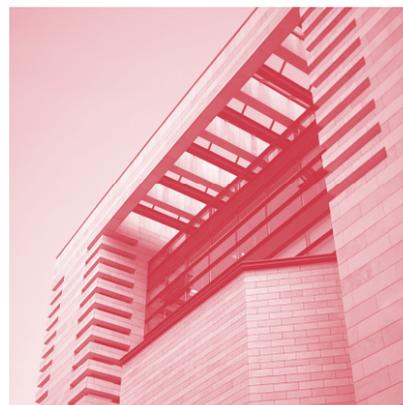


5th International Meeting for the Restoration of the Acropolis Monuments

Athens, 4-6 October 2002

New Administration Building of the National Bank of Greece – Amphitheatre of the Hellenic Ministry of Culture



2002, the twentieth year of activity by the Committee for the Conservation of the Acropolis Monuments (ESMA), was one of the most productive and important of all. This is because the preconditions for work are now favourable for productivity and it is also due to the continuously improving climate in Greece in connection with cultural values and the monuments. Indeed, 2002 saw not only the lively acceleration of the works, but also a new Archaeological Law, a series of works in archaeological sites, the study for a new,

Committee is also responsible for programming and supervising the interventions, and for keeping the time-schedules and changes made to them. It also approves studies, it proposes and then through its President introduces them for their approval by the Central Archaeological Council of the Ministry of Culture. The multi-disciplinary character of the Committee and the experience of the members from other archaeological projects or from their service on the Archaeological Council, enables it to examine

brinoudakis and P. Themelis), and four Professors-Engineers from the National Technical University of Athens (K. Syrmakezis, M. Korres, Th. Skoulidakis and Ch. Bouras). The two last are Emeriti. The Director of YSMA, who is the civil engineer M. Ioannidou, also introduces the various subjects for discussion to the ESMA. There were only a few changes during 2002: After his withdrawal Professor G. Despoinis was replaced by A. Mantis and the duties of the secretary of YSMA M.-X. Garezou, who was transferred to the central service of the Ministry, were assumed by the archaeologist E. Petropoulou. The Committee met twice during 2002 under the chairmanship of the Secretary General of the Ministry, Lina Mendoni.

In addition to the new Archaeological Law, which we have discussed above, among the institutional measures taken in 2002 are the Regulations of the YSMA, product of the effort of its Director and of a committee formed by the Ministry for that purpose. A landmark likewise in the long life of the Committee is the 5th International Meeting for the Restoration of the Acropolis Monuments, which was held in Athens during the three days of the 4th to the 6th of October, 2002.

The extensive report of the Director of YSMA, M. Ioannidou, published in the present issue of the "Acropolis Restoration News", fully covers the essence, that is to say the actual work carried out on the Acropolis monuments during the past year. It also covers the extensive effort made to improve and renew the mechanical infrastructure for these works. During the same period, apart from current matters, the Committee discussed many other subjects. Occasionally these discussions were without direct result, but they contributed to the fruition of proposals or to the promotion of research and they are connected with the works. Thus, there were endless discussions about work pending on the Erechtheion, interventions on which have not been included within the responsibilities of the YSMA, although they constitute unacceptable omissions. These concern the covering with pebble of

the interior of the cella, the putting in order of the remains of the Pandroseion, and the protection of the north porch of the Erechtheion with invisible roofing. These subjects were explored by the architect V. Manidaki and approved by the ESMA, but they remain to be done. A similar situation exists with the deteriorating foundations of the Arrephorion, which were discovered by the early excavators and have been left for decades to the inroads of dampness, freezing temperatures and wind. Temporary roofing is in the course of study (V. Manidaki).

There were endless discussions likewise with the presentation of the final studies by E. Papaconstantinou, K. Frantzikinaki and P. Pouli on the use of laser for cleaning the Parthenon west frieze. This resulted in approval both by the Committee and by the Archaeological Council. Very valuable in this difficult discussion was the contribution of a sub-committee headed by the Acropolis Ephor, A. Choremi, who has followed the work in all its stages (structural conservation of the west frieze, removal of detrimental elements of earlier interventions, continuous supervision of research). The subject of the two side walls of the Parthenon cella provides a typical example of great speculation and boundless effort at research, with no possibility of immediate application (researchers C. Paraschi, N. Toganidis, K. Matala). On this score there were extensive discussions of purely theoretical content about the final application of the programme, which is not yet in the form of a definitive proposal.

The problem of the inscriptions that are lying outdoors on the Acropolis remains unsolved. These are very large members that cannot be protected in the museum storerooms and they suffer continuously from acid rain and atmospheric pollution. The drastic solutions that have been proposed for some years by M. Korres were not accepted and other more attainable solutions were discussed, such as the adaptation of the Belvedere tower or the north tower of the Late Roman Beulé Gate. Endless discussions have not so far produced results.

While the Committee understands the great work-load involved in the programmes already underway until 2004 or 2006, it continues to ponder new, mainly rescue, programmes for the immediate future. Considerable discussion was devoted last year to the west façade of the Parthenon, to protection in the Museum of the metopes still remaining in situ on the monument and to the eventual covering of the opisthodomos with the marble ceiling members that had been prepared fifty years ago by Anastasios Orlandos, despite the fact that the west frieze, that was to have been thus protected, is now in the museum. The theoretical difficulty concerns the balance between the need for roofing the opisthodomos and keeping the addition of new material to the monument to the lowest possible level. Discussions were initiated also on the proposals of M. Korres (presented at the October Meeting) for the ultimate aspect of the surface of the Acropolis after the works are completed and the scattered architectural members have finally been organised. Little progress was made during the past year, unfortunately, on the big subject of the final publication of the completed projects.

2002 has been a fruitful year from the standpoint of publications. The doctoral

dissertation of C. Zambas, on the "Refinements of the Parthenon Columns" was published, followed by a series of studies, which were presented at the International Meeting: the North Colonnade of the Parthenon (C. Zambas), the South Cella Wall (K. Paraschi, N. Toganidis), the South Wall (K. Matala, N. Toganidis), the Entablature of the North Colonnade (L. Lambrinou), the Ceilings of the Propylaea (T. Tanoulas and M. Ioannidou), the Cleaning of the West Frieze of the Parthenon (E. Papaconstantinou, K. Frantzikinaki and P. Pouli) and others. Edited by F. Mallouchou-Tufano, the 2nd issue of "The Acropolis Restoration News" was published and both the volume of summaries of all the communications and the catalogue of the photographic exhibition by S. Mavrommatis were circulated on the occasion of the International Meeting. Published in addition were various booklets from the Department of Information and Education of C. Hadziaslani, which include the complete photographic recording of the Parthenon frieze and the photographs by S. Mavrommatis. Among the activities of the ESMA, should be mentioned S. Mavrommatis' video entitled "The Monuments and the People Behind Them", which was included in the photographic exhibition.



The Prime Minister of Greece C. Simitis during his visit at the Acropolis (26.4.2002), greeting a marble technician at the Propylaea Work-site. At his side the Minister of Culture E. Venizelos and the Director of YSMA M. Ioannidou. On the background (left) the President of ESMA Ch. Bouras

modern Acropolis Museum, visits by the President of the Hellenic Republic and the Prime Minister to the works being carried out on the Acropolis Rock and an increase in newspaper publications concerned directly or indirectly with questions of archaeological import.

The establishment in 1999 of the Acropolis Restoration Service (YSMA) changed the role of the Committee in formal terms, but not in actual practice. While the Director of the Service has executive authority for the works and is responsible for proposing them, the Committee retains the scholarly responsibility not only for the studies for the Acropolis works but also for their correct application. The

problems on the Acropolis in their totality and at the same time to further research and study according to qualification.

