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THE ENIGMA OF THE HOLY SHROUD

The Shroud of Turin is the holiest object in Christendom. To those who believe, it is proof not only of Jesus the man, but it is also evidence of the Resurrection, the central dogma for hundreds of millions of the faithful. Regarded as the winding sheet, the burial cloth of Jesus, it is revered by many, and on the rare instances when it is displayed, the lines to view the Shroud go on for hours.

The Shroud measures fourteen feet three inches long and three feet seven inches wide. It depicts the full image of a six-foot-tall man with the visible consequences of a savage beating and cruel death on the cross, in other words, crucifixion. Belief in the authenticity of the Shroud is not universal. To critics it is a medieval production, created either by paint or by a more remarkable process not to be duplicated until photography was invented in the nineteenth century. Nevertheless, a fake.

Despite the debate about the Shroud's authenticity, it has been described as "one of the most perplexing enigmas of modern time." This enigma has been the subject of study by an army of chemists, physicists, pathologists, biblical scholars, and art historians. Experts on textiles, photography, medicine, and forensic science have all weighed in with an opinion.[1] Had the image on the burial cloth been that of Charlemagne or Napoleon, the debate might have proceeded along scientific lines. But the image is that of the crucified Jesus, so to some it means that the religious biases of each scientist and expert are grounds for suspicion. To others the stakes are even higher. The reality of Jesus and the Resurrection may either be confirmed or challenged by an ancient linen cloth.

Officially, the Catholic Church is neutral and, while guarding the Shroud from overzealous poking and prodding, has made it available on occasion for study. Recently this study has come to include carbon 14

dating. The results of this caused quite a stir in the months preceding the most recent exhibitions, as that process declared the Shroud itself to date to the same time it appeared in France. For some the jubilee celebration was a bit chilled because of the controversy of the latest test. For others science simply didn't matter. Crowds waited for hours to get a chance to view the image of Christ on his burial sheet. Scientists retreated and regrouped for a battle that was not decided by that last test.

The Shroud had passed other challenges before carbon 14 dating came along.

For centuries, the Shroud had been the property of the House of Savoy, who treated it as a most sacred object and stored it in the Chapel of the Holy Shroud in the Cathedral of St. John the Baptist in Turin. While some had regarded it as a painting, just one of many depictions of the crucified Jesus, others regarded it as being the true cloth that was used to prepare Jesus for burial. It was not until 1898 that science would enter the mix in the form of the photographer Secondo Pia.

Pia had been given permission to photograph the Shroud twice, once in daylight. The Shroud itself is on a very thin material, although a backing had been sewn onto it to protect it from handling. When one is thirty inches away from the cloth, the image of the man depicted is visible. As one gets closer, the image is hard to see.

Photography in Pia's time was still in its early stages of development. He set up his boxlike camera in front of the altar. He had no automatic focus or guide to shutter speed, and worse he was given a short time to take his photographs. He took two photographs, one with a fourteen-minute exposure, the other lasting twenty minutes. Then he rushed back to his darkroom to develop the images.

The results were unbelievable. Through the relatively new art of photography, he showed that the Shroud was not a painting, as critics had branded it much earlier, but a negative image. It was a photographic image of Jesus created long before photography and the negative process were invented. Light and dark shadings provided depth to the image. Pia was at first relieved that his pictures were developing, then he was astonished by the image. He had no question that he was among the first to see a likeness of Jesus Christ, hidden to the rest of the world for nearly two thousand years.

The results of Pia's images would change the way the world viewed the

Shroud. It now showed an image that could be studied to see the real Jesus, as no one had for two thousand years.

For such an important relic, the key to declaring its authenticity rests in the available science and in the provenance. As in the art world, a broken provenance, or chain of ownership, is a reason to be suspicious. Police use a near-similar term, chain of custody, to keep track of evidence. The authenticity of the Shroud rests in passing the available testing methods and in proving to have a point of origin that dates to the first century.

The Travels of the Holy Shroud

The Gospels are invaluable in providing an eyewitness account to the Crucifixion. Jesus was taken by the Romans from the Garden of Gethsemane. In rapid succession he was arrested, interrogated by Pilate, condemned to death, scourged, and delivered to be crucified. After his Crucifixion he was placed in a tomb secured by Joseph of Arimathea.

When the women returned to possibly administer to the body of Jesus on Sunday, it was no longer in the tomb. Jesus had been resurrected from the dead, the premise of the new religion that would soon develop. The winding clothes were left behind.

John describes St. Peter and "the other disciple whom Jesus loved" heading toward the tomb.[2] The other disciple is most likely John, the author of that Gospel, who may have felt it was modest not to name himself. The "other disciple did outrun Peter" and was first into the chamber. He noticed "the linen cloths lying" and mentioned them three times. Luke, too, mentions "the linen cloths laid by themselves."[3] Neither recorded anything further about the linen cloth.

Early Gospel writers discussing the low point and the high point of the story of the life of Jesus may be forgiven for an imperfect accounting of his personal inventory, however, the lack of a record becomes problematic. Until recently, there is almost no mention until the fourteenth century of the winding clothes of Jesus or the imprint his body made in the cloth.

It was the author Ian Wilson who provided a great deal of evidence that filled in the gaps in provenance.

During the short ministry of Jesus, a king in the city of Edessa heard of his powers of healing. This King Abgar wrote a letter to Jesus requesting that Jesus travel to Edessa to cure the king. Jesus wrote back basically

telling the king he had too much on his agenda at the time but would send an apostle. These letters are remarkable in themselves, as despite Jesus' education, nowhere in the Gospels is there a record of Jesus writing. While the Roman Catholic Church has not put emphasis on the Abgar story, both the story, the letters, and the subsequent travel of Addai or Thaddeus to Abgar is recorded. Eusebius, one of the church's first historians whose works survived, discusses Abgar in detail. He calls him "the monarch of the peoples in Mesopotamia" and claims that all records of the Jesus-Abgar correspondence were in the records office of Edessa.[4]

Today the Syriac Christian Church commemorates the correspondence in its Lenten liturgy.[5]

Edessa was not a backwater province, and its modern name, Sanliurfa, meaning Glorious Urfa, is not exaggerated, considering its history. Some believe the Garden of Eden was nearby. When the Seleucid rule followed the conquests of the Greek Alexander the Great, Urfa became Edessa. It would keep that name for the next two thousand years until the Ottoman Empire was formed.

In the century when Jesus lived it was a cultural crossroads where Persian and Indian thought met with the Western ideals of Rome and Greece. It became a crucible of strange heresies and exotic gnostic doctrine.

