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CONSERVATION OF THE STATUE OF CHARILAOS TRIKOUPIS IN STADIOU STREET

TECHNICAL REPORT

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INTRODUCTION-HISTORICAL DATA

The statue of Charilaos Trikoupis,which stands in Stadiou street,in the centre of Athens,was created at the expense of the egyptian Polychronis Kotsikas and was raised in the yard of the greek Parliament.It was stood there as the «Demon-protector» of the Parliament.The comparison of the austere static aspect of Ch.Trikoupis with the allegorical figure of the Spirit,under the shape of an angel.consists the quality of this work of art.

The statue was created by the sculptor Th.Thomopoulos in 1916.The artist was born in Smyrni in 1873 and died in Athens in 1937.He studied at the School of Art of Athens with professor Georgios Vroutos.

The conservation of the sculpture was carried out by the Dept. of Conservation of Antiquities and Works of Art of T.E.I. (Technological Educational Instituition) of Athens,in collaboration with the municipality of Athens. In the conservation process, participants were students from the Dept. of Conservation of Antiquities and Works of Art ,T.E.I. of Athens, as well as italian students from the Dept. of Architecture, University of Milan, who came to Greece under the framework of exchange students, Erasmus programme. The conservation works took place during the spring semester of 1995-96.

MACROSCOPIC EXAMINATION, NATURE OF DECAY, ANALYSIS OF THE BUILDING MATERIAL, OF THE TYPE OF DECAY AND OF THE DEPOSITS.

The marble made of Ch.Tricoupis is situated in Athens,in a heavily polluted atmosphere therefore it presents the symptoms of weathering, deterioration and decay of a monument standing in an industial city:

a. Granular disaggregation of the surface, in relatively large extension/scale, due to the action of the atmospheric carbon dioxide, in correlation with the moisture.

b. Black, hard crust, mainly into the cavities of the sculpture details of the monument, as a result of the interaction between the rainwater and the deposit of mineral particles and/or atmospheric pollutants.

c. Biological deposits at the underneath parts of the monument, due to the moisture.

d. Formation of gypsum as a result of the reaction of sulphur dioxide and of the moisture. Gypsum was detected mainly into the recesses of the marble scupture. Tests were made in superficial samples with rodisonic sodium and barium hydroxide. XRD analysis in samples from the sculpture, verified the existing gypsum. Macroscopic examination revealed loss of superficial details of the scupture.

e. Nests of insects were found in certain recesses and joints of the sculpture.

Qualitative analysis results of the building material and of the deposits by means of Analytical Chemistry and of Physicochemistry (eg.XRD) are presented at the end of this report. The building material are consisted of calcite while in veins of the the stone, quartz and feldspars have been detected. Analysis of the deposits revealed aluminium silicates, carbon and calcite in small proportion.

CONSERVATION TREATMENT

The decision for the conservation treatment was made after the thorough study of the macroscopic examination and the analysis results. The materials used and the methods of conservation were in accordance with the ethics of the conservation of buildings and works of art.

The necessary scaffolding was supplied and adjusted by the municipality of Athens.

Tests of cleaning were made at different parts of the statue. The removal of the deposits and the black crust from the surface of the marble were studied in relation to the necessary time for an effective result. The cleaning took place first in parts without gypsum, and from the top to the bottom of the statue. The surface was subjected to successive washing using packs impregnated in deionized water, in order to remove the soluble deposits such as soluble salts,dust etc. In the case of oily deposits, few drops of a neutral soap (Texapon) were added in the washing water.

Measurements of the pH and of the electrical conductivity were made in samples collected from the washing that followed each cleaning process, in order to verify the total removal of acidic or alkaline deposits and of the soluble salts.

The cleaning of the black crust was a rather laborious,time consuming work, and it was realised by application of pastes made by absorbent clays (sepiolite) mixed with deionised water. In areas where it was not detected formation of gypsum, sodium bicarbonate and ammonium bicarbonate were added to the above pastes in order to

create an alkaline environment that favour the dissolution of the deposits. There was also added complex agents of calcium ions (EDTA). In cases where the crust were thick and hard, and the cleaning with pastes didn`t work, mechanical cleaning under the microscope with a lancet was considered as the most suitable way of cleaning.

The above mentioned pastes were applied on the sculpture ornaments from the top to the bottom, and they were covered with a thin plastic sheet in order to prevent the evaporation of the deionized water or of the solution. When all the pastes were removed, the area was thoroughly cleaned by rubbing off the surface with soft brushes and then by successive rinses with dilute ammonia solution and deionized water. After each rinse the collected solution was subjected to pH and electrical conductivity measurements in order to verify the total removement of acidic or alkaline deposits and soluble salts from the marble and the mortar surface. In many cases the application of the pastes was repeated more than once while the duration of the treatment didn`t exceed the 60 minute. In the deepest recesses of the sculpture and in the details where the crust was thick and hard, the marble underneath was in an extremely bad condition, very weak and porous.
Problems of fragility and of high porosity were also detected in other areas of the marble surface.

