EDIZIONI MUSEI VATICANI

St. Peter's Pietà

History and Restoration
40 Years Later

Edited by

Guy Devreux

On the cover:
Vatican Basilica, Saint Peter's Treasury Museum, plaster cast of Michelangelo's Pietà
(photo M. Falcioni)

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Michelangelo's Pieta: A collaborative restoration

Nazzareno Gabrielli

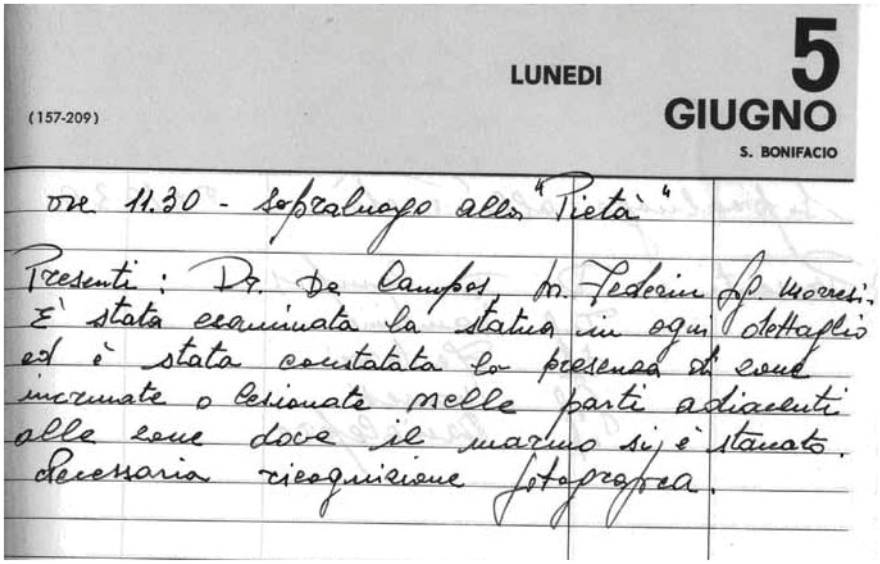
Of all the restoration team members[1], who are shown in the picture below and with whom I worked on the restoration of Michelangelo's Pietà, which had been savagely damaged by a deranged man of Australian origin, I am the only survivor. (picture 1).

Picture 1
The restoration team after project completion.

1 Prof. Deoclecio Redig de Campos, General Director of the Vatican Museums; Engineer Francesco Vacchini, Manager of the Fabbrica di San Pietro; Dr. Vittorio Federici, Manager of the Office for Scientific Research of the Vatican Museums; Dr. Nazareno Gabrielli, Deputy Inspector of the Office for Scientific Research; Ulderico Grispigni, Head Restorer of the Marble Restoration Lab; Francesco Dati, Head Restorer of the Ceramics and Bronze Restoration Lab; Giuseppe Morresi, Head restorer of the Plastic Materials and Artistic Reproductions Lab.

Of the two other people who assisted the team, namely Mr. Nello Pelonzi and Mr. Antonino Turchetto, only the latter is still able to bear testimony of his contribution to the project and of the events that characterized this difficult restoration process. In addition to the aforementioned Vatican Museum employees, a reputable independent photographer, Mr. Antonio Solazzi, also contributed to the restoration project and is still fully active today. Until just recently, I was still in possession of my 1972 planner[2], in which, from the day after the devastating attack, I detailed the meetings of the Museum Board of Directors, the lab experiments, the repairs on the defaced sculpture, and even the people visiting the restoration site: mostly famous artists and art historians. I still remember the profound sense of shock and bewilderment felt by the entire team and in particular by the general director of the Museum, Prof. Deoclecio Redig de Campos, a renowned expert on Michelangelo, who had to face what had happened and deal with the confusion, uncertainty, and doubts on how to tackle the restoration of such an important work of art, undoubtedly the most famous in the world, especially given its location in St. Peter's Basilica, where it was on display for public viewing and veneration. On June 5th, in addition to myself, there were General Director Prof. Deoclecio Redig de Campos, Engineer Francesco Vacchini, manager of the Fabbrica di San Pietro; Dr. Vittorio Federici, manager of the Office for Scientific Research; and Mr. Giuseppe Morresi, technician specializing in plastic materials. My planner entry for Monday, July 5, 1972, reads as follows: "Upon a very thorough examination, we assessed the presence of cracked or damaged parts around the areas where the marble was snapped off. A photographic survey is deemed necessary." (Picture 2). Engineer Francesco Vacchini assigned the photographic survey to Mr. Antonio Solazzi, head photographer of the Archeological Superintendent Department for the Lazio region, who had already taken photographs of St. Peter's Basilica as part of the survey commissioned by Pope Paul VI. After spending several days studying and surveying the marble sculpture, Mr. Solazzi delivered his photographic portfolio to Engineer Vacchini, thus providing a complete and thorough documentation of the damages. The proposal stated that all pictures taken before, during, and after the restoration had to be taken exclusively from the same spot and mostly from the same azimuthal and zenithal angle. Conse-

2 On May 20, 2013, the planner was donated to the General Archive of the Fabbrica di San Pietro.


LUNEDI 5
GIUGNO
S. BONIFACIO
(157-209)
ore 11.30 - sopraluogo alla "Pietà"
Presenti: Dr. de Campos, Dr. Federici, Sig. Morresi.
E' stata esaminata la statua in ogni dettaglio
ed è stata constatata la presenza di zone
incrinate o lesionate nelle parti adiacenti
alle zone dove il marmo si è staccato.
Necessaria riacquisizione fotografica.

Picture 2
The page of the 1972 planner that reports the first survey of the mutilated sculpture.

quently, in order to achieve the utmost level of accuracy, a 1:10 diagram was created with eighteen reference points, that would provide a complete and thorough documentation of the damages. Said points were then transferred on the scaffold built around the sculpture in the basilica and every photo that was taken displayed information on the reference point, the position of all light sources, and the angle (azimuthal and zenithal) from which the photo was taken. On June 21, the general director summoned the Museum Board of Directors to discuss what had happened and to find out what the various department directors thought about the criteria to be employed in the restoration project that was about to begin. Dr. Federici, manager of the Office for Scientific Research, was absent because he was not in Rome at the time. On the evening prior to the meeting, the general director called Dr. Federici to offer him the supervision of the restoration project and to hear his thoughts on the restoration criteria to be adopted. I obviously have no way of knowing what they said to each other on that phone call, but given the exhaustive technical analysis of all the subjects discussed at the meeting, I can state with a degree of certainty that Dr. Federici must have reassured Prof. de Campos about the possibility of performing a full restoration, especially considering that an exact replica of the Pietà was stored in the sacristy of St. Peter's, which offered the opportunity to create a rubber silicone mold of the parts of the sculpture that had been destroyed. As I was writing this report, I received a detailed account by his daughter Giovanna of the phone conversation between Dr. de Campos and her father, Dr. Federici, the evening before the meeting on June 21. This is what his daughter told me: "Dr. Gabrielli, I remember well Dr. de Campos frantically calling

my father, who was out of town working on the restoration of the Munich Royal Palace, to ask him, obviously worried, if he was willing to take on such a delicate project. With the humility he was known for and by virtue of his long experience in the field, my father reassured him, telling him not to worry, because he already had a plan on how he wanted to proceed and a pretty good idea of whom, among all the available restoration lab experts, he wanted to work with on the project. My father also told Dr. de Campos that he was certain that the restoration would definitely be a success."

Once he returned to the Vatican, Dr. Federici provided his list of restorers to Prof. de Campos:

- Ulderico Grispigni, a marble specialist;
- Giuseppe Morresi, a plastic materials specialist;
- and Francesco Dati, a bronze and terracotta specialist.