It was into this world that an apostle—not of the original twelve but of the wider circle of seventy—traveled, bringing his ability to cure without herbs and a remarkable gift. It is an image of Jesus, an acheiropoietoe, that is to say, an image made not by human hands. King Abgar V was suffering from an unknown disease, possibly gout or leprosy. Eusebius called it "a terrible physical disorder which no human power could heal." Since he is also known as Abgar Ukkama, meaning Abgar the Black, many believe it was some form of skin disease. Upon receiving his visit and gift he was presumably cured. He did have one problem, however, with the sacred object. World religion was in a state of turmoil, and the Middle East, then as now, was a friction point where politics and religion made a combustible combination. Jews regarded a burial cloth as unclean. Not only was it not an object of reverence, but it also was not to be handled period. Romans would regard an object of the charismatic rebel Jesus who challenged the authority of Rome as something to be destroyed. Pagans of Asia Minor, of which Edessa was part, regarded a portrait or depiction of a person, dead or alive, as bad magic. Again, it was something that needed to be destroyed. Abgar's decision to hide his prize in the walls of the city was a wise one. His successor was his rebellious son Ma'nu VI, who was threatened by the new Chris-

tianity. He would go on an anti-Christian rampage that included destroying any religious article.

Edessa would find its way back to Christianity when Abgar VIII took the throne in A.D. 177. He would mint a coin with his portrait on one side and the emperor of Rome's portrait on the other side. Since Emperor Commodus had married a Christian, he was not averse to the new religion. The coin is also remarkable as the first coin to depict a Christian symbol, a cross on Abgar's crown. When a new and less tolerant emperor took over for Commodus, succeeding coins were minted without the symbol.

The image of Jesus on the Shroud is not mentioned again until May of 544, when the Persians led by King Chosroes I Anushirvan attack Edessa. The Persian Army erected a huge rampart against the wall of the city. But the defending Edessans tunneled under their city wall, or perhaps through an existing secret passage, to set fire to the siege machine. With the rampart ablaze, the image was rushed out of the tunnel and splashed with water. The rampart burned, and Edessa survived the onslaught.

Sometime after Edessa's victory the *Acts of Thaddaeus* records the gift of the cloth, which is referred to as a tetradiplon, that is, folded into four. This may be the first time that the size of the cloth is determined. It distinguishes the Shroud from a burial napkin, or the handkerchief-size Veil of Veronica.

While the survival of Edessa itself is not critical to the Shroud's provenance, it is important to note that around the time of the Shroud's reappearance, the depictions of Jesus had changed. Byzantine art, which has done much to preserve the representations of Christian figures, had usually portrayed Jesus as being beardless. This was more common to Greeks and Greek gods but was not typical of Jewish men. After the emergence of the Shroud in the sixth century, Byzantine art took a dramatic turn and began picturing Jesus as the Shroud did, that is, full bearded and long-haired. Enigmatically a V at the bridge of the nose became almost universal in Byzantine paintings depicting Jesus and is mirrored on the Shroud.

Edessa managed to defend itself against the Persians, and it was claimed that the Shroud had protected the city. True or not, the Shroud was now known to the world and did make an impact. While many writers on the Shroud disparage the gaps in ownership, at least a handful of writers would record Edessa's sacred image. These include a French bishop, Aroulf, and St. John Damascene, who would both refer to the burial cloth in seventh- and eighth-century writings, respectively. The greatest impact, however, was in the art world. The Shroud served as such an inspiration

that soon there was a flood of new art depicting Jesus in this new way. The sheer number of new paintings was so immense that later there would be a backlash against such art. In 726 Emperor Leo III banned the worship of images, and the painters of such icons were regarded as greedy swindlers. No doubt this was a reaction to paintings being fraudulently passed off as the real thing. Despite this, the Shroud itself was still highly regarded and revered. Leo, the lector of Constantinople, recorded his 787 visit to Edessa and seeing "the holy image made without hands."[6]

Edessa did not manage to hold onto the Shroud forever. When the rising Islamic threat became a reality, the city was soon invaded. Negotiations with the Arab conquerors allowed for the image to receive a new home, in the eastern capital of Christianity, Constantinople. The basilica of St. Mary of the Blachernae in Constantinople received the Shroud on the feast day of the Blessed Virgin, August 15, 944. In 1157 an Icelandic abbott, Nicholas Soemundarson, writing in his native Old Norse language, lists the relic among many he had been privileged to see in his travels to Constantinople, specifically citing it as "shroud with the blood and body of Christ on it."[7]

After the armies of Islam took control of Christianity's holiest city, a series of Crusades were launched to recover Jerusalem. On their way to Jerusalem, the Crusaders sacked the Christian city of Constantinople, which fell victim to their three-day rampage, which spared none in an orgy of pillage, looting, and rape. Anything that could be carried was plundered, anything that could not be taken was destroyed. The Historian Niketas Choniates who served as an eyewitness said, "Even the Saracens would have been more merciful." Steven Runciman, writing in the third volume of the *History of the Crusades,* said, "The sack of Constantinople is unparalleled in history."

In 1204 nine centuries of collecting works of religious artisans, relics of saints, and art objects, and of building libraries replete with volumes of history and science came to a disastrous end in a matter of days. Mobs rushed through wealthy homes and stately buildings, sparing neither libraries nor churches.[8]

Robert di Clari, a knight from Picardy, had arrived in Constantinople a year before the massacre. He would remark, "Neither Greek nor Frenchman knew what became of this Shroud when the city was taken."[9] Wealthy citizens were tortured to reveal the locations of their treasures, and after their rampage thousands of soldiers were ordered to turn over their loot to the Frankish nobles.

The Shroud had truly disappeared from history and would not emerge again for nearly 150 years. There is more than one theory of where the Shroud was in that missing century and a half. The author Ian Wilson[10] believes it was taken by Hugh de Lille de Charpigny and held by his family and heirs. Geoffrey de Charny was one of those heirs, and he and his wife, Jeanne de Vergy, are the next documented owners. Here, in France, it existed either to be protected, or even to provide protection to the Cathars, who were under siege by the Roman Catholic Church.

During that time there are hints that the Shroud became more known in Western Europe. Gervase of Tilbury mentions the crucified Jesus leaving an imprint of his entire body on a sheet of white linen. A few years later in the Holy Sepulchre Chapel of Winchester Cathedral, a fresco depicts a man with a large shroud meant to cover the full length of the body. Grail literature, too, recalls the story of the Holy Grail and the preservation of the blood of Jesus.