In 2002 the ESMA held 20 sessions, the proceedings of which take up some 400 pages. It collaborated on a continuous basis with the 1st Ephorate of Prehistoric and Classical Antiquities and with the Research and Technological Foundation, particularly on the subject of the restoration of the Parthenon west frieze. The Committee includes three Directors of the Ministry of Culture (N. Valakou, N. Minos and D. Giraud), the Ephor of the Acropolis, A. Choremi, the archaeologists E. Touloupa and A. Mantis, two University Professors of Archaeology (V. Lam-



The President of the Hellenic Republic C. Stefanopoulos with the Secretary General of the Ministry of Culture L. Mendoni and the YSMA personnel during his visit at the Acropolis (10.10.2002)



The President of the Hellenic Republic C. Stefanopoulos talking to the Secretary General of the Ministry of Culture L. Mendoni, the President of ESMA Ch. Bouras and the Director of YSMA M. Ioannidou, during his visit at the Acropolis (10.10.2002)

The 5th International Meeting for the Restoration of the Acropolis Monuments was announced at the beginning of February and preparations began by a six-member organizing committee. As in the previous International Meetings, the purpose was to inform the general scholarly public about YSMA's interventions on the monuments and as much as possible to make use of the observations and comments of the participants at the Meeting, to the advantage of the monuments. In numerous consultations with the scholarly personnel, it was decided that they should all present their work of the past years and especially whatever theoretical questions arose during its

course. The ESMA decided to accept foreign views in the framework of the general discussions rather than in separate talks. It was decided also not to pose written questions to the participants, as in the past, since decisions had been made on nearly all matters, both by the Committee and by the Central Archaeological Council. Finally, it was decided to hold, under the chairmanship of Professor Skoulikidis, a separate parallel meeting solely on chemical and conservation matters.

The full programme of the Meeting has already appeared in the 2nd issue of "The

Acropolis Restoration News" (2002) and in the special volume of summaries of the communications, mentioned above. Contributing to the success of the Meeting was the fact that the sessions were held in the amphitheatre of the New Administration Building of the National Bank of Greece on Aioulou Street, for the use of which (as well as for a grant of €10,000) the ESMA expressed its warm thanks. The opening of the Meeting was honoured by the presence and greeting of the Minister of Culture, E. Venizelos and its closing by the Secretary General of the Ministry, L. Mendoni. Likewise contributing to its success was the photographic exhibition of S. Mavrommatis on the subject of the works of the Acropolis (1975-2002) at the Benaki Museum, the Directorate of which had the kindness to hold a reception for the participants. The political leadership of the Ministry of Culture honoured likewise the opening of the exhibition.

Objectively, the 5th International Meeting can be considered successful, because the goals of mutual information have been fulfilled and the various studies have all without exception been accepted. Missing, however, were substantive comments and there was no dialogue or criticism that might have provided fruitful questions or an impetus for new investigations. Perhaps we have moved on to a stage of applying methods and principles that were much discussed at earlier Meetings, a stage of productive work at the work-sites, based on long experience rather than on the enthusiasm of the newcomer.

Be that as it may, the Committee decided not only to publish, as always, the full proceedings of the Meeting, but through letters to encourage some of the foreign participants in particular, even if post factum, to contribute their comments in writing for inclusion in the proceedings. Mrs. F. Mallouchou-Tufano has undertaken the editing of the publications.

Professor Emeritus Charalambos Bouras
President of the ESMA

Beginning in 2000, the work of conservation and restoration carried out by the Acropolis Restoration Service (YSMA) on the monuments of the Acropolis have, as we know, been incorporated in the 3rd Community Support Framework, with a budget of €16.845.194,42. In agreement with the approved programme, work is being carried out on structural restoration and surface conservation on the Parthenon, the Propylaea and on the temple of Athena Nike and, on the Erechtheion, conservation of the surface. Among the activities of the YSMA is also the recording, description and inventorying of the antiquities scattered on the Rock and the consolidation of the Acropolis circuit Walls. There are various support sections that function in the framework of the YSMA, including computerised, logistical and secretarial support for all the works, supervision of supplies, documentation of the interventions, production of casts, and information and education. The following reports in greater detail the work carried out in 2002 by these departments.

Restoration of the Parthenon

The architect N. Toganides is head of the work being carried out on the Parthenon, with the specialised personnel in 2002 as follows: the architects, R. Christodouloupoulou, L. Lamprinou, A. Papandropoulos and C. Paraschi, the civil engineers M. Mentzini, E. Toubakari, Ph. Tzannetos and the archaeologist E. Karakitsou. The architect P. Koufopoulos served as Technical Advisor for the restoration of the opisthodomos. The team of marble technicians is headed by St. Kafouros.

In 2002, work was continued on both pronaos and opisthodomos of the monument, and the programmed first phase in the dismantling of the north side of the monument was completed.

In the pronaos, two column drums (nos. 4 and 5) of the 6th column were restored with new marble, so as to increase its overall stability, and all the parts of the 6th column were again set in place (11 column drums and a capital). The

surfaces of columns 5, 4, 3 and 2 (from N), were cut and the column capitals set in place on the 5th and 4th columns, after completing them with new marble (80% and 50% respectively). Finally, the three architrave blocks were completed with new marble and one was set in place.

The dismantling of the blocks of the entablature, started in 2001, was continued along the north side (from the 4th to the 11th column from the E). Removed

intervention. This situation has increased the length of time needed for their structural restoration and conservation.

Members were dismantled likewise in the opisthodomos (five architrave blocks, the capitals of columns nos. 5 and 6 from N and the uppermost drum of column 5). Here too, the task of conservation and structural restoration of the dismantled members on the ground was begun. The structural restoration of eight architrave blocks was completed,



View of the pronaos of the Parthenon from the West. Photo L. Lambrinou, 2002

were 16 cornice (geison) blocks, 13 crown blocks (thranoi), 16 metope backers (antithemata), 13 triglyphs, 18 frieze (diazoma) blocks and 25 architrave blocks. Dismantled in addition were the capitals and twenty-eight drums of columns nos. 4, 8, 10 and 11. At the same time, the task of conservation and structural restoration of the dismantled members on the ground was started, with the removal of cement additions and the iron clamps and dowels of the earlier interventions. So too, the process of joining the ancient fragments, making moulds and fillers of new marble. During the dismantling of the members it was discovered that their condition was far worse than had been thought before the

and in 2002 work began on the structural restoration of six more architrave blocks, two capitals and one top column drum. Various works were carried out in place on the opisthodomos, such as consolidating the architrave blocks of the west wall, the anta capital of the NW anta (parastas) and the capitals of the 2nd and 4th columns. The uppermost eight drums were consolidated in place by means of grout and the surfaces of four frieze blocks received conservation. Finally, five of the architrave blocks of the opisthodomos were reset in their original positions.

Various tasks in support of the work of dismantling and structural restoration

were carried out at the Parthenon work-site. These included some readjustment of the scaffolding of the north side and the preparation of a surface north of the monument for placing the dismantled architectural members, moving/removal of architectural members from the interior of the Parthenon, extension of the office and work-site equipment, improvement and reinforcement of its mechanical equipment with the installation of an original machine for cutting the column flutes (an invention of the mechanical and electrical engineer, Sp. Oikonomopoulos).



Structural restoration of an architrave of the opisthodomos of the Parthenon. Photo A. Kafourou, 2002



Dismantling of a column drum of the north colonnade of the Parthenon. Photo A. Papandropoulos, 2002

Finally, also in 2002, restoration studies were completed for both the north and south cella walls of the Parthenon, by the architect C. Paraschi and the draughtswoman K. Matala, respectively. In addition, R. Christodouloupoulou completed the architectural study of the interior of the west entablature (architrave, frieze and crown blocks). The civil engineers of the project, M. Mentzini and E. Toubakari, studied and made an estimate of the titanium reinforcements that would be necessary for structural stability. They also oversaw the application of these studies to individual architectural mem-

bers. In addition, bending tests (in collaboration with the Materials Strength Laboratory of the National Technical University of Athens) were carried out on copies of the architrave blocks of the north side. During dismantling of the drums of the 11th column of the north side, measurements were made of the movement of the joins and cracks using a system of strain gages. Resistance tests were run on the first three (from N) columns of the opisthodomos, and studies and tests were made on the artificial stone from which the copies of the west frieze were made.