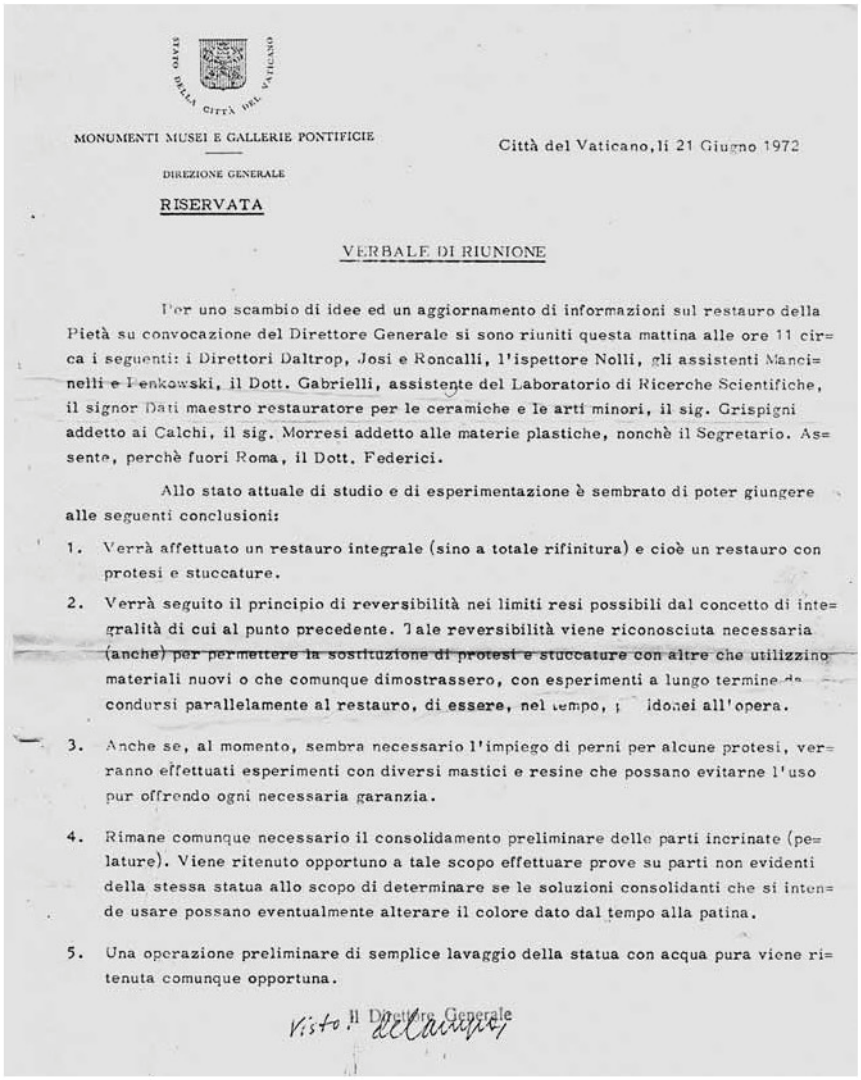
The report drafted by the museum secretary, Dr. Walter Persegati and signed by the general director, Prof. de Campos, states the following (Picture 3):

"Upon being summoned by the General Director, the following individuals met this morning at approximately 11 AM to exchange ideas and provide updated information on the Pietà's restoration project: Directors Daltrop, Josi and Roncalli, Inspector Nolli, assistants Mancinelli and Penkowski, Dr. Gabrielli, Scientific Research Lab assistant, Mr. Dati, master restorer for ceramics and minor arts, Mr. Grispigni in charge of casts, Mr. Morresi in charge of plastic materials, as well as the secretary. Dr. Federici was not present because he was out of town. At this stage of study and testing, the following conclusions were reached:

1. The project entails a complete restoration (up to the finishing touches), in other words a restoration which includes prosthetic parts and plastering.
2. The principle of reversibility will be adopted in compliance with the concept of integrity, as indicated in the previous entry. Said reversibility[3] is deemed necessary to allow (among other things) the replacement of prosthetic and plaster parts with new ones

3 The concept of reversibility of the materials and products to be used in the delicate restoration process, as expressed by Dr. Federici in the interview conducted in the Office for Scientific Research with movie director Brando Giordani, states the following: "This must be a full restoration. The sculpture must be brought back to its original state, but in a documentable manner, so that parts can be eventually replaced if needed; in other words, this restoration project cannot be a permanent one, because in maybe two-hundred or five-hundred years, either due to weather-related issues or to any other external factor, this sculpture, like all other works of art, might require another restoration. Consequently, if the materials or the procedures we use today make future repairs impossible, we doom the entire work of art."

Picture 3
Report of the first operational briefing held to discuss the restoration of the Pietà.



STATO DELLA CITTÀ DEL VATICANO

MONUMENTI MUSEI E GALLERIE PONTIFICIE

DIREZIONE GENERALE

Città del Vaticano, li 21 Giugno 1972

RISERVATA

VERBALE DI RIUNIONE

Per uno scambio di idee ed un aggiornamento di informazioni sul restauro della Pietà su convocazione del Direttore Generale si sono riuniti questa mattina alle ore 11 circa i seguenti: i Direttori Daltrop, Josi e Roncalli, l'ispettore Nolli, gli assistenti Mancinelli e Penkowski, il Dott. Gabrielli, assistente del Laboratorio di Ricerche Scientifiche, il signor Dati maestro restauratore per le ceramiche e le arti minori, il sig. Grispigni addetto ai Calchi, il sig. Morresi addetto alle materie plastiche, nonchè il Segretario. Assente, perchè fuori Roma, il Dott. Federici.

Allo stato attuale di studio e di esperimentazione è sembrato di poter giungere alle seguenti conclusioni:

1. Verrà affettuato un restauro integrale (sino a totale rifinitura) e cioè un restauro con protesi e stuccature.
2. Verrà seguito il principio di reversibilità nei limiti resi possibili dal concetto di integralità di cui al punto precedente. Tale reversibilità viene riconosciuta necessaria (anche) per permettere la sostituzione di protesi e stuccature con altre che utilizzino materiali nuovi o che comunque dimostrassero, con esperimenti a lungo termine da condursi parallelamente al restauro, di essere, nel tempo, più idonei all'opera.
3. Anche se, al momento, sembra necessario l'impiego di perni per alcune protesi, verranno effettuati esperimenti con diversi mastici e resine che possano evitarne l'uso pur offrendo ogni necessaria garanzia.
4. Rimane comunque necessario il consolidamento preliminare delle parti incrinate (pellature). Viene ritenuto opportuno a tale scopo effettuare prove su parti non evidenti della stessa statua allo scopo di determinare se le soluzioni consolidanti che si intende usare possano eventualmente alterare il colore dato dal tempo alla patina.
5. Una operazione preliminare di semplice lavaggio della statua con acqua pura viene ritenuta comunque opportuna.