In 1353 Geoffrey and his wife showed the Shroud to the dean of a proposed abbey at Lirey in France, where they wished the image to be housed. The abbey would be built for that purpose. Geoffrey would die in the act of protecting his king from a lance at the battle of Poitiers. The year after his death, his widow, Jeanne, in reduced circumstances made the decision to display the Shroud.

At the time churches rivaled one another for attendance, and such an important item would bring Lirey both pilgrims and pledges of money from the faithful. Bishop Henri of nearby Troyes had his own church to protect. His church owned the body of St. Helen, which by comparison would be eclipsed by such an object of veneration as the Shroud. He launched an investigation. Allegedly he heard the confession of a man who painted the image. While the bishop ordered the display ended, the Charny family ally, Pope Clement VII, not only allowed the display but also ordered the bishop to silence.

A generation later a new bishop of Troyes, Pierre D'Arcis, called for the end to the image's exhibitions, claiming the motive was profit not piety. Again, Charny connections won the day. The attack on the Charny family by the rival bishops of Troyes may be chalked up to jealousy, but one point was made that is used by modern critics of the Shroud. The Charny family had steadfastly refused to answer the question on just how they came to own such a relic.

There may have been good reason. Barely sixty years had passed since another Geoffrey de Charnay, note the spelling variance, was burned at the

stake. This Geoffrey was the precept of the Knights Templar in Normandy and possibly the second-highest-ranking survivor of a vicious attack on the sacred order. Along with Geoffrey was Jacques de Molay, the grandmaster of the Order. It is said that as the two men burned, de Molay had cursed both the French king and the current pope, who had betrayed the order. Neither, he said, would live a year. Neither did.

The story of the Knights Templar begins in 1118 when nine French nobles pledged themselves to guard the highways surrounding Jerusalem, to make them safe for pilgrims. Two hundred years later they were a most powerful organization, second only to the church itself. Having lost Jerusalem while amassing great wealth, the Knights Templar made many enemies, such as the king of France. He would create evidence of heresy to destroy the order. The Templars were the subject of mass arrests, cruel tortures, induced confessions, and finally for many, execution. They were ordered to disband.

Though the Knights Templar had been officially disbanded by both church and state, in their place rose other elite orders. Geoffrey himself, born too late to have been a Templar knight, was a member of a small elite Order of the Star, which like the Templars was a religious military order.

Heirs of Geoffrey may have deemed it wise to wait the half century before revealing their sacred treasure. In fact, during the trials of the Templars and the cruel tortures of medieval investigators, many knights confessed to "worshipping" a bearded head. Ian Wilson believes it is more than coincidence and points to a Shroud-like depiction at Templescombe in England as evidence that the Shroud and the bearded head were the same. He believes the Templars had come into possession of the image in 1204 and retained ownership until de Charnay became the guardian of the image. The dropping of the vowel in the name is typical of medieval spelling.

The last of the de Charnys was Margaret, who would give the Shroud to the wife of Louis I, the duke of Savoy. While the church forbids the sale of relics, the House of Savoy reciprocated the gift with their gift of two estates, complete with a castle and ongoing revenues.

What is less well known is that the Savoy family and the family of de Charny and de Vergy are related. It was Ian Wilson who had speculated that Charny and Charnay were the same. He was proved correct in 1987 when Noel Currer-Briggs, a genealogist and a member of the British Society for the Turin Shroud, proved that the Geoffrey of Lirey was the nephew of the Geoffrey who was burned at the stake. Currer-Briggs, who has worked

for *Debretts* and *Burke's Peerage,* the two most distinguished journals in the world of heraldry and genealogy, would also show that the younger Geoffrey had a second cousin who had been a Templar grandmaster. Geoffrey and Jeanne de Vergy both had grandfathers who were seneschals of Champagne and Burgundy. It was the seneschels who were given secret orders by the king of France to arrest the Templars on Friday, October 13, 1307. An early tip-off may have allowed the commander of the Paris Temple, Gerard de Villiers, to escape with the treasure of that temple just ahead of the king's men.[11]

The Shroud became better known under the control of the Savoy dynasty, and in 1464 Pope Sixtus IV believed it was the authentic burial cloth of Jesus. While the Savoy family traveled extensively with the Shroud, in 1502 it was given a permanent home. The dukes built a special chapel at Chambery to house their relic.

It was here that on December 4, 1532, a fire broke out in the Sainte-Chapelle at Chambery. The Shroud was protected in a grill that required four locks to be opened. The problem was that four separate men held those keys. The fire was so hot that silver, which does not melt until 900 degrees Celsius melted on the folded cloth and burned through the folds. The fire was doused with water but not before doing irreparable damage to the cloth. The image itself survived almost untouched, though the cloth bears the scar of this fire. A little over one year later repairs would be done by sisters of the Poor Clares convent. The Shroud was stretched out and sewn onto a holland cloth. Patches were applied to the damaged areas. After the repairs the Shroud was then exhibited in several cities. The family of Savoy moved their capital to Turin, and soon the Shroud would be housed in that city. It would remain there until modern times.

Fairly regularly the Shroud was displayed both for the public and often for private audiences with holy men and European royalty. After the defeat of Napoleon it was hung out over a balcony in celebration.

In addition to being regularly exhibited, it was also subjected to more than one alteration. In 1868 it is known that Princess Clotilde of Savoy would change the lining of the Shroud, replacing it with crimson taffeta.

In September 1939, following the outbreak of war, the Shroud was removed from Turin and brought south to the Benedictine Abbey of Montevergine. Only the vicar general, a prior, and two monks were told just what treasure they were holding. In October 1946 the monks were shown the Shroud, and it was returned to Turin.

Months before, the people of Italy had voted for an elected government, and the king who was the owner of the Shroud was no longer a king. Umberto II lived until 1983, and in his will he officially made the Vatican the owner of the image.

The Science

From the day in 1898 when Secondo Pia took his photographs, the Shroud became subject to a massive number of tests, debate, and more tests. The man depicted on the Shroud, according to Dr. Robert Bucklin, the deputy coroner and a forensic pathologist of Las Vegas County, is described as being five foot eleven inches tall and weighing 178 pounds.[12] Height is something that forensic scientists can determine with very little trouble and a high degree of accuracy. There are 206 bones present in the human body. Provide a femur, a tibia, or a fibula, and with a simple calculation the scientist has the full height. The sex of a person, as well as the race, can also be determined by the bones.[13] The man on the Shroud was above the average height and weight of most men at the time and place in history. The Harvard professor Carleton Coon stated, "He is of a physical type found in modern times among Sephardic Jews and noble Arabs."[14] Archaeologists who studied skeletons of the area have established that the average build of a Semite male at the time of Jesus was five foot one inch and the average weight was 110 pounds.[15]

The combination of the then new art of photography and forensic science would also help scientists learn more about their subject. Dr. Bucklin, whose career has been spent mostly in California and Nevada as a medical examiner, and who is now an active expert witness in many modern murder cases, would determine the cause of death of the man wrapped in the Shroud. He had lesions on the head, including numerous puncture wounds, swelling over one cheek, most likely a black eye, a wound in the left wrist, and swelling of both shoulders.[16] The actual cause of death may have been the severe scourging. The final blade wound did produce both blood and water, as one Gospel recalls. It is the effect of both the lung and heart area being punctured.

