is like no other object in being the center of such interdisciplinary and international concern.

NEW RESEARCH FINDINGS (cont'd)



APPLICABILITY OF STATISTICAL METHODS TO SINGLE PAST EVENTS

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In an article entitled "Radiocarbon dating of the Shroud of Turin"¹ the investigators, who shared in that investigation (1988), communicate their methods, results and conclusions. The crucial sentences of the conclusion are:

(*) "The results of radiocarbon measurements ... yield a calibrated calendar age range with **at least 95% confidence** for the linen of the Shroud of Turin of AD 1260-1390 (rounded down/up to nearest 10 yr)."

(**) "These results **therefore** provide **conclusive evidence** that the linen of the Shroud of Turin is mediaeval." (Conclusions, p. 614; underlining is ours).

Obviously these statements are not identical, and hence the step from (*) to (**), which is indicated in (**) by the word 'therefore', demands for some underlying reason. In the mentioned article is not given any reason, which seems to indicate that the step from '95% confidence' to 'conclusive evidence' is somehow evident for the authors and most of the readers, especially those, who are familiar with statistical methods, like physicists, physicians and engineers. However, between assertions of statistical and non statistical character exists the fundamental difference that statements containing statistical weights **must always** refer to a **collective of individuals**, meanwhile statements without statistical or probabilistic weight can refer to a **single individual** (When saying 'individual', it can be understood as individual thing or individual event, which happens to an individual thing). Therefore, the reference of a probability or statistical weight to one singular object seems to be meaningless, and hence it seems to be incorrect to infer from (*) a statement like (**), which is not statistically weighted and refers to the same unsubstitutable thing. Summing up, there seem to be two questionable points, which demand for a clarification:

- a) the reference of statistical weights to a single individual;
- b) the step from probability to evidence.

* * *

Concentrating attention to the mentioned distinction between single individuals and a collective of similar individuals on one side, and statements about these entities on the other, the first question concerns the meaning of probability in statements like (*), which refer to one object only. Precisely because there is only **one** indivisible object of reference, the probabilistic weight can **not** mean that two mutually contradictory predicates can be said simultaneously of this object, irrespective of any attached weight. For

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instance, the sentences 'With a probability of 95%, the linen has been fabricated between 1260 and 1390 **and** at the same time 'with a probability of 5% the same linen has **not** been fabricated within this time interval', or, more drastically, 'I am alive with 95% and at the same time **not** alive (= dead) with 5%', obviously violate the principle of contradiction².

The only possibility to save the meaning of the statistical weight in (*) consists in regarding the relationship to the measuring devices and thus a **multiplicity** of measurements. Only the different relation of **different** measuring devices or processes make different statements about one and the same object possible. Therefore, the statistical weight does not express an **absolute property** of the object only, but rather gathers its relationship to a multiplicity of such measurements. Thus, among other things, the claimed step from (*) to (**) makes the statement (**) **independent** of the investigation, which hardly can be accepted. The relationship between measuring devices and object can be loosened, because the devices are, within their differences, similar; therefore one can partially disregard "this concrete" measuring device, but this relationship cannot be simply dropped.

As a matter of fact, 'statistics in itself' means that differences between individual measurements **do exist** and are taken into account, and that the proper domain of statistics consists of **collectives** (things or events, e.g. measurements), and not of single individuals (in the present case: the couple of the unique object and a single concrete measuring device). The individual differences also **impede** that statistically obtained statements are referred back to single individuals, such as any mean value cannot be predicted of the individual numbers as such, but only of the collective of individual numbers, from which it is calculated; otherwise all the individual numbers would have to be equal to the mean value. In the present case, the numbers are measured ages, and if the mean value of these numbers is different from each of them, there rises the question, how the calculated mean value can attributed to the object.

Above all, measurements are not taken from one and the same object, but from **different samples**, which in turn are parts of one and the same object; therefore, in principle, does not exist any longer a unique object of reference. But the samples stem from the same cloth, and consequently each sample can be taken, at least approximately, as a representative of the whole shroud (**pars pro toto**). All these mentioned mutual differences seem to have led the investigators to weaken their results by means of a statistical weight, as formulated in (*). That means that **the employed experimental method** in itself does not allow for **a statement about the age without a statistical weight**. But then, it can only be a **personal conviction**, by which (**) is considered as a consequence of (*).