Visto: Il Direttore Generale

that use more innovative materials or which at least demonstrate, after long-term testing to be conducted simultaneously with the restoration project, that they are better suited in the long term.
3. Even though, at the moment, the use of pins for a few of the prosthetic parts appears necessary, further testing of different sealants and resins will be conducted to investigate the option

of doing away with said pins while still maintaining the necessary quality and strength.
4. The preliminary consolidation of the cracked parts (peeling) remains, however necessary. For that purpose, it is advisable to conduct testing on non-visible parts of the sculpture to determine if the desired consolidating solutions could possibly alter the patina color acquired over time.
5. A simple preliminary washing of the sculpture with pure water is, however, recommended.
Signed, De Campos, General Director"

In the days following the board meeting, Dr. Federici summoned a briefing with Mr. Francesco Dati, Mr. Ulderico Grispigni, Mr. Giuseppe Morresi and me in the Office for Scientific Research. As he was explaining the restoration criteria, as also shown in the report of the board meeting held on June 21, Dr. Federici invited us to express our own ideas, so that we could come up with a full restoration plan that could return the sculpture to its original state. After approximately two hours of constructive discussion, the details of the manner of intervention were finalized as follows:

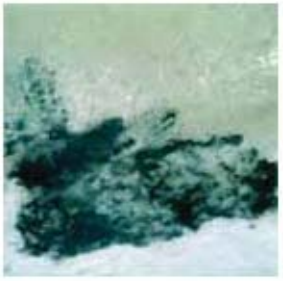
1. Identification and classification of all the marble fragments;
2. Detection and selection of all fragments that could be reconnected;
3. Selection of the adhesive material to reattach the fragments to each other and to the sculpture;
4. Tests with products used in dentistry for implants (faux marble) to be placed on the spots of the sculpture where the original marble was completely shattered;
5. Silicone rubber mold of the sculpture's shattered parts;
6. Silicone rubber mold of the same parts on the plaster copy stored in the St. Peter's Sacristy.

On July 4, Ulderico Grispigni began identifying and classifying the fragments that could still be reconnected. At the same time, in the Office for Scientific Research, testing began for the selection of the adhesive, the creation of faux marble prostheses,

and especially, for a plan to remove the blue paint[4], that stained the damaged left eyelid of the Virgin Mary (Pictures 4 and 5).

Testing with polyester resins, cyanoacrylate, and acrylic emulsion was conducted to determine the best adhesive option. Pieces of white saccharoidal marble were broken off and reconnected with said adhesives. Then, after a few days, in order to verify the strength of the adhesives and to select the best one, traction dynamometer tests were conducted in the Experimental Center of the Italian Railway Company. It was determined that the strongest connections were those using polyester resin. In regard to the testing of prosthetic parts, dentistry products were the first ones to be tested. Several abrasions, gaps, and cracks were artificially created on pieces of marble and then repaired with said products. The result was undoubtedly bad, because the color appeared too white and even worse, looked like porcelain. Consequently, a faux marble compound with the same transparency and refraction index as the Pietà's marble needed to be created. Given the fact that polyester

Picture 4
Hammer paint on the left eyelid of the Virgin.



Picture 5
Macro photography of the blue paint of the hammer.

4 The stain was caused by the new hammer, which was blue in color, used by the deranged man.

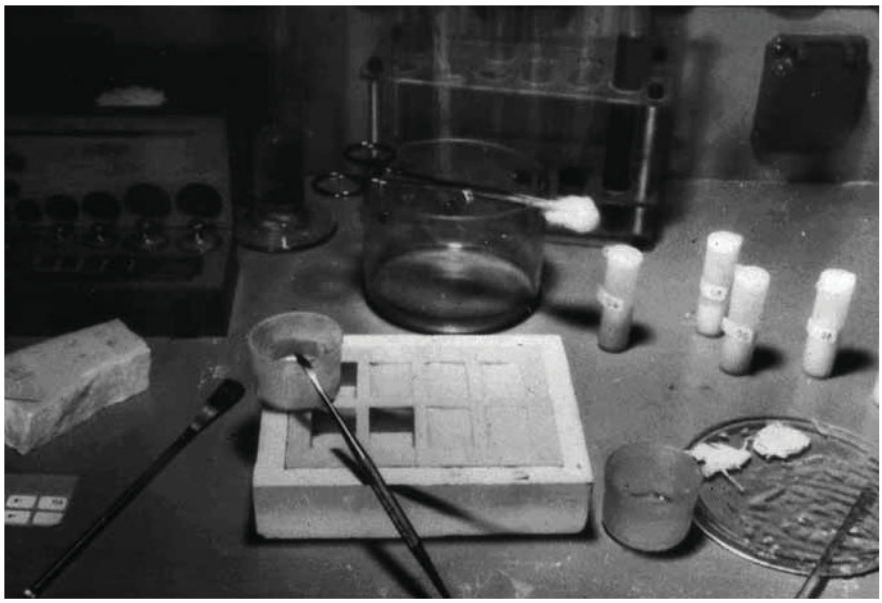
resin had already been selected to reconnect marble fragments, it was decided to test said resin as the cementing base for marble powder of appropriate granulometry. The objective was to basically create faux marble that had the appropriate quantity of marble granules of the proper size. Pieces of Carrara marble were grinded in a mortar and the obtained material was put through six sieve strainers with increasingly finer mesh (pictures 6, 7 and 8).
In order to choose the appropriate size of the marble granules to be mixed with the resin, the powder obtained from each of the sieves, which were all of different sizes, was compared with an original marble shaving whose granulometry size was fully visible (picture 9). Regardless of what marble powder morphology was considered the most suit-

Pictures 6, 7, 8
The mortar, sieves, and various size materials obtained by grinding pieces of Carrara marble.

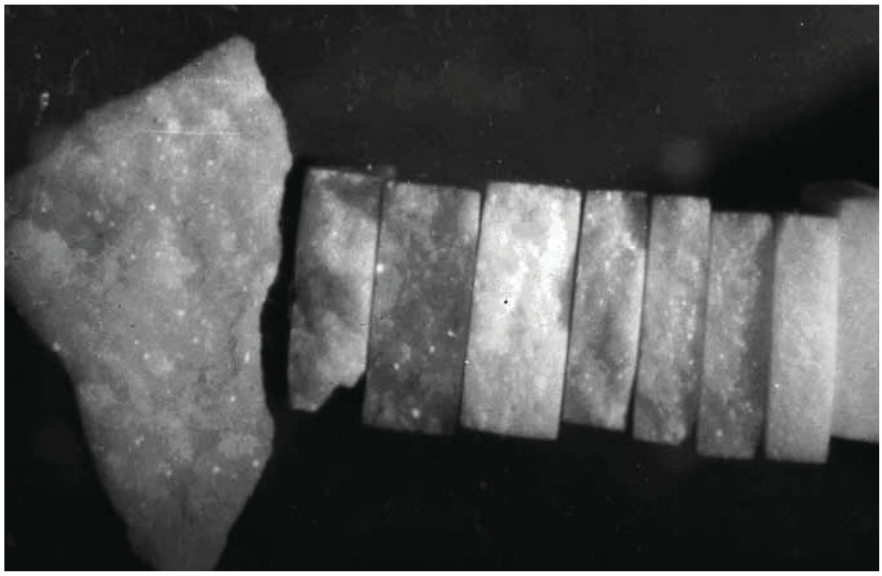
Picture 9
A marble chip from the Pietà compared to marble granules of various sizes.

ed for the creation of the prostheses, samples of faux marble were made using the dust from all sieves (pictures 10 and 11). Once the ideal resin and the size of marble granules were determined, it was a matter of creating prosthetic parts that presented the same color of the Pietà's marble which, as reported by Prof. Cesare Brandi in the article he wrote about the