The biological deposits were removed from the plain surfaces and the recesses using solution of hydrogen hyperoxide (Perhydrol) 5% per volume and the biocide with the trade name Desogen.Washing with deionized water was followed this treatment, especially in areas where gypsum was not detected.

The cracks that were probably due to the thermal stresses and to the atmospheric pollution, were filled up with compatible mortar made by white cement and marble powder.

After the cleaning, priority was given to the consolidation of the most degradated /friable areas (in marble surface and mortar). The consolidation treatment was based on repetitive spraying and use of packs composed of neutral paper saturated in calcium hydroxide. In the most dramatically degradated areas the packs were covered by a thin plastic sheet in order to eliminate the evaporation of the consolidant. Controls were made to detect the effectiveness of the treatment.

The areas where gypsum has been detected, presented satisfactory results.

Preventive consolidation was also took place to the sculptured ornaments as well as to the mortar used for the crack filling.

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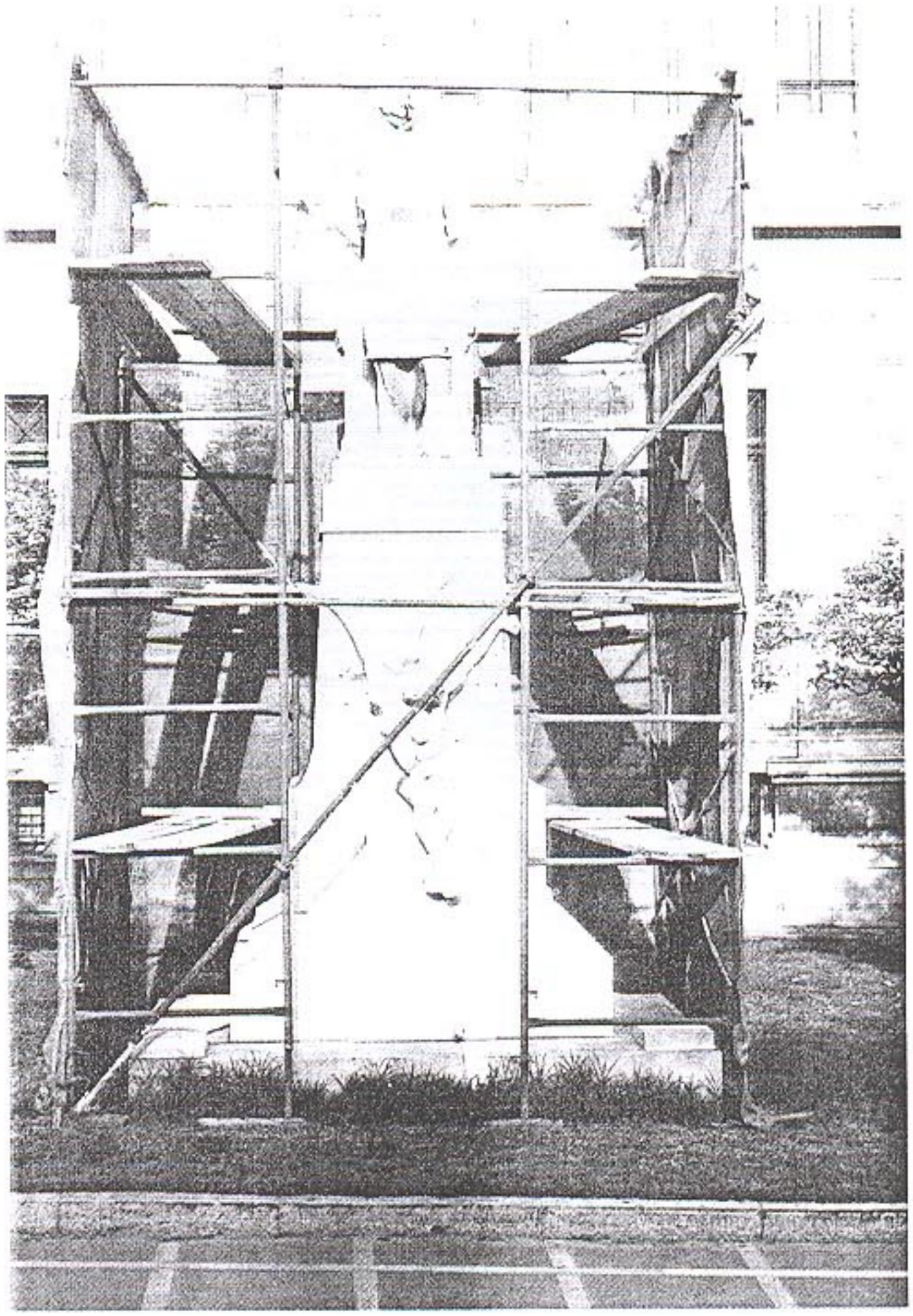
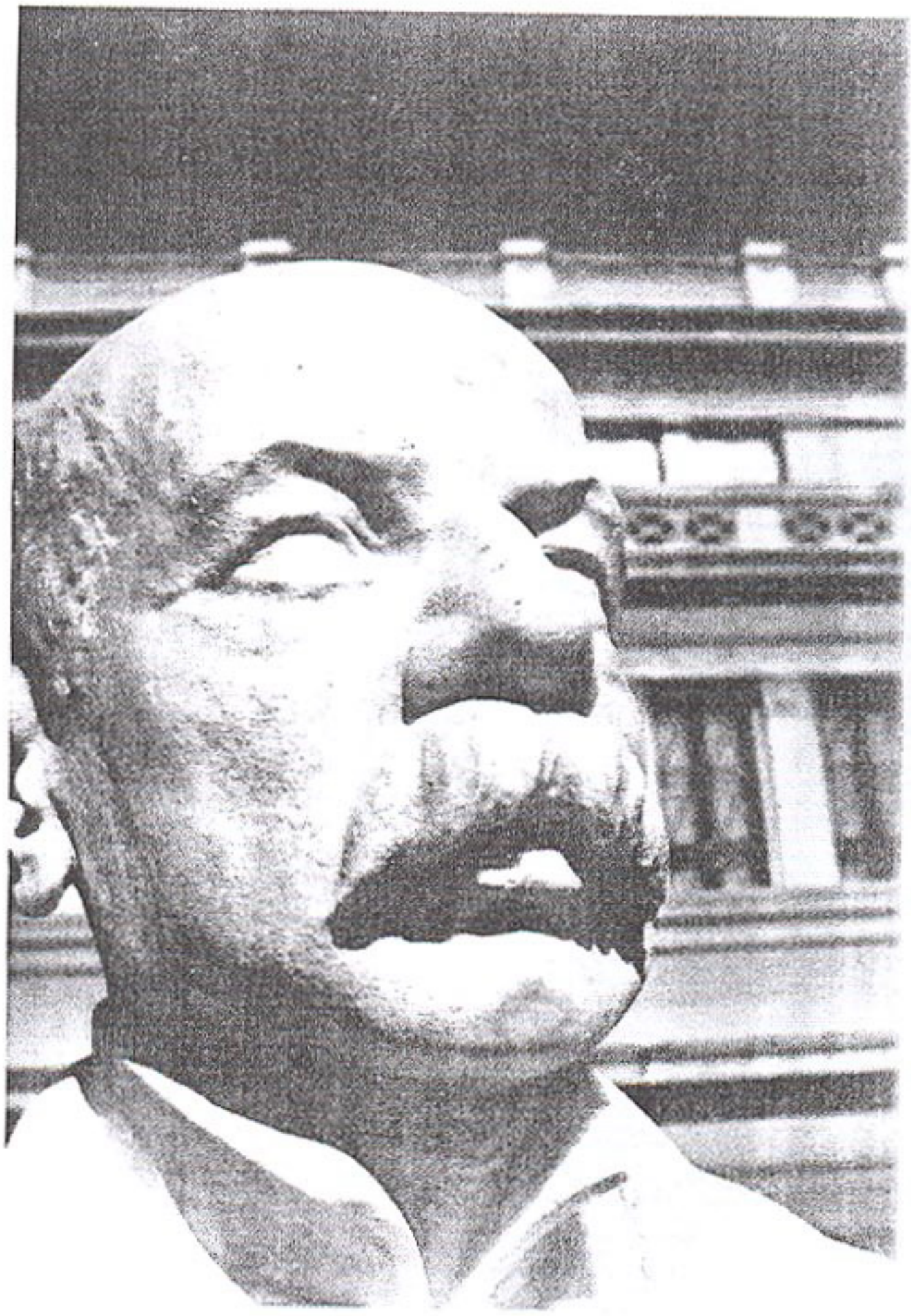