The early photographs convinced many that the man on the Shroud had been crucified, and this conviction would only grow as science improved.

Future photographers would have their chance. In 1931 Giuseppe Enrico, chosen by Victor Emmanuel III of Savoy, the king of his country

and the owner of the Shroud, would be allowed to work without the glass covering the cloth and to take advantage of the newer developments in photography. In 1969 the first color photographs were taken, and more recently even X-radiographs (images created using short-wave radiation) and high-quality color photographs were taken, allowing life-size transparencies to be made. All would be valuable tools in further research, although it was the first photographs, by Pia, that were the most instrumental in creating new interest for the Shroud.

Soon after the photographs were published, Yves Delage, a professor of anatomy at the Sorbonne who reviewed the photographs in detail, declared he was convinced that the man on the Shroud was Jesus. He presented his findings in a professional paper and pointed out that he was an agnostic. His paper met with the derision and outrage that greeted many scientists as most regarded the Shroud as a fake. Despite his credentials, he was ordered to rewrite his paper and limit it only to actual science. But he became a believer, and over the years the Shroud would claim other believers as well.

After the early photographs became more widely known, Pierre Barbet, a French doctor, traveled to Turin to see the 1933 exposition. On the final day, the Shroud was taken outside the cathedral and could be viewed in sunlight. Barbet was able to view the cloth from less than three feet away and was moved by the visible difference in color that the blood made. After his own lengthy investigation he went on to write *A Doctor at Cavalry,* detailing his findings. Medical examination now had more evidence than before to discuss the Crucifixion. Up until the most recent times, the nail wounds in the hands of Jesus were depicted as having pierced his palms. Yet the palms alone could not support the weight of the body; the nails would have simply ripped through the hands. The Shroud, however, depicted the nail wound on the left wrist. (The right wrist is covered by the left and so cannot be seen.) In the wrists is an area called "the space of Destot," an opening not known about by anatomists until the nineteenth century. This opening through the bones was apparently known to the Roman executioners.

Barbet's experiments with fresh corpses proved that a hole in the palm could hold 100 pounds. A hole in the wrist through tightly packed carpal muscle could hold 240 pounds.

A nail driven through this space would sever the median nerve and pull the thumbs tightly to the hand. This too is shown on the Shroud, where the thumb of the left hand is not shown at all. This is considered

evidence that the Shroud is not a medieval creation, as such anatomy would not have been common knowledge, if it were known at all in that period.

The collection of evidence by medical and forensic experts would all weigh in on the side of declaring the Shroud authentic. In addition to the nail wounds there are three sets of major wounds, those made from the Crown of Thorns, the brutal scourging, and what may have been the final death blow made by the lance. Commentary on the blood flow from the various wounds indicates that a forger would need to have done a great deal of research in blood flow. While Dr. Barbet had the advantage of studying cadavers, it would be unlikely that an artist would be presented with such an opportunity.

Crucifixion was a common practice during Roman times. Capital punishment was common, and crucifixion is its cruelest form. The slave revolt of Spartacus ended with six thousand crucifixions. While putting down the rebellion in Jerusalem in A.D. 70 Titus crucified five hundred Jews daily. When an individual was targeted for death by crucifixion, he would first be subjected to flogging. Hebraic law limited the number of lashes to thirty-nine. Roman law dictated a slave could receive a maximum of forty lashes. While flogging on English ships in the eighteenth and nineteenth centuries could see men die of 40 lashes, the man on the Shroud would suffer 120 lashes. Surviving such a beating would have certainly left him in poor shape to carry the hundred-pound crossbeam of the Cross through the city streets up to the place of execution. Testimony of Gospel writers regarding a man being ordered to help, as well as knee bruises evident on the legs of the man on the Shroud, concur that the Cross was carried with great difficulty.

Just how the image came to be on the linen cloth was for years the greatest source of debate. The world of religious artifacts is rife with forgery and fakes, and many dismissed the Shroud as one more man-made creation. Many scientists had a built-in prejudice that the Shroud was simply a painted cloth.

Between 1976 and 1977 a handful of scientists began corresponding about the Shroud. In March 1977 they would participate in the U.S. Conference of Research on the Holy Shroud. Many who attended would come together in the next year to create a Shroud of Turin Research Project, more commonly known as STURP. Others left the conference to create the BSTS, the British Society for the Turin Shroud. Over several years it

would be STURP that took the lead in requesting and performing numerous tests on the Shroud, while attempting to stay objective about both religion and politics. Because the majority of STURP members were Christians, they would be considered to have a built-in bias, although even critics admitted "we could not ignore the sterling work of STURP and other scientists."[17]

One of the early tests was to determine where the Shroud had been. Dr. Max Frei of Switzerland had taught microscopic techniques at the University of Zurich and set up a crime lab for police. In 1973 he was given permission to take samples. He took sticky tape and lifted residue from the Shroud's frontal end. His twelve samples yielded nearly fifty different types of pollen. From this he determined that the pollen on the Shroud was consistent with that of an object exposed to the air in Palestine, Turkey, and France. Every grain of pollen has a very hard outer shell that can survive for tens of thousands of years. This shell, called the exine, can attach itself to a suspect's clothing, and detecting the presence of various exines is a method used to provide evidence for or against a suspect being in a certain location. While Frei had traveled to these various areas to collect pollen at different times of the year, not everyone agreed with his conclusions, which were published in 1976. Those who agreed with Frei's conclusions would admit that pollen alone could not provide firm evidence of just where the Shroud had been, but it would take an inventive forger to even think of gathering such pollen.[18] Those who disagreed pointed to evidence that the Shroud in numerous exhibitions was touched, kissed, and handled by many whom had come from all over to view the object.