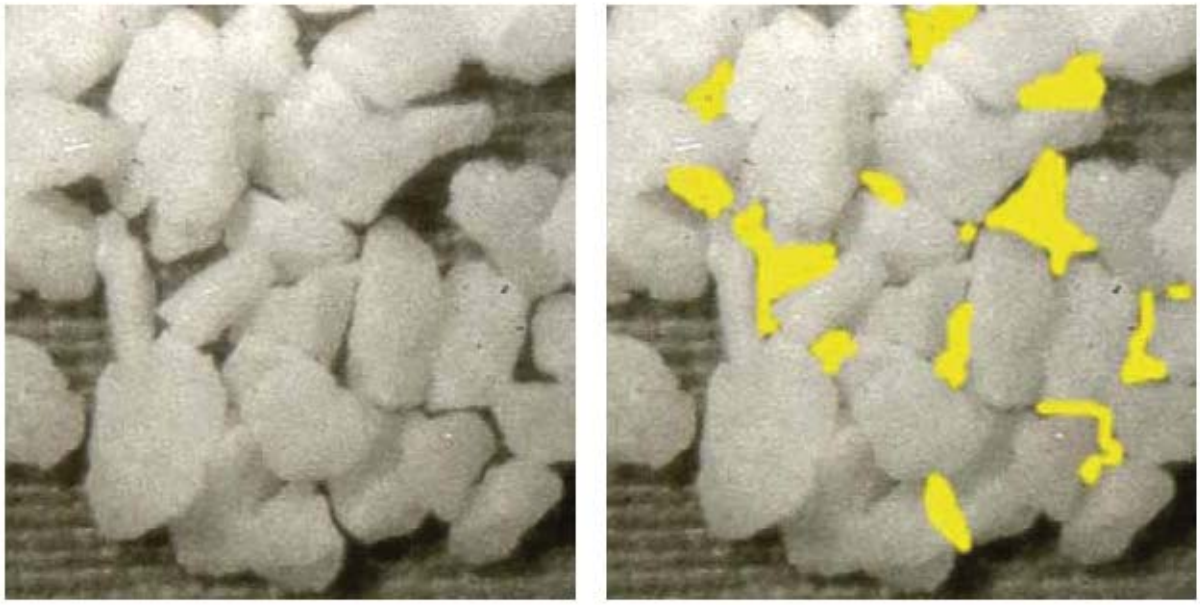
Picture 10
Mixture of polyester resin and marble powder.



Picture 11
The original marble chip next to faux marble samples.



Pietà's restoration and published in the *Corriere della Sera* on December 7, 1972, "had the color of honey that Michelangelo had achieved by applying a patina of oil and wax." Creating faux marble with that particular coloring proved to be a long and difficult task. Several faux marble samples were created using different amounts of ochre pigments. The results achieved were unsatisfactory, not only because obtaining the same color of the Pietà's marble was difficult, but especially because the transparency of marble was being lost. This was due to the fact that ochre oxide powder entered the empty spaces between the marble granules (pictures 12 and 13).
Consequently, the resulting product, "attufato"[5], was flat and



Picture 12
Marble granules with empty space between them.

Picture 13
The ochre powder is inserted in the empty spaces between granules.

opaque, very similar to hardened plaster. Restorer Francesco Dati came up with the ingenious idea that brought the testing process to successful completion. Instead of using ochre oxides, he suggested creating the color and especially the transparency of the prosthetic parts, by adding, to the basic white marble granules, granules of different colors, obtained by crushing colored marble: antique yellow, bardiglio, portasanta, nude, and others. The results were amazing: transparency was achieved because the spaces between the white granules and the few colored ones remained unaltered, allowing the light to filter through the faux marble. Once the right adhesive to con-

5 The word "attufato" is widely used in Rome to define a chalky conglomerate that is opaque.

nect the marble fragments to each other and to the sculpture was selected and the faux marble for the prostheses replacing the marble that had been completly destroyed was created, all that was left to do was figuring out how to remove the blue stain from the left eye of the faux marble prosthesis.
The idea of using a solvent definitely had to be discarded since using it would dilute the blue pigment, which would be absorbed into the marble and spread over a large part of the face of the Madonna. The mechanical removal, with a scalpel, could have altered the surface of the marble while increasing the risk of pushing the color even more deeply into the porous marble.
During our sometimes-animated discussions — in which each of us believed we had found the best solution for the removal of the blue color — Dr. Federici decided to adopt the "tearing" technique, even though this technique is no longer used since it has been supplanted by the "detachment" technique. It can only be considered still valid when it is necessary to separate two paintings, superimposed on each other, because they were executed, one over the other. In the following days, experiments were performed in the workshop on pieces of marble, smeared with the same blue as the hammer, using a good adhesive tape as a tear-off element.
The technique made it possible to easily "tear" off the blue spots and, above all, not cause any alteration to the underlying marble surface.
At the end of September, we were able to say that laboratory experiments were finished. At the same time, photographer Antonio Solazzi continued to document the work using scaffolding set up around the Pieta in order to detect any damage suffered by the sculpture, and above all, to help carry out the restoration.[6]
In summary, the adhesive to connect the fragments, both to each other and to the sculpture, had been developed to create the faux marble, for use with the prostheses, and above all, the remove the blue paint left by the hammer on the left eyelid of the Virgin.
On October 7 at 1:40 pm, we all moved to the Basilica of St. Peter. On the scaffolding built around the sculpture by the workers of the Fabbrica di San Pietro, directed by Eng. Francesco Vacchini, a small laboratory was set up with all the equipment and products necessary for the various restoration steps. While the scientific contribution of the writer could be said to have ended in the laboratory, the remarkably challenging work of the restorers now continued.
To each of them, Dr. Federici, director of the restoration, assigned the task that was most suited: Ulderico Grispigni had the difficult task of assembling the marble fragments to each other and onto the sculpture; Giuseppe Morresi had to execute the casts using the rubber silicone and to prepare the polyester resin for the creation of the faux marble prosthe-

6 Refer to the restoration's Technical Notes, prepared by the Editorial Staff, published in the Bulletin for the Monuments, Museums, and Pontifical Galleries I, 1, years 1959-1974, pages 39 and following.

Picture 14
Dr. Vittorio Federici, Prof. Deoclecio Redig de Campos and restorer Ulderico Grispigni survey the damages on the sculpture.

ses; Francesco Dati was in charge of particularly demanding finishing tasks: the removal of the blue pigment from the Virgin's eyelid through a lifting technique; the creation of prostheses by combining the right mix of white and colored marble granules; and the plastering of spots where small gaps could not be repaired by the use of prostheses (Picture 14).
The first restoration step was the removal of the blue stain from the eyelid of the Virgin's left eye. Mr. Francesco Dati, with great apprehension but also amazing ability, positioned the adhesive strip on the stain and lifted off the blue pigment. In order to remove it completely, the procedure had to be repeated multiple times[7] (pictures 15 and 16).

7 C. Brandi, Visit to the Pietà under Restoration, article published in the "Corriere della Sera", on December 7, 1972: "Under the eyelid, a very insidious black stain. This stain consisted of an oily substance attached to the sacrilegious hammer that had just been bought by the deranged man. The stain could have possibly been gently scraped off and then any residuals could have been removed with a solvent, but there was the real possibility that a shadow would remain: and in that particular spot, an almost circular shadow, would have resembled the pupil of a sinister eye. They instead had the great idea of lifting the stain; in fact, I actually saw the adhesive strips used repeatedly to remove the stain with no damage whatsoever to the patina underneath."