After these comments on the distinction between 'uniqueness of the object and multiplicity of measurements' we have to consider briefly the distinction between 'probability' and 'evidence'. Here must be considered the distinction between **material individuals**, singles or collectives (in the present case: a

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sample and a measuring device, giving rise to a concrete measure), and concepts. There exist the procedures of 'induction' and 'generalization', which link individual cases to universal laws in both directions: **learning** rules from concrete experiments and **applying** such rules to concrete cases. Note that the link between both sectors is **not purely conceptual or rational**, and therefore a single individual or even a collective of them, cannot be simply subsumed in concepts.

In the present case, the shroud of Turin is an **individual material object**, which in some sense is linked to general laws of nature, but is not completely described by them. Here, a statement about the age of an unsubstitutable and unique thing is required, which cannot be obtained exclusively from general laws. Therefore, the step (*) -> (**) cannot be conceptually derived by means of some calculus, and hence some personal valuation of the situation, including all particular circumstances, is necessary. **One of the most important features of the whole situation is the fact that the object of investigation is a singular material thing.** It must be expected from the very beginning that general laws of nature only give general ideas about the properties of a concrete thing, and that therefore many concrete details should be taken into account. As a matter of fact, science usually operates as if individuals could be subsumed equally under a conceptual scheme, such that the initial distinction between individuals is neglected, when operating within theoretical framework. That means that theoretical scientific methods are by their own nature "partially blind" and must be completed by considerations about the concrete features of the object.

* * *

These objections might show that neither the meaning of (*) nor the step from (*) to (**) is beyond any doubt. However, a positive methodical qualification of the step (*) -> (**) is not easy, and hence it is not surprising that good part of discussions about the mentioned result and its discrepancy to earlier results concentrate in examining other features of the C¹⁴-investigations of 1988. Consequently, up to now the question, which might be called the 'intrinsic truth or the meaning of a statistical method', has been let aside. However, the preceding considerations might have shown that a more careful analysis of the meaning of radiocarbon method, in particular its statistical character, is desirable. This analysis has not to deal with experimental details, or with questions like 'if the limits of confidence should be 94% instead of 95%', but rather with the fundamental features of statistics.

It is not the place here to treat this question in metaphysical terms, which would demand an analysis of the relationship 'individual-species' and similar ones, which point to the well known question of **universals** and their relation to **individual things**. We would rather like to point out that the step from statement (*), which contains a probabilistic ponderation, to statement (**), which is not probabilistically weighted and qualified as "conclusive evident", is **incorrect**, for the three reasons stated below. We let aside the religious dimension of the shroud, and rather consider it as a piece of

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cloth, comparable with any other object subjected to radiocarbon analysis. The following considerations are quite general, but concern and are developed referring to the C¹⁴-investigations of 1988.

These arguments are of different level, but reflect all somehow the same idea, that a single material thing or event, which happens to a single thing, cannot be exhaustively reflected by a conceptual (mathematical or other) scheme. The **first argument** states that in virtue of the uniqueness of the object under consideration all variations of the measures are due to the multiplicity of experimental devices and not to the object itself. As between these single experimental devices and procedures themselves exist irreducible differences, too, they have to be related, especially if it comes out that the spread of results is larger than expected. This cannot be done by a statistical treatment, which finally is referred to the **object** and not to the **measuring devices**, too. The **second argument** deals with the distinction between average and individual value in connection with the determination of age by means of a 'calibration curve' and points out that the employed experimental method requires information from **other** things as the object under consideration. Therefore, an irreducible individual difference is intrinsically inbuilt into this method, which cannot be treated statistically. The **third argument** derives an intrinsic limitation of statistically weighted statements from the **indifference** of statistic calculus, considered in itself, to real past and future on one side, and the **difference** of past and future in the real material world, on the other side.