Restoration of the Propylaea

Restoration of the Propylaea in 2002 comprised support operations at the work-site, removal of what remained of the earlier work of anastelosis, work on structural restoration and conservation of the surfaces of the dismantled members.

The architect T. Tanoulas is head of the work of restoring the Propylaea and the scholarly personnel are the architect C. Karanasos, the civil engineer V. Paschalidis and the archaeologist E. Petropoulou. General supervision of the engineering work on the Propylaea is in the hands of the Director of YSMA, the civil engineer M. Ioannidou. P. Adamopoulos is head of the marble technicians.

Work on improving the infrastructure of the Propylaea work-site included: the installation early in 2002 of a system of scaffoldings-bridgecranes, with which it was planned to complete the dismantling of the architectural members of the monument that had been restored earlier and to reset them after consolidation and conservation; the construction along the central passage of the Propylaea of a special protective ceiling of galvanised metal net for the protection of visitors, walking below the bridgecrane while work is being carried out; extension of the ground surface for the dismantled architectural members to the north and south of the area of the bridgecrane. Finally, to increase the roofed work-space, a small prefabricated building with removable roof was set up in the area,

where it is accessible from the bridgecrane location.

The dismantling of the remaining parts of Balanos' anastelosis from the east porch (105 members) proceeded at a rapid pace and was finished by early summer of 2002. In the course of the work it was discovered that Balanos' intervention had also gone into the area of the north wall of the central building to include an unknown number of architectural members. The existence of clamps of that period for joining fragments or for reinforcing cracked members and the replacing of ancient clamps and dowels with others, which had rusted out, meant that the dismantling had gradually to be extended until untouched areas were reached. By the end of 2002, the number of members dismantled amounted to 129 stones, without having reached an undisturbed area.

Together with the work of dismantling in 2002, the structural restoration of the coffered ceiling blocks and other members proceeded (joining of fragments, casts, construction of new marble additions). According to the study for restoration of the ceilings carried out by M. Ioannidou and T. Tanoulas, these will be reset in the central building of the Propylaea. Thus, by the end of the first quarter of 2002, the restoration of the coffered ceiling of the west hall was finished and work on restoring the coffered ceiling of the east stoa continued at a rapid pace.

Five coffered slabs for this ceiling were made of new marble. Likewise completed was the carving of the final surface of the additions on two coffers and the casts for restorations to sixteen coffer slabs were made. In addition three interbeams of new marble were produced and twelve casts for additions to the rest. The ancient fragments of one of the ceiling beams were joined and preparations were made for the definitive joining of two beams composed of fragments that belong together. Finally, work proceeded on constructing twenty-six additions in new marble for filling in the beams.



View of the Propylaea from the E. Photo C. Karanasos, 2002

Restoration work proceeds on the members that have been dismantled, in the order in which they will be reset on the monument. The cement and iron used in the earlier anastelosis have been removed as well as the fragments that did not belong to the same member. Fragments of four blocks of the north wall have been joined where they belong and two casts and an addition have been made for the SE column capital of the east portico.

Finally, in 2002, work began on making two Ionic column capitals in new marble, in accordance with the study for restoration of the ceilings. To speed up the cutting of the stone, the outer surface of the marble was removed by an outside company with a marble cutter, reducing it by three centimeters. The final carving of the surface was done at the work-site.

In addition to estimating the titanium reinforcements needed for consolidating the architectural members, and supervising the application of the relative studies for this, the civil engineers of the project finished the study for repairing the ceiling beams. In accordance with this study, the static strength of the beams is to be restored so that they can safely carry the weight planned.

Restoration of the Temple of Athena Nike

The restoration of the temple of Athena Nike during 2002 progressed with the completion of the dismantling of the temple, supporting work at the work-site and the restoration and conservation of the surfaces of the dismantled members.

The head of the restoration project of the Athena Nike temple is the civil engineer D. Michalopoulou. Scholarly responsibility for the work is in the hands of the architect C. Mamalougas and the archaeologist E. Lepidaki. L. Zacharopoulos is head of the team of marble technicians.

Removal of the last seventy five architectural members and three poros blocks of the earlier shrine completed the dismantling of the temple. Removed also was the reinforced cement slab on which the temple had been founded, the four metal beams that had supported its northeast corner and the metal post that supported the north pilaster, all elements of the 1935-1940 intervention. The cement mortar was removed from the first and second steps of the crepis and from the euthynteria. So too all the marble fragments of various origins that had been incorporated in the earlier intervention,

and the reinforced cement along the north side of the wall of the poros shrine.

Work began also on consolidating the members of the temple: the cement mortar and rusted clamps and dowels left from the earlier anastelosis were removed from one hundred nine architectural members and thirty five fragments that belong together were joined, using titanium rods. Finally, also in 2002, a total



Construction of Ionic column-capitals, made of new marble, at the Propylaia. Photo T. Tanoula, 2002

of twenty-one new marble additions were made for filling in the wall blocks.

The dismantled blocks of the temple were rearranged so as to economise on the limited space in the work-site, while a small extension to the laboratory was started. Finally, the existing system of bridgecrane on elevated rails was removed to make way for a newer, larger bridge crane, capable of carrying greater loads. This will be used for reconstructing the temple.

Studies included the investigation by D. Michalopoulou, civil engineer responsible for the project, of the new load-hoisting system. She also studied and supervised the consolidation of the architectural members. The architect C. Mamalougas, in collaboration with D.

Giraud, author of the study for the restoration of the temple of Athena Nike, made a trial placing of the epistyle courses and the cyma wall base on the crepis, in order to investigate the original measurements of the temple at the level of the epistyle and at the base of the orthostates. Finally, the wall blocks of the cella were measured in order to determine the height of the courses and the fragments, that were removed from the reinforced

cement of the crepis, were identified and attributed to the cella blocks.

As every year, all the work carried out in the work-sites of the monuments was rigorously recorded daily in an analytical day-book with detailed drawing and photographic recording of the members that were dismantled and restored. As for the new marble needed for restoration, this was covered by supplies from the marble quarries of Dionysos – an amount that reached 143,66 m³ in 2002. A special agreement has been made with the marble quarries of Dionysos for cutting and trimming some of the great blocks quarried, so they are worked to the desired measurements and form.

Consolidation of the Circuit Walls of the Acropolis
In the framework of the project for

consolidating the Acropolis circuit Walls, in 2002 documentation of the south fortification Wall was entrusted to an outside collaborator. The first stage of documentation proposing the installation of a micrometric net, has been completed. In addition, the architect V. Manidaki studied the north side of the circuit Wall with the aim of protecting the poros foundations of the Arrephorion.

Inventory and Classification of Architectural Members Scattered on the Acropolis

Head of the project of recording, documenting and classifying the scattered architectural members of the Acropolis is the archaeologist K. Kissas. The following work was carried out under his supervision in 2002: a) three stone piles were taken down and the 1244 members in them were numbered, photographed and catalogued. About one third of them were documented by drawings. Many of these were attributed to monuments undergoing anastelosis, and the sculpture, inscriptions and archaic architectural pieces were taken to the storerooms of the Acropolis Museum. The rest were placed north of the Museum; b) forty-four small fragments were joined with titanium rods and white cement; c) we have begun to move the architectural members on the Acropolis Rock, necessary in order to pursue the works of restoration and to improve the appearance of the environs of the monuments. Finally, members of the team working on the scattered pieces took part in preparing the architectural members, which were presented in the exhibition “Klassik” at Berlin and Bonn.