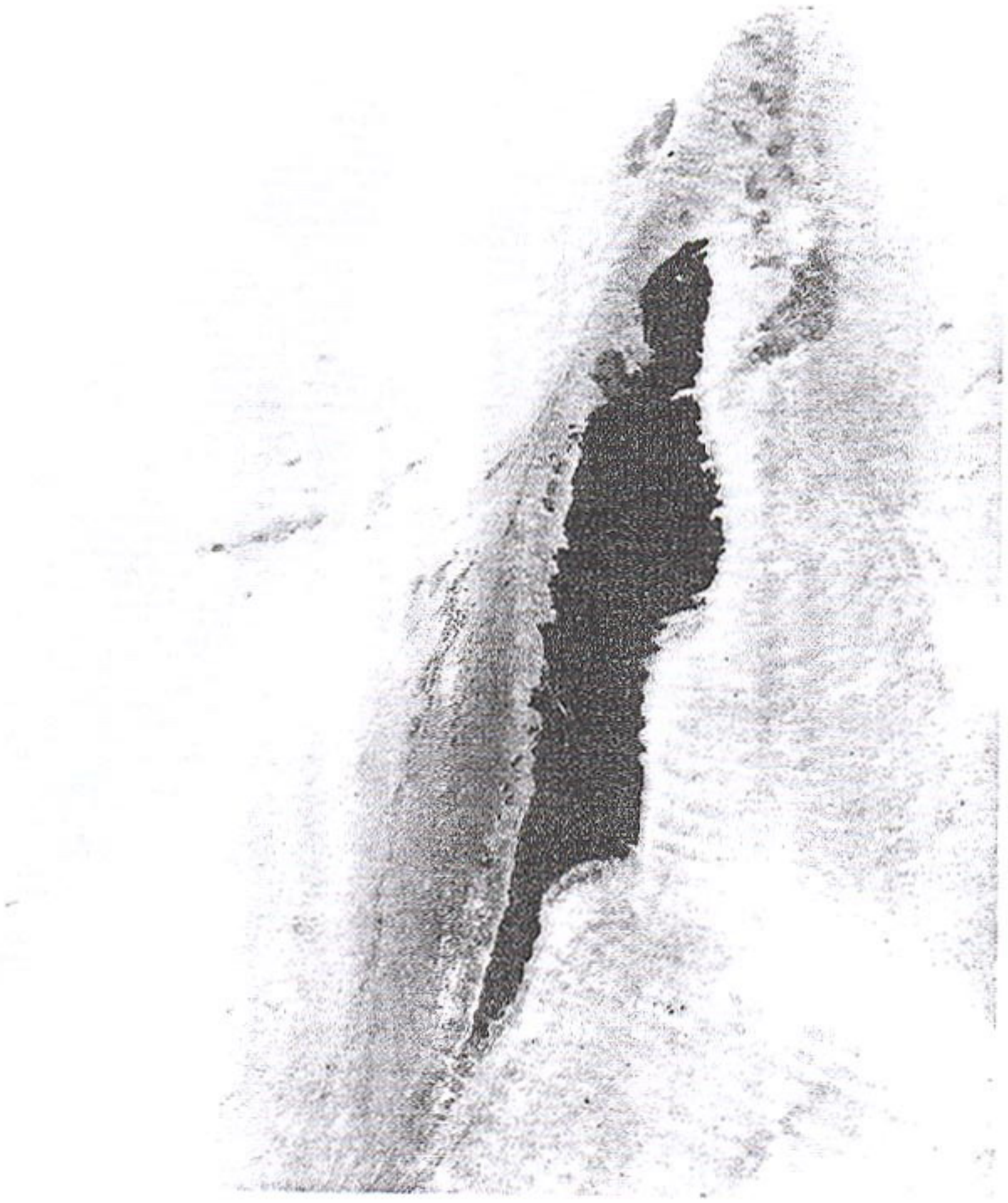
1. *The statue before the conservation treatment.*