* * *

1. Range of unspecified errors. "The spread of the measurements for sample 1 is somewhat greater than would be expected from the errors quoted" (Results, p. 613. Arizona: 615-677; Oxford: 720-780; Zurich: 652-700; p. 613, Table 2). In **any case, the statistical results have to be understood in accordance to the initial information that all samples come from the same cloth and thence undoubtedly have practically the same age**. This means that the samples cannot be considered as independent objects, but rather represent essentially one singular object, i.e. the whole shroud. Otherwise a partial result concerning a single sample could not even be extended to the shroud as a whole, as is tacitly done in (*). In view of this initial information, the variations and statistical limits are substantially due to the multiplicity of measuring processes and not to the multiplicity of samples. In other words, statistics reflect the range of error of the result due to experiments and not due to the object.

Without referring to the non-statistical information of identical age of the samples, the usual way of arguing would lead to the conclusion that with high probability the "sample of Oxford" has another origin than the other two samples³. But taking into account that initial information, the results of the laboratories spread over a range, which has not been specified by them. This might have been the reason, why the authors concluded that "it is unlikely that the errors quoted by the laboratories for sample 1 reflect the overall

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scatter" (Results, p. 613). Thus, the width of the overall scatter remains **unknown**, and the decision of the investigators to realize a further statistical treatment of the three results, must necessarily rely on **hypotheses**. One of these assumptions is that "the errors might still reflect the uncertainties in the three dates relative to each other" (Results, p. 613; underlining is ours).

By this step the subsequent discussion is turned away from ages towards their **differences**. We know already that the samples have practically the same age, before and **independent** of any measurement and subsequent statistics. The statistical treatment of the different **measured ages**, which was decided to apply, cannot take into account this identity, because it starts from some different values and reaches at some mean value. Therefore it is not appropriate to extend results whatsoever to parts of the shroud, which have not been examined experimentally. The suitability of the mentioned decision remains restricted to the minds of the concrete investigators, and so does the claimed 'conclusive evidence' (**).

2. Distinction between average and individual. There cannot be derived any information about a **single member** of a collective from the mean value and other moments of a statistical distribution, which is taken from this collective or applied to it. This is irrespective of the width of the distribution, which might be 'wide' or 'extremely sharp'. In the present case, the interesting date is the age of a certain single cloth. Because this cloth is made out of plants, its age is connected with the proportion of carbon isotopes in those concrete plants. This proportion began to change considerably at the moment of the harvest of them. The time dependence of that ratio is governed by the law of radioactive decay, such that from any couple of different ratios the corresponding time interval can be deduced, which by reference to 'now' is converted into a certain age.

Note that the ratios must be taken **from the same piece** under consideration. Obviously, in the present case only the actual ratio can be obtained, and the other must be **substituted** from the natural average proportion of isotopes in living plants, which in turn is a result of statistical elaborations and afterwards condensed in a 'calibration curve' (p. 614). But the difference between the real initial proportion of carbon isotopes in concrete plants and the natural average cannot be determined statistically. There are needed more detailed informations about the concrete object, which might be obtained by an exploration of the history and prehistory of the shroud as a whole. This, in turn, obviously **goes beyond the limits of statistical methods**, and shows that the results of them **are governed by non statistical informations**.

In practice, the mentioned substitution always must be made, and one may ask, why the radiocarbon method normally is considered as successful; if it is, there is no reason why precisely in the present case it should be not successful. But in virtue of the preceding considerations, there is a difference between considering a method as 'normally successful' and 'successful in this concrete, unsubstitutable case'. In any case, the existence of a statistically

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obtained 'calibration curve' assures the validity of the radiocarbon method 'in general', but not for each investigated object separately.

It is also worth to consider that in many cases, the radiocarbon method is the only one (up to now), by which the age of a piece can be determined. **In these cases the accuracy of the result cannot be checked independently**; there are only estimations, which are taken from other sources than the actual object. In the present case of the shroud, however, there exist checks, which consist in the former investigations of the shroud by means of non statistical methods and disapprove the results of the C¹⁴-investigations of 1988.

There exist other forms of independent information, which may improve the consistency of experimental results, as, for instance, the 'archaeological context', or the estimation of the physical state of the object under consideration. Also the possibility of taking more than one sample out of one object, whose ages are linked with each other, as it is in the case of the shroud. Another case of various samples is that of a tree, where the original locations of the samples are separated by a certain number of year-rings, which in turn can be counted. It is clear that these last two types of examples ('shroud' and 'tree') differ essentially, because from equality of age of the samples cannot be derived any information about their age itself, meanwhile from a *nonzero difference* of age of the samples can be deduced an information about the age of the singular samples and thus of the whole.