Surface Conservation of the Monuments

Together with projects of structural restoration, both rescue and systematic conservation was carried out on the surfaces of the parts being restored on all the monuments; so too on other areas showing increased surface damage. Surface conservation was carried out likewise on the Erechtheion. Head of surface conservation is the chemical engineer, E. Papakonstantinou. Responsible

for the work of surface conservation, monument by monument, are the conservators A. Panou on the Parthenon, C. Babanika on the Propylaia, A. Tsimereki on the Temple of Athena Nike and G. Frantzi on the Erechtheion.

In detail, the following work was carried out on the monuments in 2002:

On the Parthenon, rescue interventions were carried out on the north side, during the dismantling of the cornice (geison) blocks, triglyphs, frieze and columns, and systematic conservation was applied to the dismantled wall crown blocks (thranoi) and to the bedding surfaces of the dismantled column drums. In the opisthodomos, the columns underwent structural restoration in situ by means of grouting and the column capitals and uppermost drums received systematic conservation. Rescue and systematic conservation was carried out also on the column capitals, the epistyle blocks and other members that were dismantled and structurally restored and are to be set in place again. In the pro-naos, work included the application of an artificial patina on eleven drums of new marble that have already been set in place in the monument.

Considerable progress was made in 2002 in the conservation of the west frieze in the Acropolis Museum. Three blocks were restored structurally and cleaning of the first block of the frieze (W.V) by the laser method was launched and completed, using an instrument provided by the Institute for Electronical Structure and Laser of the Technological and Research Foundation (FORTH-IESL). In April 2002, the Central Archaeological Council of the Ministry of Culture approved the study for conservation and cleaning of the west frieze by E. Papakonstantinou and K. Frantzikinaki, the result of long research and testing in collaboration with the FORTH-IESL. The study prescribes the cleaning of the Parthenon west frieze by laser working on two wave lengths and, where necessary, used together with other methods that have been tried and proved entirely safe (mi-

croblasting, application of absorbant poultices with sepiolite, inversion of gypsum into calcite). With the approval of the study, the FORTH-IESL undertook the development of a new system, on two wave lengths (infrared and ultraviolet), that could work separately or be used at the same time with differing proportions of power. This new system will be used by YSMA for the cleaning of the west frieze, together with the older



The reinforcements of Balanos' intervention in the central architrave of the east portico of the Propylaia (detail). Photo V. Paschalides, 2002

system with which trials were made, so that the cleaning of the frieze can proceed rapidly.

Systematic conservation continued in 2002 in the Propylaia with work on the surfaces of the fragments of the Ionic column capital from Balanos' anastelosis and in the colonnade of the north wing. Systematic conservation was continued likewise on the south wall of the central building, on two of the ceiling beams, on the southeast column capital in the east portico and on the east lintel block of the central entrance. Systematic conservation was carried out also on the cof-fered ceiling blocks of the west building after the new marble additions had been joined. During the dismantling of mem-

bers from the central building, preliminary stabilising was carried out and fragments were collected. The dismantled members then received systematic conservation on the ground.

While the temple of Athena Nike was being dismantled, rescue operations were carried out on column drums of the west colonnade, the crepis steps, slabs of the floor, the toichobate, the euthynteria and the cella walls. Systematic interventions were carried out on the resting surfaces of the dismantled members, euthynteria blocks, crepis steps, toichobate, floor, orthostate and architrave blocks, which will be inaccessible once the architectural members have been reset in place.

Finally, the surfaces of twenty blocks of the inner face of the south wall of the Erechtheion were conserved systematically and rescue conservation was applied to two beams of the north porch and to the second step of the crepis.

The sculpture that had been in the exhibition “Klassik” at the museums of Berlin and Bonn, underwent conservation in the sculpture conservation laboratory of the Acropolis Museum, scholarly responsibility for which is held by C. Vlasopoulou, archaeologist in the First Ephorate of Prehistoric and Classical Antiquities. The new additions likewise were restored and fifteen sculpture fragments from the Museum storerooms cleaned.

Electronical/mechanical and Technical Support for the Projects

The electronical/mechanical crew of the Acropolis projects continued in 2002 with the installation of supportive infrastructures at the work-sites and with the continuous task of keeping the machinery and equipment there in good condition. Worth noting especially are the various work-site constructions, invented and designed to make the work go faster, by the electrical and mechanical engineer Sp. Oikonomopoulos, head of the office and crew. He also supervised their construction and installation in the work-sites of the various monuments.

Particularly important is an original invention for cutting the flutes of the column drums of the Parthenon. Another significant contribution by Mr. Oikonomopoulos is the establishment of a computer network, incorporating radio links, between the central offices of the YSMA at 10, Polygnotou Street with the work-sites above on the Rock. It is one of the first applications of its kind in Greece.

Casts Laboratory

A. Mantis, Ephor of Antiquities and a member of the ESMA, is in charge of the YSMA cast laboratory. In 2002, the laboratory was involved primarily with producing copies of the west frieze of the Parthenon (making elastic moulds of eleven blocks, preparations for the final casting of two blocks, test casting of the artificial stone used for the copies under the supervision of E. Toubakari, civil engineer of the Parthenon project), to replace the originals on the building. Plaster casts were also made for use in exhibitions outside Greece and for the Acropolis Museum. Finally, casts, moulds and copies were made for use in the projects of the First Ephorate of Prehistoric and Classical Antiquities.

Documentation Office

Head of the YSMA documentation office is the archaeologist F. Mallouchou-Tufano. Information technology specialist, G. Alexopoulos, is in charge of the computer equipment of the entire Service. In 2002, the office continued with the permanent tasks of cataloguing and classifying new printed matter, computer registration of new exhibitions, studies and proposals, preparation and entry of photographs from previous years showing the restoration carried out on the Parthenon, into the data base that documents the Acropolis restoration works, coordination of the cinematographic documentation of the works and the recording, organising and computerising of the photographic material.

The work of the documentation office



The earlier temple inside the bastion of Athena Nike. Photo D. Michalopoulou, 2002

was expanded in 2002 to the work-sites of the monuments (Parthenon, Propylaea, Athena Nike). This included the systematic following of the restoration programmes, day-book entries and the entering, cataloguing and annotating of documentation. The above work was carried out by the archaeologists E. Lebidaki (Athena Nike work-site), E. Karakitsou (Parthenon work-site), E. Petropoulou (Propylaea work-site). In 2002, F. Mallouchou-Tufano also shared in organizing the 5th International Meeting on the Restoration of the Acropolis Monuments. She was in charge of the YSMA publications, and she presented the work of the Acropolis Committee in lectures at foreign educational institutions. Finally, she conducted visits to the works, the monuments and to the Acropolis Museum.

Photographic Laboratory

The photographer S. Mavrommatis is head of the YSMA photographic laboratory. The laboratory continued in 2002 its permanent work of photographing and printing the photographs of all the restoration carried out on the monuments. On the occasion of the 5th International Meeting on the Acropolis Monuments, S. Mavrommatis organised a photographic exhibition at the Benaki

Museum, showing his photographs of the works of restoration carried out on the Acropolis between 1975 and 2002.

Information and Education Office

The head of the information and education office is the architect-archaeologist C. Hadziaslani, who is assisted in her work by the archaeologists E. Kaïmara and L. Leonti. In 2002, the information and education office carried out educational programmes in 83 school grades and lent museum kits and educational folders to 215 schools in Athens and the provinces which were used by 13,945 students. The museum kits "Let's go to the Acropolis" and "An Ancient Temple" were provided to 160 educational institutions in Greece and Cyprus and arrangements have begun to provide 100 museum kits to educational institutions abroad.