While such corruption of evidence would make a modern crime scene investigator cringe, there was worse news. The Shroud was actually vacuumed to remove dust particles after Frei's test. Some of the minute particles removed turned out to be paint, which led to serious debate. Though it would later be proven without a doubt that the Shroud was not painted, the evidence of these paint particles had to be accounted for. It was discovered that religious painters would travel to Turin to touch their artwork to the Shroud. Since the Shroud itself is a first-class relic, this immediately raised the status of the new painting to a third-class relic. An example is found in the Royal Monastery of Guadeloupe near Toledo, Spain. Here is preserved a copy of the Shroud with an inscription stating it was "laid upon" the Shroud of Turin.[19] STURP exhaustively covered the paint controversy, and the majority of scientists working on the project team concluded that while a substance found in paint may have touched the

Shroud, it did so well after the original impression on the Shroud was made.

In 1978 scientists put in over 100,000 hours of time and spent over $5 million examining the Shroud. They performed tests using infrared light and ultraviolet light. They examined the results of X-rays. They put the Shroud cloth under a microscope and in all were not able to find any evidence of artificial means of coloration.

Nevertheless there was still at least one debunker, Dr. Walter McCrone, who said the winding sheet had been painted. Numerous materials had collected on the Shroud over the years. In addition to pollen and black and red paint particles, it held insect parts, wool, wax, silk, and even modern synthetic fibers, which may have been from the vestments of priests. The chemists John Heller, of the New England Institute of Medicine, and Alan Adler, of the University of Western Connecticut, were among the first to conclude that the image "was not caused by applied pigment or any other foreign substance."[20] In an exhaustive series of chemical tests no sign of any medium that an artist could have used was found. Visible light examination, X-ray fluorescence, and microchemical studies all pointed to the conclusion that while iron oxide was present, it was not used to create or enhance the image. It was simply part of the accumulated material that had been acquired by the cloth.

McCrone would not give up, however. He insisted the Shroud was a painting, and despite being at odds with the many scientists who had studied the image, he had a formidable reputation. When Yale University bought what came to be known as the Vinland Map, it was McCrone they hired to review its authenticity. The importance of the map went beyond the map itself. If it was real, then the Vikings had reached North America, as the map depicted their early knowledge of the North American Atlantic Coast. If it was a fake, the prevailing thought that no Europeans had been to America before Columbus would remain intact.

He told the university they had been taken, bluntly declaring that the map being authentic was as likely as "that of Admiral Nelson's battleship at Trafalgar being a Hovercraft."[21] His reason was based on what he said was a significant amount of titanium anatase in the ink, which was not in use until after 1920.

Regarding the Shroud, he claimed the particles of iron oxide and cinnabar were evidence of a base to make paint. What he called paint, Drs. Adler and Heller demonstrated was blood. The scientists discovered

serum, blood clots, blood protein, and hemoglobins. Finding a high concentration of bilirubin, Adler, whose specialty was blood chemistry, determined it was the blood of someone who had died under great stress or trauma. Despite the scientific evidence, Heller and Adler were young and McCrone was the old master. In a showdown Heller asked McCrone how he knew the red dots to be iron oxide. "Experience" was McCrone's answer. Heller asked, "Did you test them chemically?" The answer was "I don't have to: experience." [22]

When confronted with the X-ray analysis that proved otherwise, McCrone simply said it was wrong. Many would regard McCrone's speculations as impossible, but his reputation plagued STURP, as it was hard to put the paint issue to bed. Regarding the Vinland Map, Dr. Thomas Cahill would later show that the amount of titanium present occurred naturally and that the map was no different from 150 other medieval manuscripts he had studied. While McCrone's reasoning for branding the Vinland Map a fake might have been correct, his ability to provide an accurate test was thrown into question. He had determined that the amount of titanium was one thousand times what it would actually prove to be. The unearthing of a Viking farm at L'Anse aux Meadows in Newfoundland would resolve the issue.

The linen of the Shroud too would be tested. It was a linen fiber that had been woven on a loom that was also used for cotton. The cotton was a Middle Eastern variety, and traces of the cotton could be detected under a microscope. The weave was a three-to-one herringbone twill, which is still used today in denim jeans. In its day it was regarded as expensive linen, but this would not be out of line, as it was provided by a wealthy man who had also provided a large tomb for Jesus.[23]

Next, a most remarkable test was then done by the Jet Propulsion Laboratory of Pasadena, California. Dr. John Jackson had earned a Ph.D. in physics while in the navy. His first assignment was in the Albuquerque Weapons Laboratory, where he worked with sophisticated, almost futuristic weapons systems such as laser beam and particle beam weapons. He teamed up with a civilian expert in image enhancement, Don Devan, who was consulting for the air force at the time. To begin to create a three-dimensional picture of the Shroud, they used a densitometer, which measures degrees of darkness and density. After an incredible 750,000 measurements were taken by hand, a digital computer analyzed the data. Dr. Eric Jumper, of the Weapons Lab, wrote a program to sort through

their data. Their team grew and soon included members of the Jet Propulsion Laboratory, which is sponsored by NASA. Normally they were responsible for assembling images of moons, planets, and their rings. Computers can be used to remove any irrelevant material, which helps present a final image. After lifting away the damage left by a sixteenth-century fire, they were left not only with a cleaner image but also with a startling deduction. There are no brushstrokes anywhere on the Shroud.

Jumper's conclusion implies that an artist would have had to color each thread prior to weaving the cloth. This is a feat that not only has never actually been performed but is also impossible without a computer.

Their next test employed what is called a VP-8 image analyzer. This is generally used to decipher the "pictures" sent home by space probes. These craft do not employ cameras, instead using a device that picks up light signals. At the Sandia Lab in New Mexico, Dr. Jackson and his colleagues placed a photo of the Shroud in the VP-8. The result: a three-dimensional image as different from the photograph as a statue is from a painting. Their reaction was similar to Secundo Pia's; they were gazing at the face and body of Jesus from two thousand years before.

Evidence for authenticity mounted. Dr. Frei's pollen testing was a positive indicator of authenticity. Dr. Jackson and his colleagues at Sandia provided evidence that the image was not a painting. Next, more detailed testing on the area perceived as blood was done using a microspectrophotometer. This test determined the presence of hemoglobin, indicating that what was perceived as blood actually was blood. From there, the Italian forensic medical expert Professor Pierluigi Baima-Bollone claimed that the blood identified was of the type AB.

There are several different blood types, including the rare type AB.[24] In the general world population AB occurs in 3.2 percent of the population. In Northern Palestine and among "Babylonian Jews" the occurrence of AB is much more common, with 18 percent of the population having that normally rare typing.

Later Marcello Canale, a professor from Genoa's Institute of Legal Medicine, reported that DNA had been extracted from a thread. The blood that was originally thought to be only iron oxide and paint now provided meaningful results for the presence of DNA. Enough DNA was present to be replicated, that is cloned, by using an enzyme that would provide enough characteristics to identify an individual or possibly a relative.