3. Asymmetry between past and future. There exists another approach to the mentioned limitation of the results of statistical methods, which consists in the consideration of the link between statistics and prediction of single future events on one side, and statistics and a collective of past events (e.g. already realized measurements).

Material events are placed in a temporal order, and they have definite results, which cannot be changed a posteriori. Therefore, any statement about a real past event has a truth value, which is **either** 'true' **or** 'false', and therefore, there is no sense of speaking of "true and false at the same moment" if referred to the same single object. It may happen, of course, that an observer does not know, which of these truth values apply in a particular case. On the other hand, as experience shows, the prediction of future events can fail, until the expected event takes place at a certain moment. Thus, statements concerning single future events have no definite truth value, unless the expected event happens⁴.

The relation of a statistical distribution to material events in temporal order is as follows. A distribution can be **obtained** from a collective of already realized measurements or events of another type, or can be **preconceived** and then **applied** to these collective of events. That is, irrespective of the provenience of the statistical distribution, there exists a correspondence between the mathematical object 'statistical distribution' and a collective of real, i.e. in the moment of consideration already **past** events. Experience shows that a collective of **similar events** "reproduce" the same statistical

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distribution. Therefore, starting from the distribution, the result of a collective of similar future events can be **predicted** ("a certain statistical distribution will apply to a collective of certain future events"). That means that

- a) the statistics is independent of time;
- b) the single events (**this concrete event**, "to which a concrete observer could point with his finger") occurs at a concrete and irreversible moment in time;
- c) the 'collective' mediates somehow between the timeness of single events and the timelessness of statistical distributions: the collective as such is concrete in space and time, but when taking the collective as a whole, the internal order of 'after' and 'besides' between the individual members of the collective is disregarded.

Note that if there is built in a time variable into a statistical distribution, this variable distinguishes only between earlier and later **in general**, but not between **past and future as seen from a concrete observer**, and thus does not affect the assertions a) to c). Thus, there cannot be predicted, for instance, the features of the 'next event' in a series; 'next' as seen from a concrete 'now'.

In other words: No statistical distribution can be obtained from single events, and no prediction of single events (e.g. measurements) is possible. Thus, statistical methods cannot reflect the 'jump' from 'possible' to 'real' and therefore from 'future' to 'past' in reality, and equally not the 'jump' of that quality of a statement about real events, which consists in 'not possessing a definite truth value' to 'possessing a definite truth value'. The 'passed' and 'future' of statistics could only be distinguished by different values of a time variable, and therefore the 'passed' of statistics has not the qualification of past events in material nature (in the present case: the harvest of certain plants, which will be employed later on in the production of a certain cloth), i.e. to be **unchangeable** and **well determined**.

Consider, as an example, the case of a cube. Suppose equality of chances for each side, so that the probability that after having been thrown the cube shows a "5" on the upper side, is $1/6$, in any case exactly **one value**. Then the cube is really thrown and shows either a "5" or another number, which might be considered equivalent **either** to "probability" "1" **or** "probability" "0". The branching process from $1/6$ to 1 or 0 cannot be calculated by any method whatsoever, and hence statistics leaves this process as such undetermined. There remains the well known, but always surprising fact that many similar concrete events, which are unpredictable as single ones, are predictable, if they are taken as a whole, without making reference to this or that event. Thus, any statistically founded statement possesses an intrinsic lack of determination, which impedes its use in order to predict a singular event without any possibility to fail.

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In the present case of the shroud, however, we have to deal with real past events, but we have seen that statistics is a conceptual scheme, which not refer by itself to a concrete material thing or event, and therefore cannot distinguish concrete past from concrete future. This distance between statistics and material events manifests itself amongst other features in the indifference of conceptual past and future on one side and the difference between real past and future, on the other. As the statistical prediction of single future events can fail, the same is true in statistical statements about real past events (e.g. the harvest of very concrete plants). In particular, the probabilistic weight of the statement "This cloth has been fabricated between 1260 and 1390" means, that investigations have not completely removed the initial subjective lack of knowledge, and that the mentioned statement may be false. But a **lack of knowledge** does not "provide" a "conclusive evidence" (**). Only the investigator can attach the mentioned qualities to a statistical result by a judgement that the statistical result is "evidently" true, which, in view of the preceding considerations, seems to be somewhat voluntaristic and therefore dependent on personal attitudes, which, in turn go beyond intersubjective science.