The accomplishments of the office in 2002 included also the organising of seminars on the educational material from the Acropolis and its use for educators from forty-seven provinces of Greece, from schools in Cyprus, and for educators in European countries as well. On the invitation of the European Parliament, an exhibition of the educational material was held in Brussels in May, 2002, on the sub-

ject "The Ancient World in Modern Education – Let's Go to the Acropolis". An exhibition with the same theme was held at Odessa, Kiev, in Cyprus, at Delphi, Kavala and at Athens during the 5th International Meeting on the Restoration of the Acropolis Monuments. In addition, C. Hadziaslani participated in the organization of the 5th International Meeting for the Restoration of the Acropolis Monuments.

Secretarial and Logistical Support, Management of Material, Personnel, Economic Matters

The secretarial support of YSMA and ESMA in 2002 was carried out by the secretariat, headed by M.-X. Garezou until May and afterwards by the administrative employee, Ch. Papanikolaou. From June, 2002, on, E. Petropoulou, archaeologist in the documentation office, served as secretary of the Acropolis Committee, her chief concern being the proceedings of the sessions, in addition to her other main duties. The personnel of the YSMA secretariat took part in organising the International Meeting for the Restoration of the Acropolis Monuments in October 2002.

Accountancy support for the works was

provided by the YSMA accounting office, headed by the economist A. Mertzeliou. The logistical supervision of disbursement follows the procedure required by the administration of the Third Community Support Framework and Greek law on supplying and allotting works and studies. Th. Phoutsas is in charge of the YSMA office for management and storage of material.

A total of 240 employees with various specialties was occupied in the YSMA during 2002. They included civil engineers and architects, a chemist and a mechanical engineer, archaeologists, conservators, marble technicians and technical workers, operators of machines and assistant administrative personnel. The projects on the Acropolis were in full operation, since most of the work-site infrastructure had been completed during the previous years and the personnel involved was greatly increased. The development and progress of the works meant that the disbursement exceeded the estimate for 2002, rising to €5.237.892,82. Published in the Government Journal in 2002 were the "Regulations for Operation of the YSMA" together with an Appendix with the "Regulation for the Operation of the Documentation Office".



The temple of Athena Nike dismantled on the ground. Photo C. Mamalougas, 2002

The 5th International Meeting for the Restoration of the Acropolis Monuments. Publications

Among the main events of 2002 was the organisation last October by the Committee for Conservation of the Acropolis Monuments (ESMA) of the 5th International Meeting for the Restoration of the Acropolis Monuments. Following what is by now established tradition, the entire scholarly staff of the YSMA took part, presenting to an international public of specialists the works of anastelosis and, particularly, the new studies carried out since the 4th International Meeting for the Restoration of the Acropolis Monuments in 1994, which provide the basis for the interventions on the monuments. In addition, the YSMA in 2002, in the framework of its general publishing policy, and also on the occasion of the 5th International Meeting, has brought out a remarkable number of publications including eight volumes of studies for the restoration of the monuments, the volume of abstracts, in Greek and English, of the proposals made at the International Meeting, the 2nd issue of the "Acropolis Restoration News" in Greek and English, and the catalogue of the photographic exhibition by S. Mavrommatis at the Benaki Museum, likewise in Greek and English.

Finally, we must emphasise the close and admirable cooperation of the YSMA in 2002, both with the ESMA, which has the responsibility for the scholarly supervision of the works, and with the political leadership of the Ministry of Culture.

Maria Ioannidou
Civil Engineer
Director of YSMA

Visitors to the Acropolis will soon be able again to admire the west frieze of the Parthenon. Since 1993, this unique masterpiece of sculpture has been kept in a specially prepared area of the Museum. After a long period of studies made in order to find suitable methods and materials, the conservation and cleaning carried out, in order to repair the damages suffered by the frieze while on the monument itself, are nearing completion.

Earthquakes, the 3rd century B.C. fire, the explosion of the monument in 1687, vandalism and the theft by Elgin inflicted serious mechanical strain on the stones of the monument. The result of all these tribulations is cracking, deterioration and loss of mass in the marble. The 20 m long sculptured surface of fourteen blocks has suffered further damage from unsuccessful attempts at conservation, between 1872 and 1974, particularly from extensive use of bronze dowels and Meyer stone glue which was used for joining, fillings and remodelling of the relief. More recently, atmospheric pollution during the past fifty years in the Athenian area has wrought serious changes in the relief.

The phenomena of loss of the surface caused by acid rain, calcification from sulphur dioxide, flaking, the gradual loss of the coloured surface layers, were already noticeable during the decade of the 1970's. This is why all the sculpture was gradually removed from the Acropolis monuments and taken to the museum. In the case of the west frieze, such a decision was particularly difficult since, aside from the sculptural composition in itself, the frieze forms a structural part of the monument. Thus, in 1978, the frieze was covered by a roofing, and remained in place on the monument. With the roofing, further loss of the sculptured surface from acid attack was avoided, but there was calcification, soot deposition, suspended particles and the formation of a black crust. The result of these accretions to the sculpture was reduction of its aesthetic quality and the loss of valuable features that had still been preserved on the surface. This made it absolutely necessary to remove the west frieze

from the monument, an intervention that was carried out in 1993.

Early in 2000 the programme of structural



Cleaning the west frieze with the use of laser-technology. Photo K. Frantzikinaki, 2003

restoration and conservation of the west frieze was begun, and it has already been completed. The large sections, of which a number of blocks had been dismantled while in the museum, were mended with white cement and titanium dowels, wherever needed. Cracks were filled in with liquid hydraulic grout of



Part of the block W.III cleaned with the use of laser-technology. Photo S. Mavrommatis, 2003

cement-pozzolana made in an ultrasonic container. Surface cracks and flaking were reinforced with grouts of cement-calcium. Surface flaking was stabilised by

means of spraying with a suspension of calcium hydroxide reinforced with calcium carbonate. The number of small pieces that had to be joined was enormous.

The bronze dowels set in earlier interventions on the frieze were removed by an instrument called "karotaria", a system of metal tubes invented by the marble technicians in order to avoid damaging the marble. The old mortar is removed by means of ultrasonic scraper and dental tools. Filling mortar used in the earlier interventions, soot deposits and black crust hid the disintegrating parts of the stones. In order to determine the extent of the disintegrating areas, during the intervention, YSMA technicians produced casts of the copies of the west frieze made in the first quarter of the 20th century, which show these areas as they were preserved prior to the filling with mortar. Thus it was possible to remove the mortar safely. After cleaning, the breaks in the surface will be filled again by mortar, but his time in accordance with modern ideas of conservation, there will be no aesthetic remodelling of the relief.

The cleaning of the sculptured surface from pollution deposits and the black crust that covers it, comprises the next stage in the restoration of the frieze. The following types of crust and substratum can be discerned: loose deposits, compact crust, crust with recrystallisation on a marble substratum and coloured surface layers. The pollution layers reveal a wealth of information, still preserved on the surface of the frieze blocks, such as features of ancient sculpting, traces of the ancient stone-cutter's tools, the extent of coloured surface layers. Thus the blocks of the west frieze are the best preserved part of the entire Parthenon frieze. Cleaning is one of the most critical of all interventions, as it is a non-reversible process. Moreover, relevant international experience is somewhat limited. Where cleaning interventions have been carried out, the results have often been severely criticised. The operation of cleaning the most valuable monument of the Acropolis has rightly elicited awe and cogitation in all those responsible.