2. Black crust on the face of the statue.

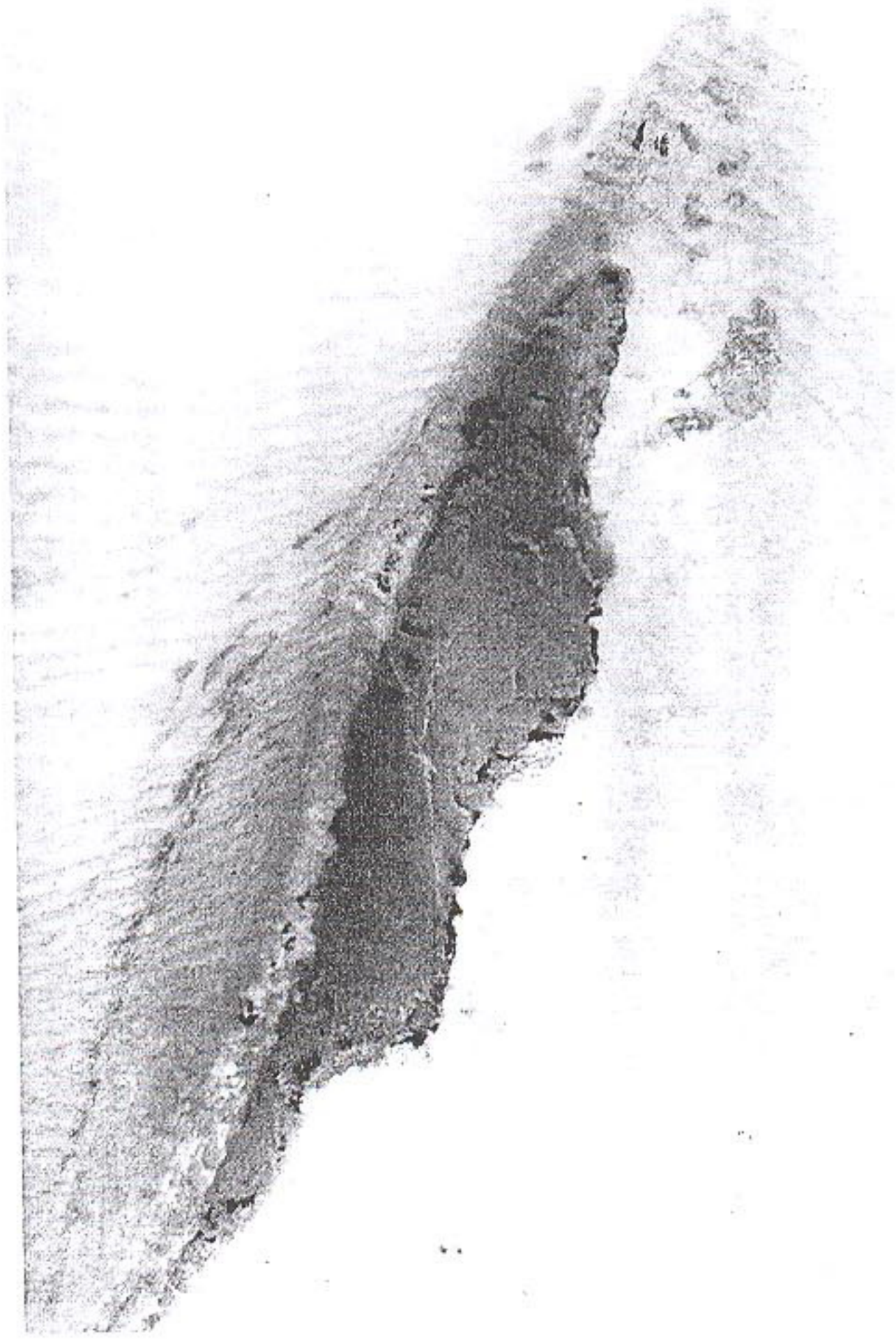
3. *Cleaning of the crust.*



4. *The face after the cleaning.*

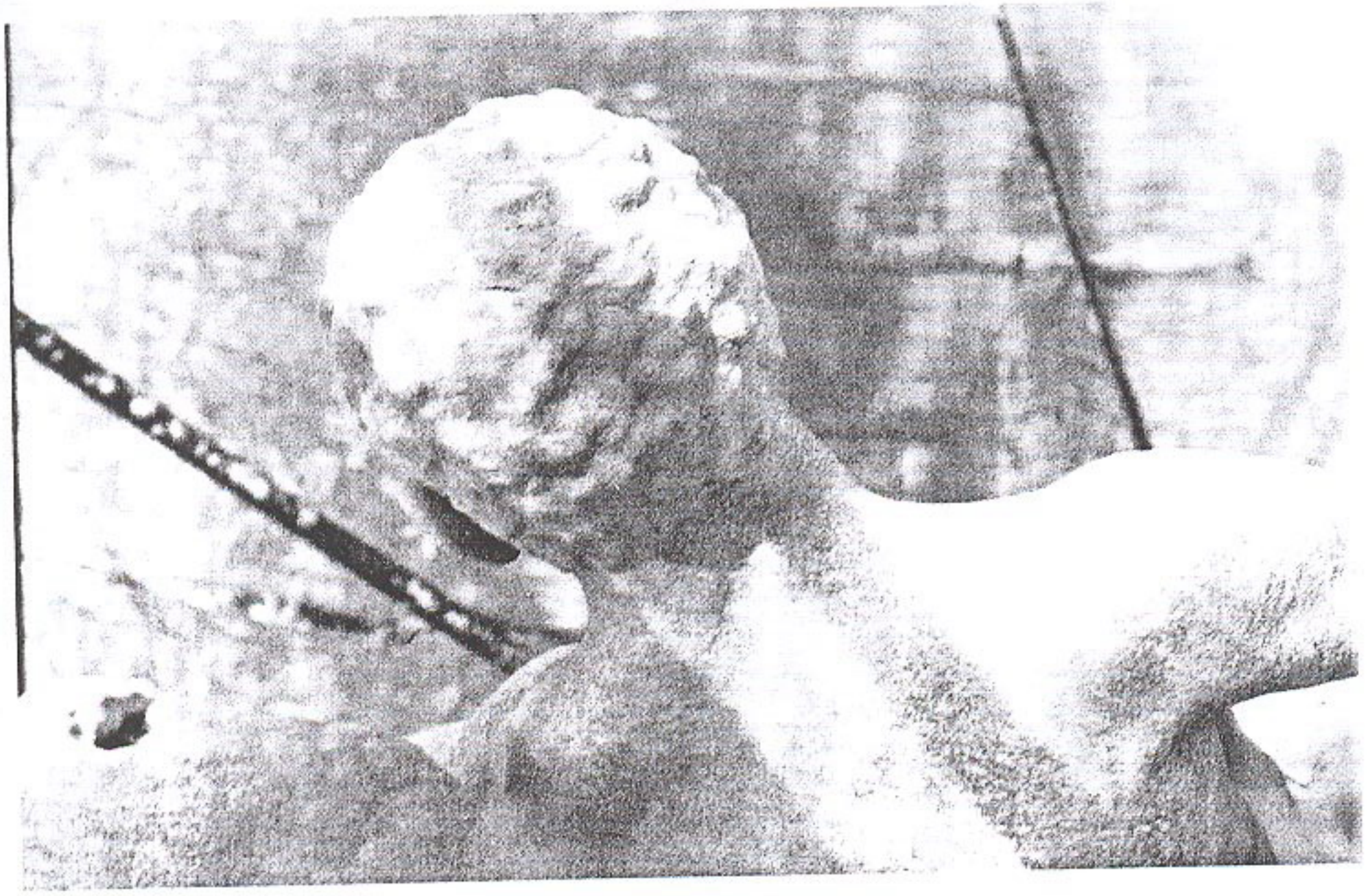