* * *

Conclusion: The preceding paragraphs, although in part obtained from considerations of a particular case, show that **statistical methods cannot** be applied to *singular events* (Things change completely, if there are two or more independent similar events). In particular, they cannot provide certainty of the results, which is a property of statements about past events. In the present case, **statement (**) is not based on statement (*)**, and thence cannot be considered as a result of the mentioned investigations. Furthermore, any statistical elaboration **is based on non statistical** informations, which have a stronger power of proof.

- 1 Damon, P.E. et al., *Nature*, 337, 611-615 (1989). References in the text refer to this article.
- 2 It might be interesting to note that some theoretical physicists claim that this principle of contradiction is not valid in the "microscopic world" of atoms and elementary particles. In fact, the well known physicist Erwin Schrödinger, one of the founders of quantum theory, formulated in 1935 a situation, which he esteemed to be contradictory, which is commonly known under the name of 'paradox of Schrödinger's cat'. But note that not nature, but only theory exhibits such paradoxes. In the present case, our interest is to underline the validity of the principle of contradiction.
- 3 Of course, here could be made the same objection of treating unseriously single objects with statistical arguments. In doing so, one has assumed the argument of the present article.
- 4 These cases correspond to the well known distinct logical 'principles of bivalence' and of '**tertium non datur**'. The first means that a sentence referred to an object has a truth value, which is **either 'true' or 'not true** (i.e. false)', and the second means, that for any sentence A holds 'it is true that (A or non-A)', where A is not supposed to possess a truth value. The **locus classicus** of these principles is the famous chapter 9 of the 'Peri Hermeneias' of Aristotle.

THE CASE OF THE UMBELLA DISPUTED

H. LEYNEN, Antwerp

(Br Bruno Bonnet-Eymard of France has published several articles recently disputing the Carbon 14 testing on the basis of comparison with other textiles. He has claimed that the Umbrella of Pope John VII shows the Shroud figure)

Perhaps I can help with a few details in the case of the "umbrella" of "Pope John VII". Bro Bruno Bonnet-Eymard is a very enthusiastic person, very busy, very dedicated. But his experience in the textile art is not on a high level. First he suspected hanky-panky with the S. Maximin sample (5 "ends" 2 inch long), "exchanged" for genuine woven pieces of fine, known linen, cannot be done. The golden stitching in twill pattern, on top of the canvas, was quite misleading. Now, I see he has proclaimed a mediaeval cloth from about 1300 - 1350 or later, as an irrefutable witness (of the Shroud figure) from the 8th C.

In short: the piece is (was) an "extended" and reworked *epitaphios* completely embroidered in gold and silver, showing a reclining Christ figure, somewhat re-cut (and with added lance and sponge) and surrounded with rows and rows of saints and Bible images. Size: 2.75 m x 1.85 m. Scenes and figures are arranged in such a way that it could not be used as a true *epitaphios threnos*. A real one is borne over the celebrating priest during Easter ceremony and becomes, by this use, an "umbrella". Details of how the cloth was used in S. Peter are not known. It belonged to the altar of the Vernicle, in the same aisle as the virgin chapel built (or installed) by John VII (705) and splendidly provided with mosaics about the life of the Mother of God. The Veronica altar however stood apart. The Vernicle altar was covered with a wooden dais, the relic was safe in a golden strongbox about 4 or 5 metres above ground, crowned with delicate marble cupolas, resplendent in the most beautiful coloured marbles. The catch of this cloth is that it does not correspond to any of the measured plans and that the scenes and figures were assembled head to. Exhibition of the complete surface left part upside down, whatever the direction.