Many are the methods used internationally for cleaning, depending on the material of the substratum and the type of deposit. After an evaluation of all the available methods by Professor Th. Skoulikidis, the methods approved by ESMA for study are microblasting, gypsum inversion, use of absorptive poultices and laser. A research programme of systematic trials was run for comparative evaluation of these four methods, verification of the result of cleaning and for specification of suitable conditions and parameters for each method. The first three methods were applied by the YSMA conservation group, while the laser method of cleaning was applied in collaboration with the Institute of Electronical Structure and Laser in the Technology and Research Foundation (FORTH-IESL), with Professor K. Photakis and his colleagues, Dr. V. Zafiropoulos and Dr. P. Poulis. For this purpose a laboratory laser system of the FORTH-IESL was brought to the Acropolis. After a series of simulation tests run on new marble from the most recent corner additions to the frieze blocks, all the methods were applied to parts of architectural members having surfaces in a condition similar to that of the west frieze. All modern physico-chemical methods of inspection were utilised to evaluate the results and the work was done in collaboration with other research centres such as the National Technical University of Athens, the National Nuclear Research Centre "Demokritos" and the Institute of Geological and Metallurgical Research.

The tests showed that the laser method, with the alternate possibilities it offers, is the only method by which it is possible to cope with all the deposits on the west frieze. It has many advantages, compared to other mechanical and chemical methods of cleaning. It is a dry process and it leaves no waste-materials that could in the long run affect the marble. It is quick and completely controllable since the energy density and the number of laser pulses desired can be accurately calculated so as to remove a specific layer of pollution deposit to the desired depth. This self-limiting facility, which ensures the controlled removal of the deposit without

the slightest damage to the stone beneath, is the most important advantage of the method. The tests made determined the



The research yielded important new information. It was found that infrared radiation, on which the functioning of



Details of the Parthenon west frieze before and after the cleaning with the use of laser-technology. Photo S. Mavrommatis, 2003

conditions under which the laser method ensures safe cleaning and a satisfactory result aesthetically and in terms of colour.

commercially available laser systems is based, while successful for re-crystallised crusts and in cases where coloured layers are preserved in the substrata, in cases of

loose sooty deposits and homogenous compact crusts it causes discolouration in the calcined Pentelic marble. Thus, for these two cases, the simultaneous use of infrared and ultraviolet radiation was tested for the first time, with excellent results.

These observations led to the designing of an entirely new system, developed by the FORTH-IESL, with technical features and ergonomic design specific for the cleaning of the west frieze. The system is able to work on two wavelengths (infrared 1064 nm and ultraviolet 355), with the possibility of using one or both of the two nodes together, with various energy ratios. For greater speed in the work, the new laser system works in parallel with the laboratory laser of the FORTH-IESL, which has been similarly modified. The first three blocks have already been cleaned and, according to the programme, in October 2003 it will be possible to exhibit the six blocks, numbered W.III, W.IV, W.V, W.VI, W.VIII and W.XIII. The conservation of the other blocks will gradually be completed by April 2004. After conservation, the blocks of the west frieze will be exhibited in the New Acropolis Museum. Copies in artificial stone will take their place on the monument.

The conservation group of the west frieze includes the conservators A. Panou and K. Frantzikinaki and the marble technicians C. Demopoulos and I. Skalkotos. The cleaning was carried out by the two above mentioned conservators and by the conservator K. Basileiadis together with the physicist Th. Ditsas, colleague at FORTH-IESL. The work is supervised for the Acropolis Ephorate by the archaeologist Ch. Vlassopoulou.

Evi Papakostantinou
Chemical Engineer
Head of the Department of Surface
Conservation of Monuments of YSMA

The art and architecture of the Athenian Acropolis is part of the curriculum in most schools throughout the world. The interest of pupils, teachers and the general public together with the conviction that the best form of conservation is preventive conservation, which begins with education, formed the impetus for the Committee for the Conservation of the Acropolis Monuments (ESMA) in collaboration with the 1st Ephorate of Prehistoric and Classical Antiquities, to launch educational programmes as early as 1987.

Today the Department of Information and Education of the Acropolis Restoration Service (YSMA) in collaboration



Museum kit "The Parthenon Frieze". Photo S. Mavrommatis, 2003

with the 1st Ephorate of Prehistoric and Classical Antiquities, provides information about the activities of ESMA and YSMA in keeping with modern international practice of informing the public about important public enterprises. It also exposes pupils to the art and architecture of classical antiquity, familiarising them with the great projects of conservation and restoration being carried out on the Sacred Rock.

The Department:

1) Organizes educational programmes

for specific groups and in particular for school classes –of around 25 pupils each– on the subject of the Acropolis and its monuments.

2) Conducts seminars for educators and students on classical architecture and art, as well as on the restoration of classical monuments.

3) Produces educational resources on the subjects of classical art and architecture and also on the Acropolis restoration projects, which is lent or donated to schools.

4) Organizes special symposia for educa-

tors under the general heading: "Educators and programmes about the Acropolis", the proceedings of which are published.

5) Designs exhibitions in cooperation with the personnel of the YSMA and other institutions.

A. Educational programmes

The educational programmes are addressed to school children whose schools include the thematic unit about the Acropolis in their curriculum. The visit is organized each time around a specific

subject and is determined by the age and knowledge of the children. The programmes are accompanied by special "path-finders" and visual material that is relevant each time. They take place on the Acropolis and at the Centre for Acropolis Studies.

Over the years many programmes have been developed and carried out. Special projects have been devoted to the Acropolis and its monuments: the ancient "Peripatos", the path around the Acropolis, the topography of the Sacred Rock through the texts of Plutarch and Pausanias; in addition, through the cult of the goddess Athena, the Parthenon frieze, the construction of ancient temples and the restoration of the ancient monuments. To date, some 62,000 students from schools throughout Greece have participated in these programmes. The Department collaborates with schools on the basis of the interest of the teachers themselves. Our interest is directed to the teachers since they can convey to their students the love and respect they have for the monuments. The order of application by the schools is strictly followed.

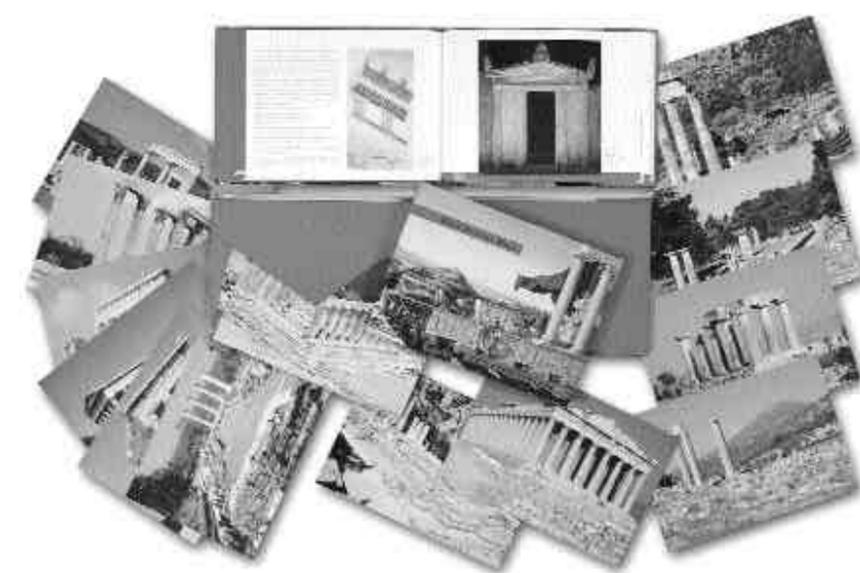
The collaboration of the Service with each school has been recorded since 1988 in an archive that contains information pertinent to some 1600 teachers and 1100 schools, their addresses, the programmes and special symposia they attended and the museum kits that have been lent. The processing of this information maps the schools and educators who have taken part in the educational programmes of the Acropolis over the past 15 years. Of great interest is both the periodical and continuous participation of a number of schools in these programmes, particularly from certain areas.