5. Black crust into a cavity of the sculpture ornament.



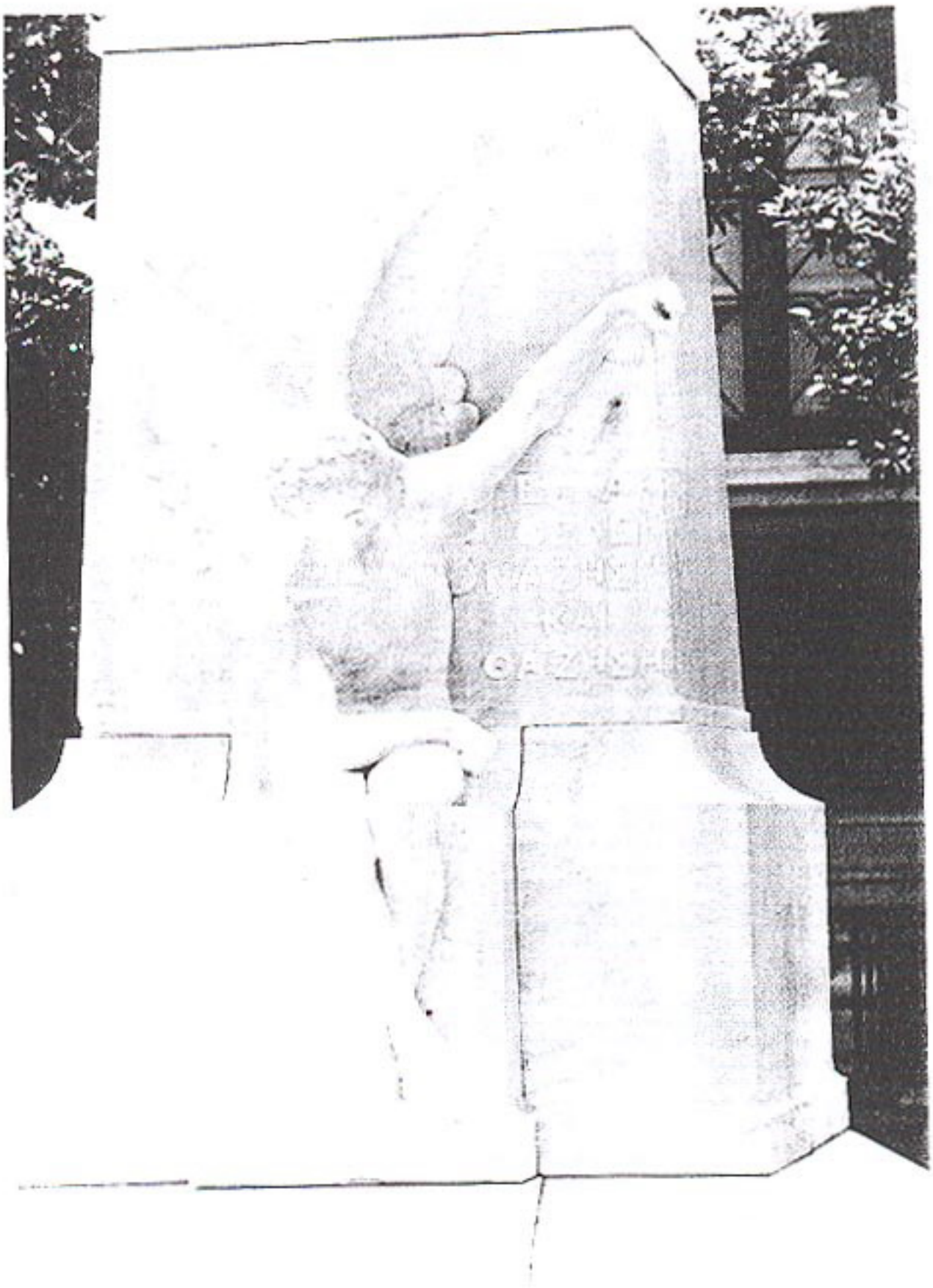
6. *Crust cleaning process.*

7. Part of the sculpture after cleaning using sepiolite paste.