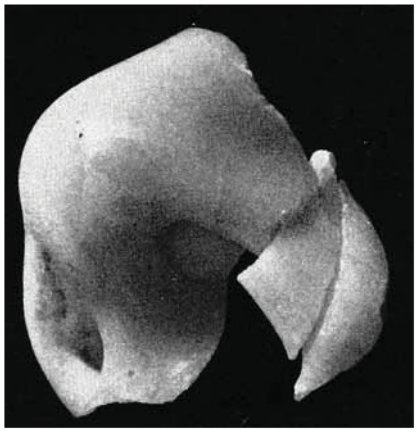
Picture 15
Before removing the blue

Picture 16
After removing the blue

Picture 17
The resin is spread on the eyelid

As the second step in the restoration process, the tiny fragment was applied on the left eye of the Virgin, on the proximal part of the eyelid and specifically in the inner area of the eye. After having coated the inner part of the fragment with polyester resin, Mr. Ulderico Grispigni confidently put it in place (picture 17). The third step consisted of securing the nose on the sculpture. In his fury, the deranged man broke the nose into three fragments: one large one and two small ones. Fortunately, the preliminary bonding of the fragments and then the positioning of the whole nose

on the face of the Madonna was easily performed (pictures 18 and 19). After connecting the nose, the veil around the Virgin's face was also repaired, and at last, so was the eye. The process was difficult and rather complicated. In fact, repairing the noticeable gap that included the central part of the eyelid and of the pupil required the creation of a faux marble prosthesis

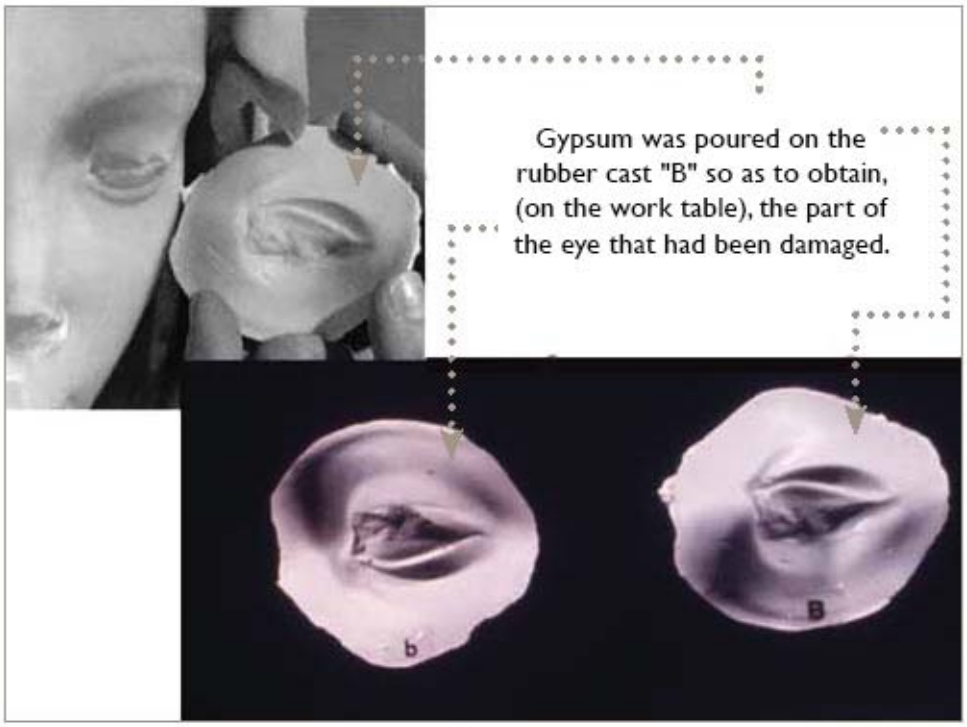


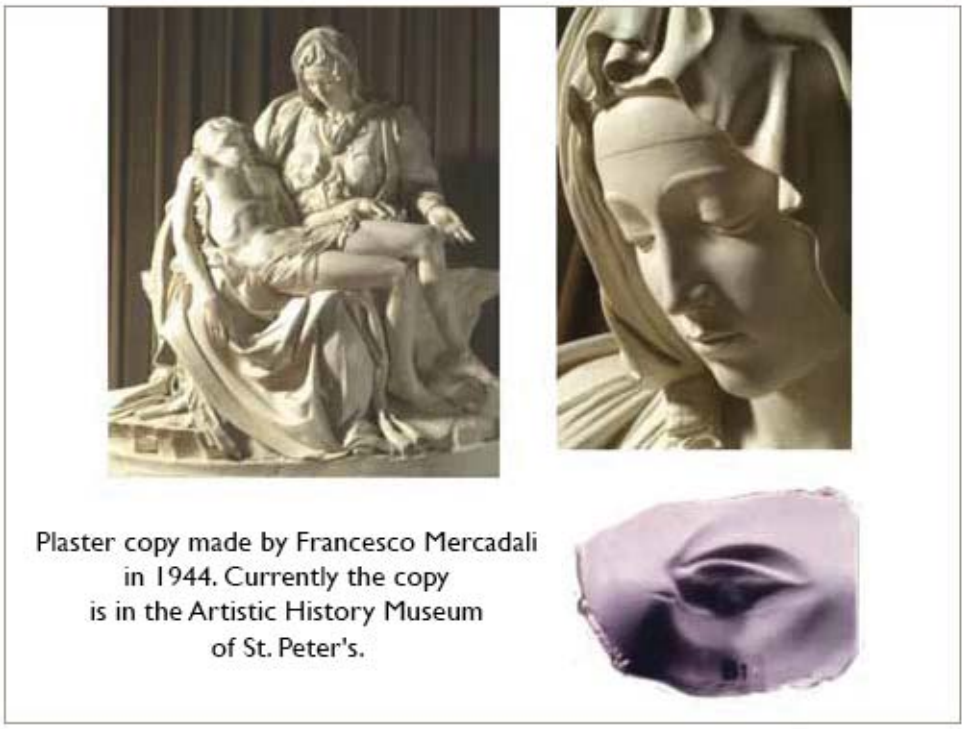
Picture 18
The nose was broken into three fragments

Picture 19
The nose is in place as is the veil, framing the Virgin's face

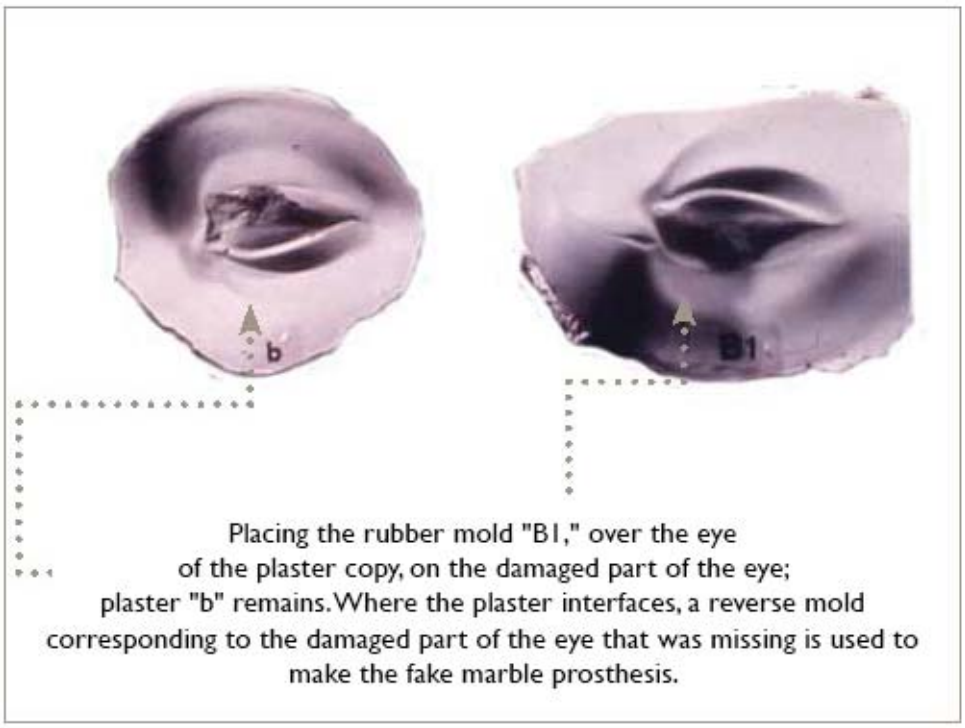
that needed to be perfect. For that purpose, two casts made with spreadable silicone rubber were created, one based on the damaged eye of the Pietà (picture 20) and the other based on the same eye of the Pietà's plaster cast stored in the St. Peter's Sacristy (picture 21). Based on the mold of the damaged eye, which provided a reversed impression of the exact mutilation suffered by the eye, a plaster cast was created. Consequently, after creating the plaster cast of the broken eye and the rubber mold of the healthy eye based on the copy of the Pietà stored in the St. Peter's Sacristy, the rubber mold of the healthy eye had to be positioned to overlap the plaster cast of the broken eye, to create the prosthesis. It is easy to observe that in the inner area where the cast and the mold overlapped (positive plaster impression and negative rubber impression), there was a gap, namely the missing part of the eye, which could then be fixed by creating a prosthesis (picture 22). In order to make the faux marble prosthesis, the following materials were mixed together: 10g of polyester resin, 13g of white marble granules (the size of the granules had already been determined during lab testing), a