B. Seminars

The collaboration of the Information and Education Department with teachers takes a more specific form in the special seminars that take place regularly at the Centre for Acropolis Studies, throughout Greece and abroad as well. Seminars are held for groups of educa-

tors by request. Some 14,000 educators have taken part in the seminars, where the Department's educational resources are presented, with data from the architecture, art and history of the classical period and its monuments, to be included in the lessons so as to enrich the course being taught.

Seminars have been held for archaeologists, undergraduates and graduate students, for librarians of public, municipal, circulating, children's, university and school libraries throughout Greece and especially for many Greek and foreign educators through various institutions such as the many Directorates in the Ministry of Education (in Alexandrou-



Teachers' pack of the Museum kit "A Greek Temple". Photo S. Mavrommatis, 2003

polis, Attica, Ioannina, Kavala, Kalamata, Patras, Santorini, Thessalonike), the Institute for Education of Greeks Abroad, the Hellenic Ministry of Education, the Universities of Athens, the Aegean, Ioannina, Patras, Thessalonike, Thessaly, Thrace, the Union of Art Teachers in Greek Schools, the "MELINA Project-Education and Culture", the Greek Section of the International Council of Museums and the National Documentation Centre of the National Research Centre, and others.

A special network has been created between the Department and the For-

eign Archaeological Schools in Greece, as well as with the European Cultural Centre of Delphi. Groups of teachers of ancient Greek from England, Denmark, Germany Holland, Ireland and many other countries have taken part in the seminars.

Seminars have likewise been organised, in collaboration with the Ministries of Education of Belgium, Cyprus and the Ukraine, at Brussels, Leukosia, Kiev and Odessa.

All participants of the seminars or of the special symposia organised by the Department receive educational resources in Greek or in English.

C. Educational Resources

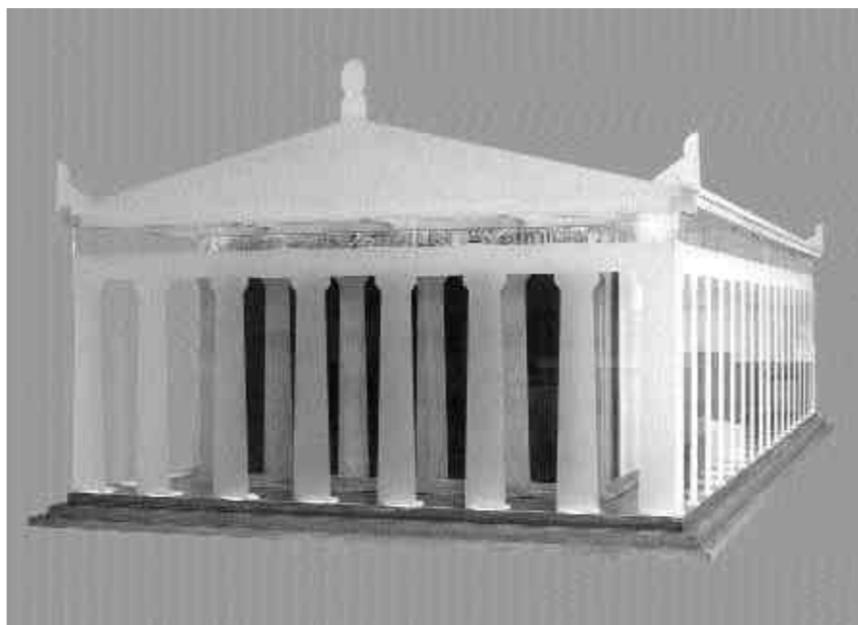
These comprise educational publications, museum kits, teachers' packs, books, special itinerary booklets or "path-finders" accompanying the programmes, films, CD-ROMs, posters and games. The Department's publications cover 20 different subjects and they have been circulated in more than 250,000 offprints in both Greek and English.

The resource material aims to help educators prepare themselves better both for the lesson at school and for the class visit to the archaeological site and the Museum.



Detail of the Parthenon educational model (scale 1:20) with the Panathenaic frieze in its original position. Photo S. Mavrommatis, 2003

Particular emphasis is placed on the distribution of material to educational institutions. Every school applying receives for its library a file containing educational booklets and posters, to maintain contact of the class with the monuments. Particular care is taken to achieve the best quality in scholarship, educational value and aesthetic appearance of the publications. The Department believes that the publications are of special importance because they are distributed to so many educators and students. Through the diffusion of these resources, the enor-



Educational model of the Parthenon (scale 1:20) with the Panathenaic frieze in its original position. Photo S. Mavrommatis, 2003

mous educational potential of the Athenian Acropolis and the era it symbolises, becomes available at a crucial level of education.

Through collaboration with all the above institutions as well as with the Hellenic Ministry of the Aegean, the Hellenic Parliament, many Embassies, the Foundation for Hellenic Culture, the National Technical University of Athens, the various Ephorates of Antiquities and Greek and foreign museums, it is estimated that some 4000 schools have the Acropolis publications in their libraries and the Acropolis posters on their walls.

Over the years it has become apparent that in addition to the training of each teacher through the material supplied, the seminars and the special symposia, in order to meet the great demand for participation in the programmes, it was necessary to enlarge the Loan Section, which is now growing continuously and is based primarily on the museum kits.

The museum kits comprise a multifaceted resource. Each one contains books, transparencies, games, models of monuments and copies of ancient objects. In their entirety they provide a spe-

cially designed educational resource of alternative teaching for use either in the classroom or in some other place of cultural reference. The old-fashioned idea of a closed box full of gifts for the child to open is associated with new technologies and the text is combined with new technologies, text, image and artifact complement each other to provide learning and fun.

The Department museum kits comprise the following subjects:

- 1) Let's Go to the Acropolis
- 2) A Greek Temple
- 3) The Art of Stone Sculpture
- 4) Ancient Greek Dress
- 5) Ancient Greek Musical Instruments
- 6) The Parthenon Frieze
- 7) The Twelve Olympian Gods

These museum kits-on-loan have travelled over the years to 2,350 schools in Greece and abroad and they have been used by some 150,000 students.

In 2001, an extensive special programme was completed, with the designing and reproduction of four museum kits in multiple copies. The new museum kits have evolved from their original form of 1990-1993, so that they are now easier to use and can be reproduced in numbers, according to the needs that may arise. They are circulated not only in Greece but also abroad and the publications have therefore been translated into English.

Until 2001, the Department was providing around 200 schools per year with museum kits-on-loan. The new kits have given us the opportunity for the first time to offer them to educational institutions and to lend them to more schools per year and for a longer period. Most of this material was a standing donation of the Ministry of Culture to a network of selected schools and educational institutions throughout Greece and abroad. The choice was based on a specific evaluation procedure so that the material would be used by the recipients to full advantage.

The four new museum kits are entitled:

“Let's Go to the Acropolis”, “A Greek Temple”, “The Parthenon Frieze” and the “The Twelve Olympian Gods”. Although the themes are separate, they can comprise an assemblage through which the culture of ancient Greece can be approached in a different way. The picture of a brilliant ancient sanctuary (museum kit “Let's Go to the Acropolis”) where the gods are worshipped (museum kit “The Twelve Olympian Gods”), in splendid temples (museum kit “A Greek Temple”) decorated by sculpture of unique artistic quality (museum kit “The Parthenon Frieze”), brings the sanctuaries to life before the eyes of the pupils. In this way they can approach the world of antiquity with pleasure, their intellects, imaginations and creativity activated. The museum kit on the subject of “The Twelve Olympian Gods” was selected in 2001 by the Educational Institute to be given as educational resource-material to the schools in the programme “Versatile Zone” of the Hellenic Ministry of Education. It has been given by the Ministry and the YSMA to 600 schools and educational institutions throughout the country.