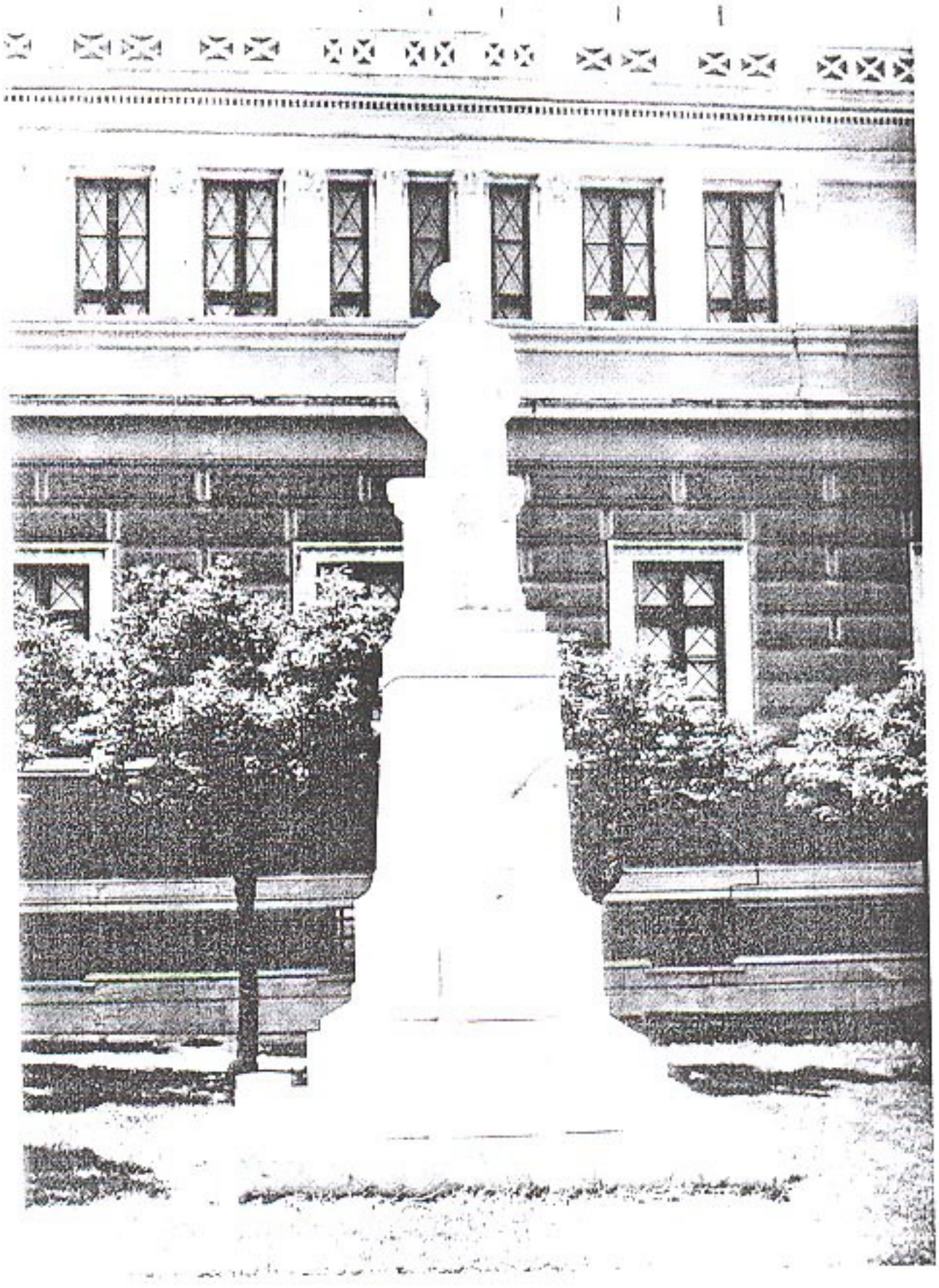


8. *The angel before cleaning.*

9. *The angel after cleaning.*

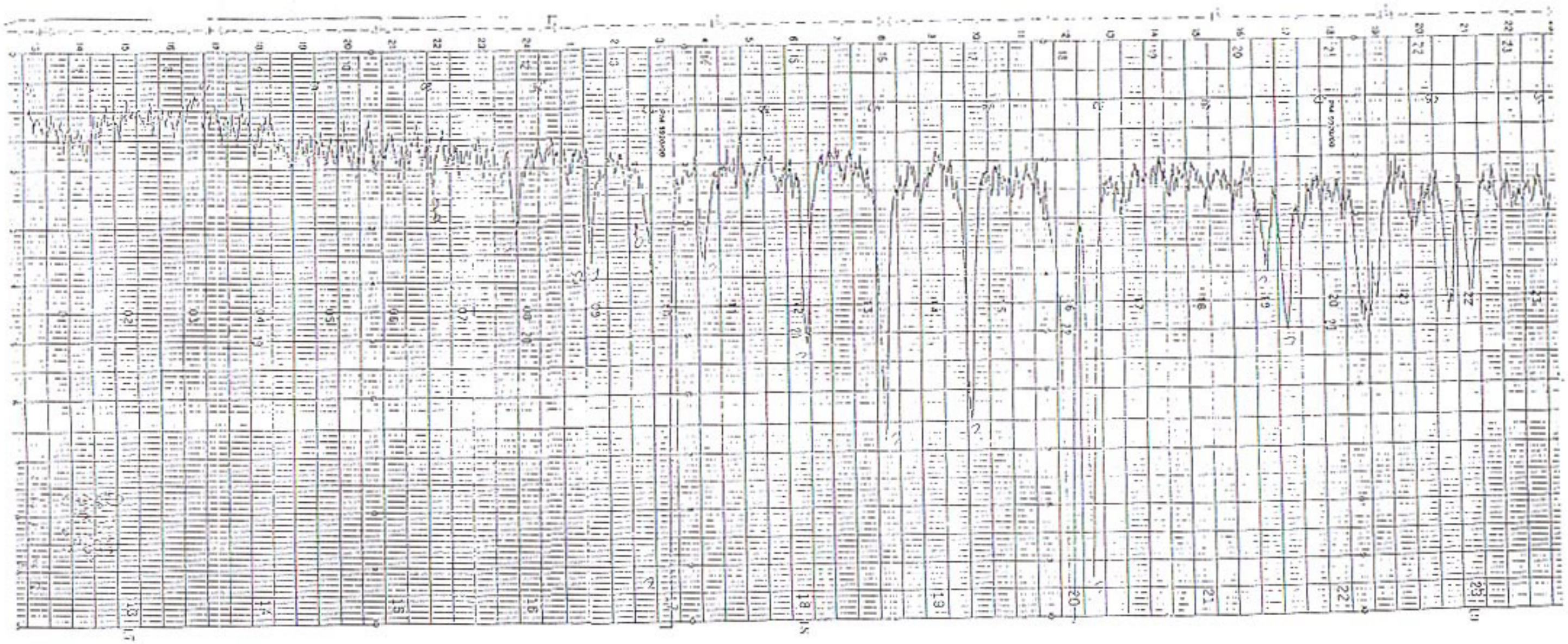