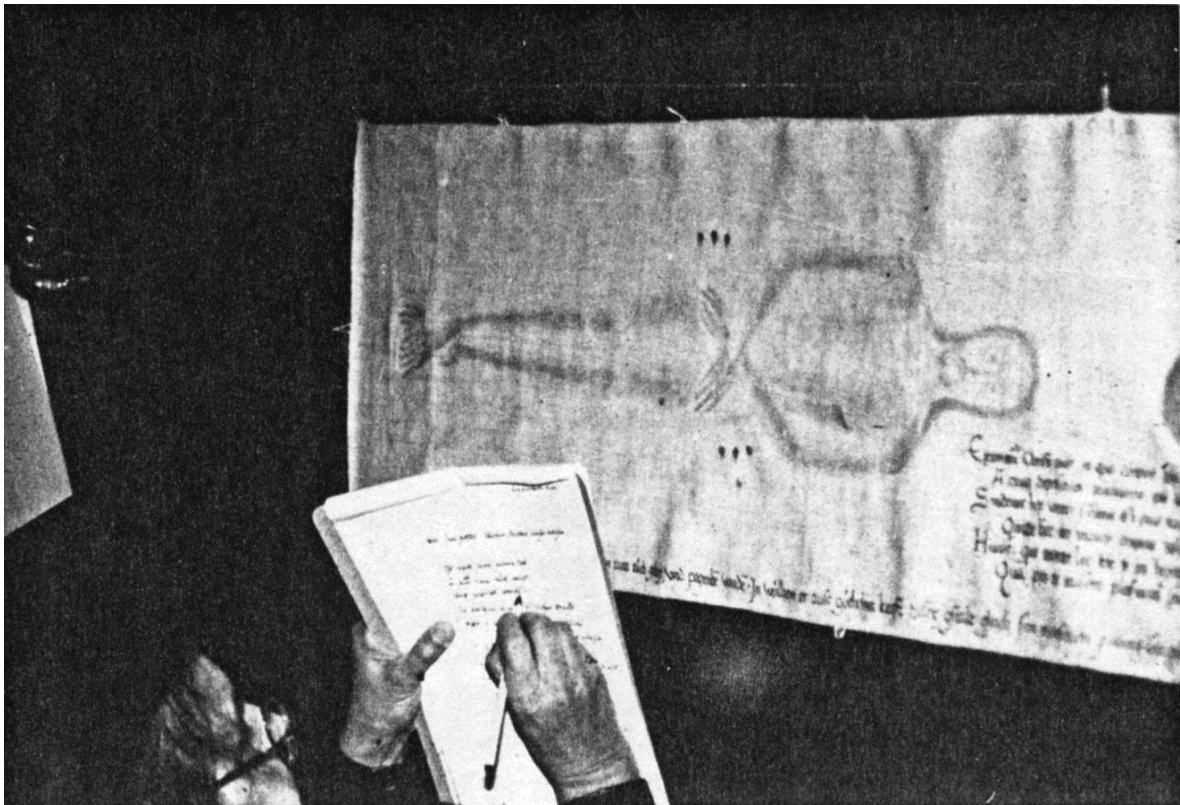
The type of cloth (+1295) came into use on liturgical requirement, started by interpretation of Mary's Lamentation in the Byzantine Rite, developing rather late in the form and use up to now. Rather surprisingly even relatively recent publications followed Grimaldi and Muntz in their antiquarian enthusiasms, without realizing the umbrella was for the Veronica service and had no connection with the altar and oratorium of the Virgin, except that both occupied adjacent space in the old S. Peter, no wonder in the architecturally crowded Constantine basilica.

THE CASE OF THE UMBELLA DISPUTED (cont'd)

The oratorium was, indeed, sometimes called the chapel of Veronica's sudarium. Pieces of the Virgin mosaics and ornaments have survived. Of the Veronica, some columns may have survived, but the little bronze doors of the golden cage were lying among the demolition tools when Grimaldi last saw them, later reported in S. Peter's archives.

Have fragments of the "umbrella" survived? No one knows, although I am pessimistic. An enquiry at the Apostolic Library did not result in a useful reply, up to now, due to a shortage of staff, I suppose. Another umbrella, this one a true liturgical ornament, also used in honouring the Veronica, has not been reported in specialized publications either.

(Adapted from *Sudarion* the journal of the Belgian group Lijkwade Genootschap)



Hilde Leynen making notes from the Shroud copy attributed to Durer at Lier, Belgium, 1985

24 SHROUD NEWS No 58 (April 1990)

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

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

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

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

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