Picture 20
Mold of the broken eye of the Pietà "B" used as a reverse impression to obtain a plaster cast "b".

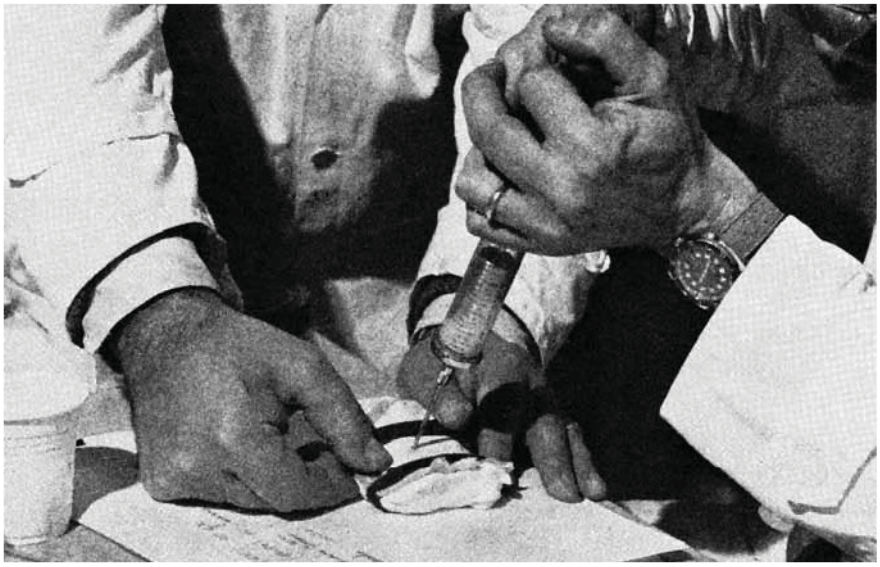




Picture 21
Silicone rubber reproduction of the same eye based on the plaster copy stored in St. Peter's Sacristy, in order to obtain the negative copy, "B1".

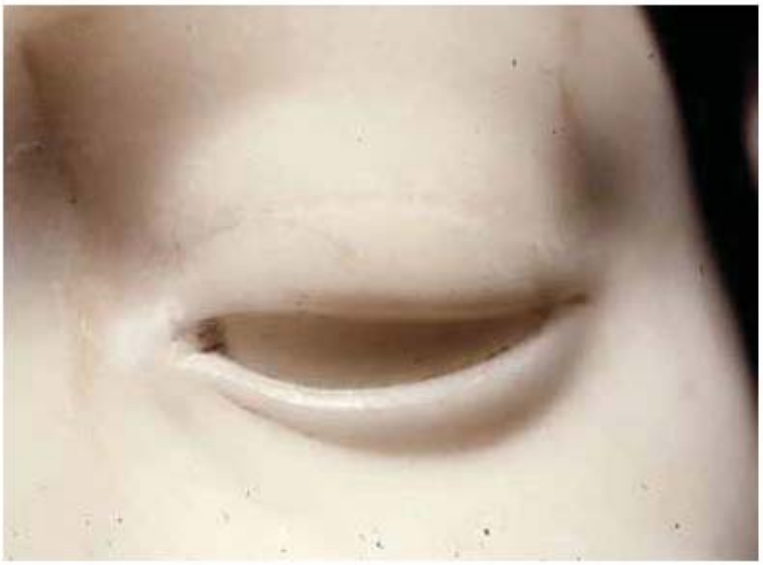


Picture 22
Positive plaster cast copy of the damaged eye "b" and reverse impression rubber mold "B1" of the same eye obtained from the plaster copy.



Picture 23
The compound of polyester resin and marble powder is injected between the cast and the mold in order to obtain, after resin catalization, the faux marble prosthesis.

minimum quantity of colored marble granules, 2.5% (of the resin weight) of methyl ethyl ketone peroxide (hardener), and 0.25% of cobalt naphthenate (accelerant). A yellowing inhibitor for the polyester resin was added by the manufacturer. Poured into a syringe, the mixture was injected between the cast and the mold (Picture 23). After approximately 24 hours, the prosthesis was ready. Unfortunately, in order to obtain a perfect one, with a color that perfectly matched the original marble and that was free from bubbles, many attempts had to be made (pictures 24 and 25).
Before discussing the last restoration steps, namely reconnecting the forearm, positioning the fingers on the hand and then reattaching the hand to the wrist, I would like to offer a brief account of my activity at the restoration site. In addition to the video documentation provided by RAI [Italian Broadcasting Service] and masterfully created by movie director Brando Giordani, the restoration process was also being followed by researchers, professors and famous artists. Dr. Federici put me in charge of giving these people tours and providing information on the restoration process. I had the great fortune of meeting many researchers and artists. Among them, I specifically remember the director of the Central Restoration Institute, Cesare Brandi, painter Mirò and sculptor Emilio Greco. Mirò was accompanied by Monsignor Macchi, the secretary of Pope Paul VI. As I was beginning to detail to the great artist the restoration criteria and restoration methods that had been selected, I was harshly stopped by Monsignor Macchi who, insisted in my silence, said, “Leave him alone, can’t you see he is looking at the masterpiece?” Even though I do



Picture 24
The Virgin's face has been completely reconstructed.

Picture 25
In the proximal part of the eye, fully restored, you can see the original marble chip and to its right, the faux marble prosthesis.