This additional blood evidence continued to favor authenticity.

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The forensic evidence of blood spatter and whip and thorn damage was realistic rather than artistic. The correct placement of the nail holes was equally consistent with the description of the execution of Jesus. The location of the nail in the wrist seemed to preclude a medieval forger. The linen was of both a type and a pattern known to be used during that period of time and was considered to be an expensive weave in comparison to most. The pollen evidence fit with the known history of the Shroud. And excluding the opinion of Dr. McCrone, there was nothing to indicate that the Shroud was not what it was believed to be. Many scientists in fact had felt they had been drawn into an investigation that could only yield a supernatural explanation.

The Carbon Dating Affair

Proving the Shroud to be authentic would suffer a sharp reversal after it was subject to carbon 14 dating. The technique had been available for years, and several STURP scientists and outsiders had suggested it be performed. Finally in 1988 permission was given. To avoid further damage to the Shroud, a sample was taken from a corner that had already been used, back in 1973, to provide a sample. It was argued by STURP that samples be taken from several locations on the Shroud, that a blind test be used, and that the tests should be performed by seven labs. As early as 1981 they gave authorities a list of the labs they wished to be included. One was the Rochester lab of Dr. Harry Gove, who had pioneered the science of carbon dating. Another was New York's Brookhaven Laboratory. The Catholic Church resisted for several reasons.

The reasons for the church's hesitation were based not on an aversion to science but in concerns about the methodology that would be used. For example, in 1985 an Egyptian mummy was tested by the new method of carbon dating, and the findings were off by one thousand years. This was the result not of faulty science but of a faulty protocol. It would not be until 1987 that Cardinal Ballestrero of Turin gave his permission. At the last minute, however, Professor Luigi Gonella, the cardinal's scientific adviser, turned the tables. Cloth from only one part of the Shroud was given, and only three labs were allowed to play a role in testing.

The sample was divided into three, and these parts were sent to the Oxford Research Laboratory, in England, to the University of Arizona, in Tucson, and to the Institute of Technology, in Zurich. The Zurich lab is where the mummy error had occurred.

The results would disappoint many. All three labs had dated the cloth as originating between 1260 and 1390, a date that would fit perfectly with the Shroud's emergence in Lirey, France. Despite the varied strong evidence that indicated the Shroud to be authentic, the carbon dating appeared to be the critical issue. The media cried hoax. The American media singularly pointed out that carbon dating proved the Shroud was a medieval forgery. Dr. McCrone, whose conclusions and comments were at odds with the scientists of STURP, was sought after for interviews by the press. The anti-Shroud camp was as zealous in debunking the Shroud as they claimed the pro-Shroud crowd was in attempting to authenticate the image. One went so far as to call anyone not convinced that the Shroud was a fake a Flat-Earther.

The media spin threw out three decades of research by dozens of experts in an instant. Many of the scientists, however, dissented from the carbon 14 date, claiming the cloth had been handled wrong, tested in a manner inconsistent with even STURP's guidelines, and the labs involved had never even used a blind test to check their accuracy. They made a strong case. The Zurich lab had missed the mummy's age by a thousand years. The Oxford lab dated a painting as 1,200 years old that had been done eleven days before. The agreement of these three labs, however, carried serious weight, despite their past mistakes.

Carbon 14 is a natural product of the atmosphere and is absorbed by all living organisms and can be measured. It is found in plants, which ingest carbon dioxide directly. It is found in animals and in humans as a result of their eating plants. When alive, organisms are constantly ingesting. After the living organism dies, the ingested C 14 decays. It is the rate of decay that is measured in radiocarbon testing.

The method by which the Shroud was tested was done by accelerator mass spectrometry, a relatively new method that was still experimental ten years before the test was done. The test compares the level of C 14 to C 12, which is supposed to be a constant. After the organism dies and the C 14 turns to nitrogen, the ratio of C 14 to C 12 changes. The new ratio, which determines the length of time of decay in the C 14, is what indicates the date. There are problems in the system. One is that shorter and longer cycles of sunspot activity can throw off the test.[25]

Rodney Hoare described just how serious errors in carbon 14 dating can be, even on matters of great import.[26] In 1984 a well-preserved body of an Iron Age man was discovered in Lindow Marsh in Cheshire, England.

Two labs did the testing; one of them was the Oxford lab that had tested the Shroud. The difference between the results of the two labs was a gaping 400 years. It was the Oxford lab that was told it was testing a painting done by an African bushman and dated the artwork to be 1,200 years old. The painting in question was actually done eleven days prior to the test.

Discounting the chance that all three labs could have produced serious errors, there are other factors that could show the carbon dating of the Shroud to be expected to produce inaccurate readings. A paper presented at the August 2000 Worldwide Congress "Sindone 2000" in Orvieto, Italy, says the sample taken contained one of the numerous patches that had been applied over the centuries to repair the damage from fire and dripping molten silver. While there are several documented repairs, the authors Joseph Marino and M. Sue Benford believe that other undocumented repairs had also taken place. The sample is very likely to be part of a patch, and Marino and Benford quote the Italian author Giorgio Tessiore as saying part of the sample had to be discarded because of the presence of color threads. This patch job would have taken place before 1534, when a backing cloth was sewn on to reinforce the damaged Shroud. The authors quote other scientists who not only concur but also point to a nearly 98 percent variation between the sample and the main Shroud cloth.

The chemist Alan Adler was quoted in a *Time* magazine story on the Shroud as saying "the sample used for dating came from an area that is water-stained and scorched, and the edge is back-woven indicating repair."[27]

Scientists soon began to weigh in further evidence. The most dramatic may be the fire that had nearly destroyed the Shroud in 1532. Silver melts at 900 degrees Celsius, so the heat of the molten silver that then poured onto the Shroud exceeded that temperature. Cloth burns at a much lower temperature, and it might be tempting to claim miraculous intervention as the reason the Shroud, a thin linen, survived at all. It had escaped Roman Jerusalem, been stuck in a wall in Edessa where it survived a flood, been rescued from Arab Constantinople at the last minute, survived a fire in Chambery, and even survived a 1997 fire in Turin's Royal Chapel. The latest fire had the firefighter Mario Trematore risking his life to smash open the bulletproof case with a sledgehammer to rescue the sacred object. (This last fire was after carbon dating samples were taken.) Less dramatically, it survived being sewn and unsewn, doused with water, and if one medieval

record be true, washed in oil after the 1532 fire. Could any of this—from intense heat to medieval oil—affect the results?