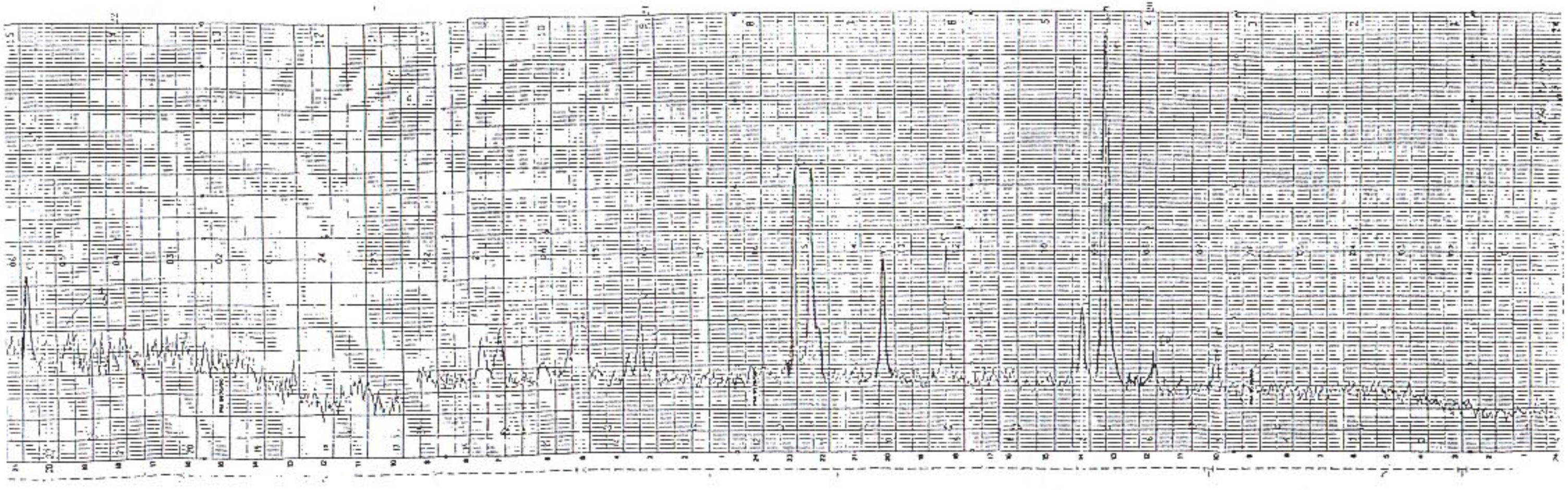
10. *The statue after conservation.*



11. *The statue after conservation.*

12.XRD analysis results , sample 1.





13. *XRD analysis results , sample II.*