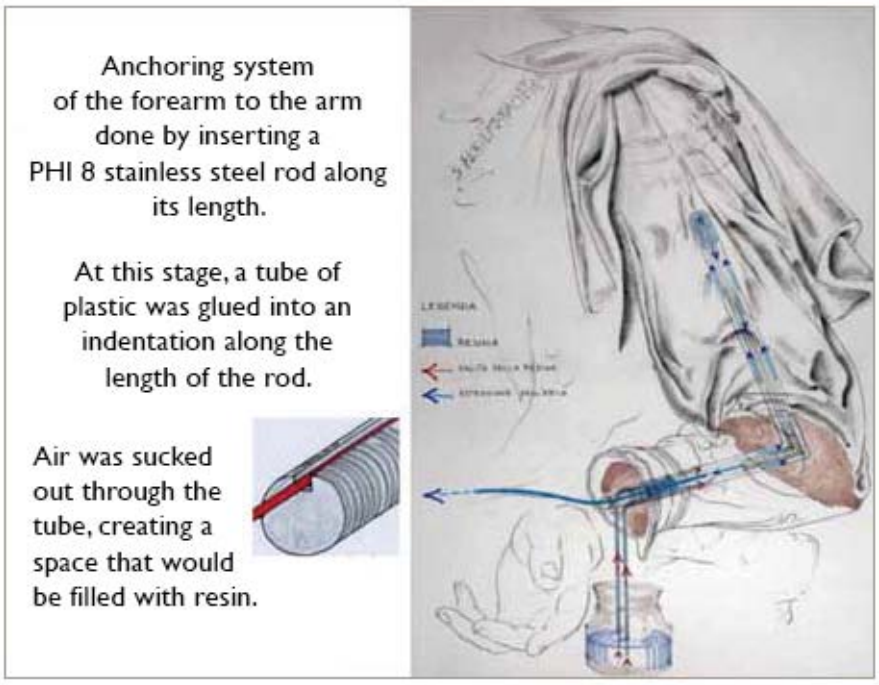
acknowledge my intrusiveness, I have to admit that I did feel terrible. Going back to the restoration process, I would like to mention that attaching the prosthetic eye was very challenging. The restored eye was so perfect that Prof. de Campos exclaimed, "Heaven be praised!"

The last steps of the restoration process entailed attaching the forearm that had been broken off at the elbow, positioning the fingers back on the hand and reattaching the hand to the forearm. Because the forearm had been broken off horizontally right at the elbow, successfully reattaching it required the insertion of a steel rod that could sustain its weight. Therefore, after drilling a 28 cm long hole in the arm, with a 12 mm diameter, the forearm was also perforated along its length with the same 28 cm bit. Subsequently, in order to create a single angled rod, the team made a temporary rod consisting of two segments connected where the elbow was, using a kind of faux set square[8]. Once the forearm was connected to the arm and the articulated pin was inserted, the forearm was pulled out slightly to tighten the screw that connected the two segments of the rod, so as to reproduce the exact angle for the permanent rod; the angled rod was then laid in fresh plaster and, based on the shape created, the final stainless steel rod was made. Once the issue of the rod's angle was resolved, the team had to find a way to introduce the adhe-

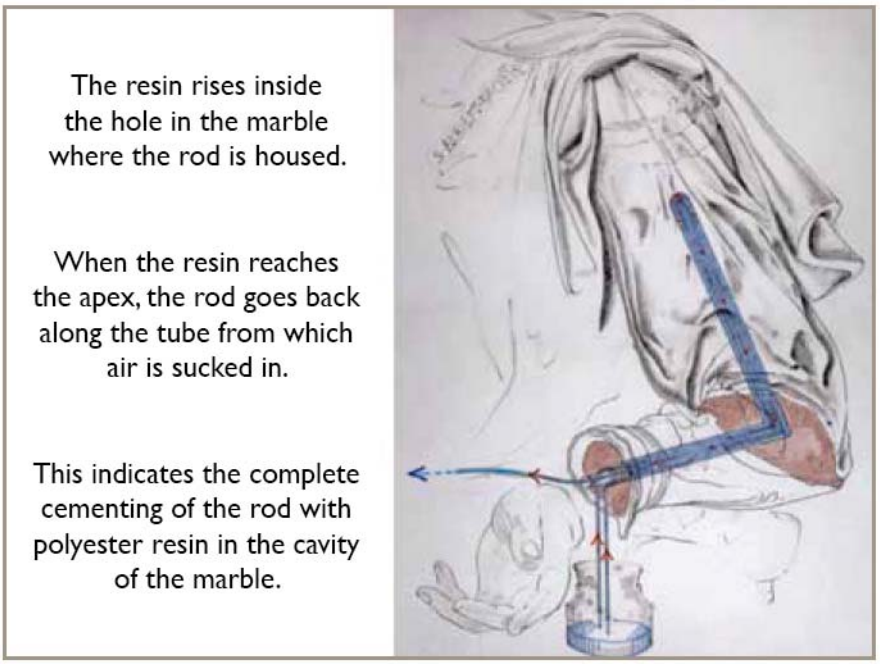
8 It was a set square consisting of two wooden pieces connected by a screw that could be loosened or tightened to create different angles.

sive resin in the hole made in the marble after inserting the permanent rod. I can't remember who came up with the unfortunate idea of drilling a small opening through the shoulder, all the way down to meet the hole in the arm, and then pouring the resin from there. That idea was quickly set aside. After a few minutes of general perplexity, restorer Giuseppe Morresi came up with a brilliant idea. According to him, it was a matter of pushing the resin upward from below by using a vacuum pump that could create a depression inside the hole where the rod was. Dr. Federici found this proposal worthy of implementing. First of all, in order to push the adhesive resin upward, it would be necessary to vacuum the air out from inside the hole. Since making a hole through the entire length of the rod that would have created a vacuum inside the marble was not possible, the team thought of permanently connecting a small plastic tube to the rod. Consequently, the rod that had already been created was pulled out and replaced with another rod that had a 4 mm indentation where a small tube with a diameter of 3 mm was placed. One end of the rod came out at the wrist for a length of approximately 3 cm. The cementing of the rod with polyester resin was done in the following manner: two small plastic pipes with a diameter of 6 mm were inserted on the sides of the rod, which was protruding from the wrist, and were left connected to a container below, which had been filled with polyester resin with the right quantity of hardener and accelerant. The little tube that was inserted in the indentation of the rod, which protruded at the wrist, was connected to the vacuum pump. A few seconds after turning the vacuum pump on, the polyester resin began to travel upward from the small pipes into the hole in the forearm and arm (picture 26).

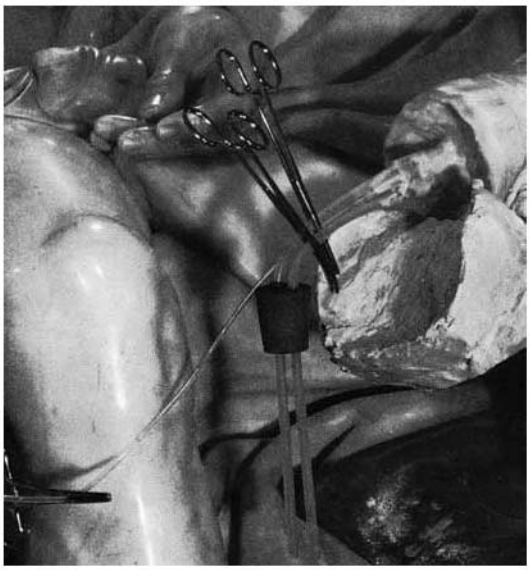
Picture 26
Diagram of the anchoring system securing the forearm to the arm



Once the resin reached the top of the hole in the arm, it had to come back down through the little tube used to vacuum out the air. In fact, as soon as the resin appeared in the little tube protruding from the wrist, we were certain that the polyester resin had arrived at the top of the hole and had cemented the rod along its entire length (pictures 27 and 28).
The last problem that needed to be resolved was that of the



Picture 27
Diagram of the upward flow of the resin.



Picture 28
The moment when the polyester resin exited the small tube used to create an air vacuum.

hand that had already been damaged in the past. The archive research conducted by Dr. Pietro Zander, the archeologist in charge of St. Peter's Necropolis, showed records of damage suffered in 1640 and again in 1964, when the sculpture traveled to America[9]. The phalanges of almost every finger had been broken and reconnected using plaster, iron and copper rods. Therefore, after removing the rods, the phalanges were reattached using stainless steel rods and polyester adhesive resin (picture 29). The rebuilt hand was reconnected to the forearm by inserting it in the rod that protruded from the forearm at the wrist (pictures 30 and 31). As the last step of the restoration process, the sculpture was washed with distilled water. I feel compelled to add that the small gaps behind the Virgin's neck, caused by the first blows delivered by the attacker, were left untouched as a constant reminder of an event, that was indeed tragic, but also part of the history of this work of art. However, in that same spot, the team did remove one iron and one bronze pin, which were originally used to hold a false halo and that, since visible, ruined the sculpture's aesthetic line.