The conclusions of Marino and Benford and others will no doubt be taken seriously. A European-trained American tailor agreed that "it is definitely a patch," pointing out that medieval weavers, not unlike modern weavers, would attempt to match the original cloth.[28]

Another research team, led by Leoncio Garza-Valdes and Stephen Mattingly, believe that microbes skewed the results. Garza-Valdes, a doctor from Mexico, had trained himself in the forensics of Mayan objects. By performing optical microscopy studies on one disputed item, he discovered that millions of "gram-positive bacteria . . . and fungi" had formed a plasticlike coating, which he dubbed bioplastic. This was what the carbon dating have been measuring, not the actual artifact. Because this varnish of biogenic material adheres to objects at a faster or slower rate, depending on exposure, it can cause havoc in the dating process. This varnish was present on the Shroud.

Tests using infrared spectroscopy and mass spectroscopy were done that indicated the linen cloth was not pure cellulose, which is the main property of linen. Instead, by using natron, which is a bleaching element, in cleaning the cloth, microbes were attracted. The cloth was not only patched on more than one occasion, but it was also cleaned more than once. The test then is not on the linen alone but also on the age of the varnish that has built up on the linen. The best results then might be inconclusive.[29]

Creating the Shroud

While scientists review the evidence from two viewpoints, the most important question remains: how then was the Shroud created? The Shroud is consistent with the winding sheet of a man in either a near-death or coma state or according to others an early state of rigor mortis. Several theories have been advanced on just how the image could adhere to the cloth.

The first is that the cloth simply touched the man, and through contact with blood and sweat, the image was then created. This theory can almost be dismissed out of hand, as this type of image would not allow for such an exacting imprint. There would be smears and places where the cloth simply would not touch unless forced. And if the cloth was purposely forced to touch every inch of, for example, the face, areas such as the nose would appear much larger.

A second theory is what scientists call a vaporograph—an image created by the emanation of gases from a still warm body who had suffered a cruel execution. The unique image that the body of Jesus may have created was a result of his own sweat and blood, intermingled with healing agents such as myrrh and aloe that had been used to prepare the body for burial. This conclusion had long been accepted by many. The claim that a gas mixture created the "negative" proved to be consistent with sweat and urea mixed with myrrh and aloe, which would be present on the body of a crucified man that was afterward treated with such substances. However, in a post-STURP survey half of the scientists who would provide their personal opinions believe that while this conclusion appears valid on the surface, even gas diffuses. Diffused gas would produce something akin to the pressed-cloth theory and not be as sharp and distinct as the Shroud's image.

Carbon dating casts doubt on the authenticity of the Shroud by dating it to medieval times. This leads to some creative theories about how the image on the Shroud supposedly was made. If the date was wrong, then the person depicted on the Shroud could not have been Jesus. So several new theories on just how the Shroud was produced went into publication.

Novel Theories

One theory is that the image is a negative produced by an early photographic process. Scientific inventions do not become reality until they are completely developed, but the concept for an invention begins much earlier. From flying machines and electric light to the telephone and the modern camera, multiple stages and a great deal of time separate concept and completion. Artists and creators like Leonardo da Vinci are responsible for proposing items such as flying machines complete with landing gear, armored vehicles with scythes, diving suits with breathing apparatus, and even contact lenses centuries before these ideas became both reality and commonplace. Da Vinci, born in 1452, would serve as his king's painter, sculptor, architect, and hydraulics expert. He would design and build siege weapons, battering rams, rope ladders for assaults on walls, dredging machines floated on pontoons, and hydraulic pumps.

At the same time he produced paintings of great religious significance, including *The Last Supper* and the *Madonna with the Baby Jesus.* Many believe he used an occult symbolism in his art. His *Virgin and Child with St. Anne* is considered to be a "treasure trove of esoterica and occult wonders," and

even Dr. Freud detected a vulture lurking in the Virgin's cloth.[30] There is no doubt that science and religion were at odds in his lifetime. What today is regarded as chemical engineering would then have been considered alchemy. Today's genetic scientists would be the nineteenth-century's Dr. Frankenstein and the sixteenth-century's Devil. So the maestro had no way to reconcile his foresight with the suspicious age he lived in.

One can only imagine what he had to do to produce his *Treatise on Anatomy,* complete with much of what is known of the human body and detailed sketches that accurately represent organs, tissue, muscle, and bone.

Lynn Picknett and Clive Prince, the authors of *The Turin Shroud, In Whose Image?*, believe da Vinci used that knowledge together with his advanced work on optics to create a prototype camera. His *Codex Atlanticus* contains a diagram of the early camera, with an artificial eye to let in light, which then can be used to produce an image on white paper or thin white cloth.[31] Capturing the image, however, was much harder. In fact the first images that were considered permanent did not appear until the nineteenth century, when Louis Daguerre showed the development process to be a two-step chemical process. The first step has light striking a sensitive emulsion solution and producing an electrochemical effect on silver halide crystals within the emulsion. The action of the light alters the charge within the silver halide crystal, and a latent image, however invisible, is processed with further solution. The trick is removing the halide before any further exposure. This is done by using a fixing agent, which is another chemical solution. An imperfect fixing agent would not allow the negative to develop correctly. This key element of the process is today solved with proprietary chemicals that were patented and produced by Eastman Kodak. Getting to the point where a negative is evenly cleaned of the image-producing chemicals entailed a long, hit-or-miss process in the development of the camera and the creation of the negative. Picknett and Prince believe that da Vinci had mastered the technique long before Daguerre, although there is no evidence. They believe that da Vinci used at least his own head and the body of another person to make a composite early photograph. But according to medical professionals who viewed the Shroud, the other man would have to be someone who was scourged, crowned with thorns, speared through a lung and the heart, and correctly pierced through the wrist. Would any artist inflict such cruelty on a living person to produce such an effect?

There are other problems with their conclusions. One is that in all his

depictions of Jesus, da Vinci painted him beardless. If da Vinci painted the Shroud, then why would he produce a bearded Jesus? A second problem is that the Shroud had been displayed a hundred years before da Vinci was born. The authors claim that the Lirey shroud was a painting, as Bishop Pierre D' Arcis said it was. The "real" Shroud, the da Vinci prototype, would later be a substitution. A third problem is that in their own re-creation, they admit the ingredients necessary to have created the Shroud were not yet available. They hypothesize that it is possible they were available but no record has been made.

Another theory of just who the Shroud depicts was proposed by Christopher Knight and Robert Lomas. They claim that the man on the Shroud is no other than the last grandmaster of the Knights Templar. Though Jacques de Molay was indeed bearded, the remaining evidence appears to be contrived. They claim that the Freemasons do have a Shroud ritual and the carbon 14 dating is in line with de Molay's death. Such a shroud would have been kept at the Paris Temple. Their theory requires the grandmaster to have been crucified, and they admit there is no evidence leading to that conclusion. History records him being burned at the stake on a small island in the Seine River. Knight and Lomas theorize that the Inquisitors would have privately crucified de Molay, as his greatest crime was heresy.

The question of just how de Molay might have left a miraculous impression in the linen is unanswered, as is other scientific evidence.

A third novel theory was proposed by Holgar Kersten and Elmar Gruber in *The Jesus Conspiracy,* which claims that the plan all along was for Jesus to survive his Crucifixion. The Vatican then plotted to have the Turin Shroud declared a fraud, as it is proof Jesus survived his Crucifixion. Billed as an exposé of this Vatican plot, their work concludes that the body of Jesus could have only made the impression by being alive, not dead, at the time the impression was made. They raise interesting points overlooked by other writers, including just why healing agents such as aloe and myrrh were used on a body already dead. They introduce the idea that a death and rebirth ceremony was actually a rite of a select group, and that Lazarus's seeming death and rebirth was a rehearsal.

While the Vatican's role is novel to such a plot (or possibly a plot to a novel), such a scenario has been suggested before *The Jesus Conspiracy.* Hugh Schonfield proposed a similar situation in *The Passover Plot,* in which even

Judas was part of the survive-the-Crucifixion plot. Jesus is arrested, beaten, and nailed to the cross and then somehow expected to survive the torture to be revived in his "tomb." But then the plot goes wrong. The spear of Longinus, thrust into the side of Jesus, pierces both his lungs and heart, and at the moment the plot appears to come to fruition Jesus is killed by the spear.

If one accepts the conclusions of Joseph Marino, Sue Benford, Dr. Garza-Valdes, and Stephen Mattingly that the dating is faulted because of the burns, the patches, and the buildup of bacteria, then the question can be approached again from the basic premise. The man depicted on the Shroud was Jesus, and some phenomena, normal or paranormal, created the image.

Back to Basics

How was the image created? The theories generally espoused include a painting of the image onto the cloth, a contact method (i.e., the cloth touching the body), a vapor-made image, and a "scorch" method.

Painting the cloth was a theory eliminated by scientific testing. While it has been hard to reach a consensus about any topic related to the Shroud, both STURP and the scientists at Los Alamos National Scientific Laboratories in New Mexico agreed that the Shroud had not been painted. The next theory was the contact method. Scientists and researchers believe that the contact method would not allow for an image to include the sides of the nose, the recesses of the eyes, the ribs, and parts of the neck shown on the cloth. The major point is that in any contact method, the back of the cloth would have been more saturated, therefore darker, than the front. Because this is not present on the Shroud, most agree that the contact method too must be eliminated. The vapor-diffusion method too does not hold up for the same reason the contact method fails. There is no way to account for all of the detail and explain why there is no diffusion effect of a rising "gas."

Several scientists put forward the "scorch" theory, which says that the image was caused by low-energy X-rays emitted by the body under the cloth. The explanation for just how and why the body of the man in the Shroud gave off such X-rays is limited, because this phenomenon has not yet been encountered anywhere else.[32] John Heller searched for Egyptian Copt burials and found that in all other cases where such a burial shroud was used, none exhibited an image.

After an estimated 150,000 to 200,000 man-hours spent researching the Shroud, scientists have not reached a conclusion shared by all. In place of a list of theories, the possible explanation indicates either a normal or a paranormal event.

With the normal theories seemingly ruled out, then a paranormal cause of the image on the Shroud becomes a possibility.

Christians believe, and it is the foundation of Christianity, that Jesus did not remain dead on the third day. He was resurrected, miraculously brought back to life. His lifeless body, bearing evidence of being beaten and scourged, nailed to the Cross, and finally pierced by a spear, was laid in a tomb. A large stone sealed the entrance. Then in a moment, the resurrection took place, which is the basis and focal point for the Christian faith.

The Gospels and tradition record a brief earthquake that shook the temple itself.[33] A flash of incandescent light scared away the Roman soldiers guarding the tomb. At the instant when the flash occurred, Jesus was resurrected. Jesus passed through the linen cloth, front and back. From the standpoint of believers, no explanation was required. From the standpoint of a believing scientist, instantaneously the cellulose of the linen degraded to leave a residue of sweat and blood. Only the image, and the residue of blood, remained. The image then is a quasiphotograph of the process of separation of the body through the cloth. This phenomenon, the flash theory, has never been encountered elsewhere.

This is nothing short of proof of the Resurrection.

Of the twenty-six remaining STURP scientists, thirteen have decided that only a paranormal explanation can account for that image appearing on the burial linen. They accept what is now called the "flash" theory.

This explanation is a difficult stance for scientists to take. First, there is no way of proving or disproving it, despite all the scientific knowledge available at this time. A second difficulty for the thirteen scientists who believe the body had to miraculously pass through the cloth, is that they are coming to the same conclusion of the Roman Catholic Church, which could lead to academic ridicule.

The controversy is far from over. In October 2000 the archbishop of Turin closed the last exhibition of the Shroud. In July 2002 the Shroud was quietly taken from the cathedral, and new repairs were started on it. The five-hundred-year-old patches were removed, as was the holland cloth (the cloth sewn onto the back of the Shroud to protect it). Immediately there was criticism, but the archbishop of Turin, Cardinal Severino

Poletto, ensured that everything would be done with the goal of preservation in mind. A full-length image scan was performed, which presumably will be available for additional research in the future. Photographs would document before, after, and the steps along the way. The cloth itself would no longer be folded, as the constant folding over the centuries was taking a toll.

Cardinal Poletto announced that the next exhibition would not take place until the next Holy Year, which is the year 2025.

The challenges too are far from over for both science and the church. Before 2025, it is almost certain that new scientific discoveries will provide new reasons for examination. The research into DNA and cloning presents the most intriguing and controversial possibilities. At this point there is no scientific technique available to clone a person from what can be referred to as the DNA of God. But the blood that remains on the Shroud provided scientists the opportunity to "clone" or replicate that blood. Today the blood can be tested to confirm, as it has, that the person on the Shroud was a man. While DNA advances are welcome to some of the Shroud researchers, there is no doubt that the church would fear that DNA evidence could mount a challenge to the tenets of the faith.

Recently, Cardinal Saldarini, the custodian of the Shroud, was presented with an article on the current ability of DNA technology. His reaction was to call back all samples of the Shroud.