Picture 29
Positioning of the phalanges of the left hand.

9 See the contribution by P. Zander, St. Peter's Pietà: History and Peregrinations between the Old and the New Basilica, pages 47-95.

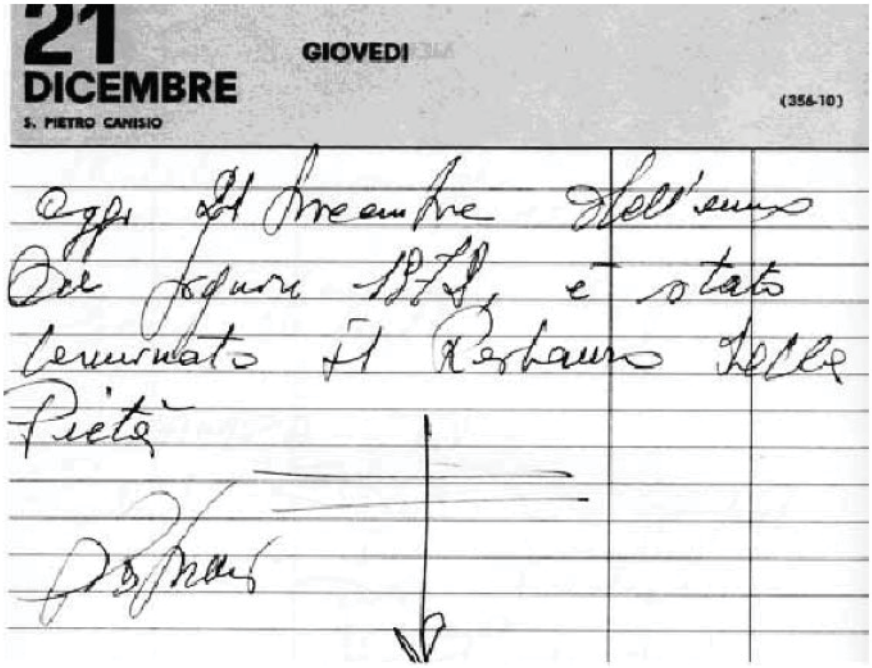
Picture 30
The Pietà before the restoration

Picture 31
The Pietà after the restoration

The opinion of the general manager, Prof. Redig de Campos, offered at the end of the restoration, reads as follows: "To conclude, I think we can say without exaggeration that today, the young Michelangelo's Pietà is essentially equal to what it was before the attack, to the great joy of those who – and there are millions – have followed its restoration with the trepidation that is felt not for a distinguished work of art that was damaged, but for a mutilated being."
Professor Cesare Brandi, director of the ICR, expressed a glowing opinion about the restoration carried out by the team,[10,] and on December 21, 1972, the restoration of the Pietà was finally brought to conclusion (fig. 32).

10 When the horrific disfigurement of the Pietà occurred, suggestions were anything but useful, such as the one recommending the insertion of a dowel of marble in place of the eye of the Madonna. Fortunately, they were nothing more than the inappropriate boastings of artists who believed they should have been the ones to restore the Pietà. The restoration implemented, and we must be grateful for it, is a prudent, respectful and removable restoration. Above all, I appreciate the fact that even the very small additions that were made to the injured eyelid, and to the nose, which was detached by a blow, were done with an easily removable synthetic material, like putty, the same that was used to reattach the tip of the nose and the reconstituted fragments of the veil.

Picture 32
1972 calendar page noting the end of the restoration



In the following days, close to Christmas, the Holy Father, Pope Paul VI, visited team members who had restored the Pietà (fig. 33), wanting to express his deep appreciation to all who had

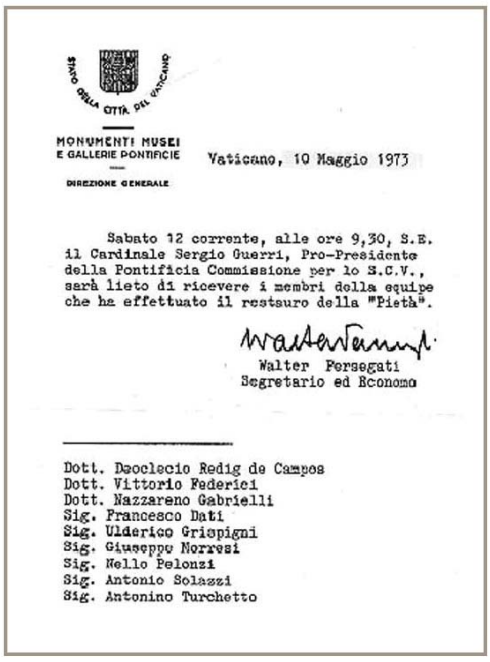
Picture 33
The Holy Father Pope Paul VI prays before the restored Pietà

Picture 34
Pope Paul VI expresses his appreciation to members of the restoration team, left to right: Dr. Nazzareno Gabrielli, Dr. Vittorio Federici, Prof. Deoclecio Redig de Campos, S.E.R.; Cardinal Marella, Archpriest of St. Peter's Basilica

Picture 35
Pope Paul VI expresses his appreciation to restoration team members, left to right: Giuseppe Morresi, Francesco Dati and Nazzareno Gabrielli

carried out the restoration (figs. 34, 35).
On May 10, 1973, His Eminence the Most Reverend Cardinal Sergio Guerri, pro-president of the Pontifical Commission of Cardinals, summoned all the members of the team who had

Picture 36
The letter inviting members of the restoration team to meet with Cardinal Sergio Guerri



STATO DELLA CITTÀ DEL VATICANO

MONUMENTI MUSEI
E GALLERIE PONTIFICIE

DIREZIONE GENERALE

Vaticano, 10 Maggio 1973

Sabato 12 corrente, alle ore 9,30, S.E. il Cardinale Sergio Guerri, Pro-Presidente della Pontificia Commissione per lo S.C.V., sarà lieto di ricevere i membri della equipe che ha effettuato il restauro della "Pietà".

Walter Persegati
Segretario ed Economo

Dott. Deoclecio Redig de Campos
Dott. Vittorio Federici
Dott. Nazzareno Gabrielli
Sig. Francesco Dati
Sig. Ulderico Grispigni
Sig. Giuseppe Morresi
Sig. Nello Pelonzi
Sig. Antonio Solazzi
Sig. Antonino Turchetto

carried out the restoration of the Pietà (fig. 36) to whom, in thanking them for the admirable restoration, he conferred the coveted *Pro Ecclesia et Pontifice.*

At the end of my review of the malicious attack and the exemplary restoration, with much sadness and detail, I fondly remember my colleagues Francesco Dati and Ulderico Grispigni, who died too early, and Giuseppe Morresi and Nello Pelonzi who also died, a few years ago, after retirement.

Finally, with a grateful soul and with feelings of sincere esteem and admiration, I wish to devote a thought to my boss, Dr. Vittorio Federici, director of the Scientific Research Cabinet and director of the delicate restoration work. He also died, unfortunately, very young. He was a true scientist, and man of deep faith, who was able to direct and lead, with skillful discretion and with full respect of the ideas of others, the admirable restoration of the Pietà.

Nota bibliografica

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V. Federici, La guarigione della Pietà, Volume II, Giubileo MCMLXXV, Edizione Beltrame 1974, pp. 49-52.

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