Funding by the Stavros S. Niarchos Foundation enabled the Service to produce the museum kit entitled “Let's Go to the Acropolis” with 100 copies in Greek and 100 in English. Additional funding from the Bodosakis Foundation provided 100 copies in “A Greek Temple”. The assistance of the “Association of the Friends of the Acropolis” has been valuable throughout. These two kits were distributed to educational institutions in 2001-2002, in 47 provinces of Greece. The choice of the schools and educational institutions was made after a selection process based on a questionnaire sent to 1,100 institutions in all 54 provinces.

The basic criteria for the final choice were:

1. The greatest possible diffusion of the museum kits throughout Greece.
2. The total picture given by each school through the questionnaire (the number of students, school activities, coopera-

tion with other schools, participation in various programmes, the existence of a library in the school).

3. The determination of the teacher to use the museum kit in his school. The final selection of schools and institutions was made by our Service. Following this, a seminar was held on the contents and use of the museum kits in the educational process.

Distribution was spread over the Directorates of Primary and Secondary Education in the Ministry of Education, and



Teachers' pack of the Museum kit “Let's Go to the Acropolis”. Photo S. Mavrommatis, 2003

primary and secondary schools in both large and small cities and in the islands as well.

In addition they have been donated to the Classics and Pedagogic departments and Schools of Architecture in various Universities. They have also been donated to several networks of public libraries both for children and adults.

Finally, museum kits have been given to the departments of Education of several Archaeological Ephorates, Archaeological and Art Museums, and to other institutions with which the Department is collaborating.

In May 2003, a special symposium was held to evaluate the results of the use of

the two museum kits by the various institutions.

The museum kits have been donated to many places abroad:

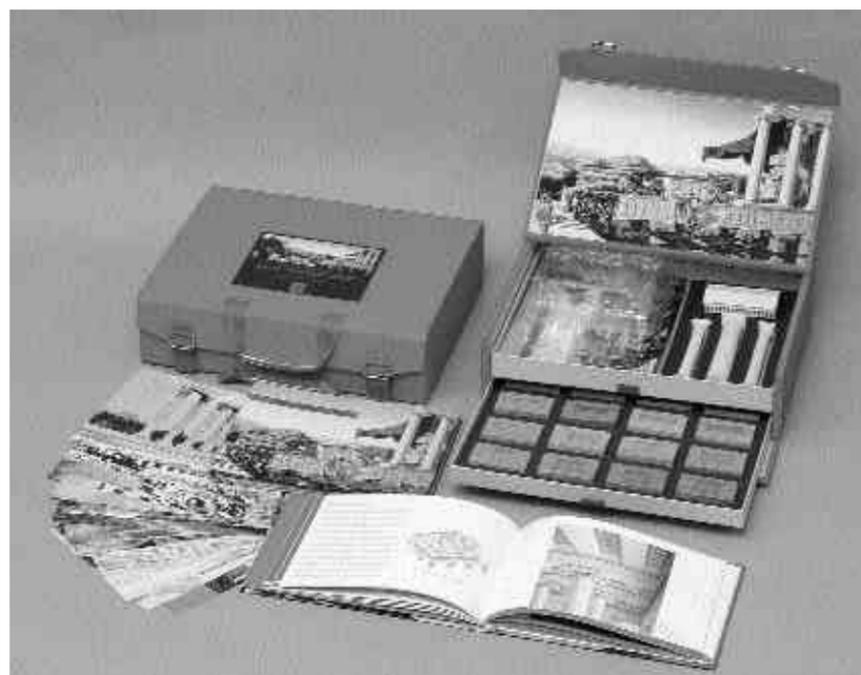
Twenty museum kits have been given to Cyprus after an in-depth seminar.

In cooperation with the Institute for Education of Greeks Abroad of the Ministry of Education, museum kits were given to Educational Coordinators worldwide. Thus the kits have travelled from Egypt to Australia, from Canada to Scandinavia and to Turkey.

They have been given to large Museums,

such as the Metropolitan Museum of New York, the Ashmolean in Oxford, the British Museum in London, the Louvre in Paris, the Musei Civici in Venice, the Museum of Pisa and the Museum of Paestum in Italy, the National Museum of Bucharest in Roumania and the National Museum of Pancevo in Yugoslavia. The kits have also been presented to important universities such as the Universities of Berkeley California, Fairfield, Indiana, New York and Yale in the United States, in Germany to the University of Tübingen and to the National University of Kobe in Japan.

They have been given likewise to large schools abroad that have special Greek departments, in Austria, Belgium, Chile,



Museum kit "A Greek Temple". Photo S. Mavrommatis, 2003

Ethiopia, Germany, Holland, Ireland, South Africa and the Ukraine.

The museum kit on the "Parthenon Frieze" is to be distributed during the school year 2003-2004.

D. Special Symposia

The department holds symposia on the general subject of "Educators and Programmes about the Acropolis". These provide a platform for dialogue between educators with a common interest in teaching through our cultural environment. The Acropolis, because of its importance and because it has an organised Education Department, provides the impetus and incitement for educators to proceed with their projects and to develop their own ideas. Thus far seven symposia have been organised (1991, 1993, 1994, 1996, 1998, 2001, 2003). Proceedings or summaries of the reports given at the symposia are published.

Taking part in these symposia are 150-200 educators and some 15-20 papers are presented each time. The value of the Symposia is evident in the multidisciplinary character of the reports. The 130 reports and proceedings comprise today an important and rich aggregate of projects related to the Acropolis that have

been applied by teachers. Over the years reports on some 100 applied projects have been added to the departmental archive.

These definitive results of teaching illustrate and describe in the best possible way the process itself of teaching that has been followed each time. The interested educator is able to examine original programmes about the Acropolis and its epoch, which contain new ideas, methods and applications that have been created by colleagues with the same background, the same possibilities and the same goals.

E. Exhibitions

In the framework of various exhibitions and meetings, the museum kits and in general the departmental publications have been exhibited in many parts of Greece, such as the Museum of Cycladic Art, the European Cultural Centre at Delphi, the Goulandris Museum of Natural History, the French Institute, many universities and libraries. Abroad, exhibitions have been held at museums in many cities such as Alexandria, Amsterdam, Belgrade, Bucharest, Kiev, Leukosia, Odessa, Osaka, Skopje and Zagreb. They have been shown also at interna-

tional book exhibitions, such as in Bologna and Frankfurt.

Finally, an exhibition of all the educational material was held in Brussels, by invitation of the European Parliament.

Connected with the above exhibitions, special seminars were held for teachers, at which the educational material and its possibilities for use in the teaching process were demonstrated. The relevant educational material of the department was given to those who had attended the seminar.

For the school year 2003-2004, the Department, sharing in the activities of Greece for the year 2004 and the Olympic Games of Athens, is organizing a special programme on the subject of "The Panathenaia seen through the Parthenon Frieze", using the new museum kit "The Parthenon Frieze".

The Panathenaia was the greatest festival of ancient Athens. Splendid athletic games were held together with competitions in rhapsody and music. A great procession, that illustrated on the Parthenon frieze, wound its way up the Acropolis on the 28th of Hekatombaion, around the 15th of August, thus coinciding with the time when the Olympic Games of 2004 will be under way.

The Department will be cooperating during the entire school year with select-



Museum kit "The Art of Stone Sculpture". Photo S. Mavrommatis, 2003

ed school and library networks. The project will be launched in November

with a special Seminar comprising several workshops. The attending representatives will be given resource-material. During the entire year the department will provide archaeological support and material to the participating schools. In May, shortly before the beginning of the Olympic Games of 2004 in Athens, the department will hold the 8th symposium, at which participating teachers will have the opportunity to present their work.

Through their teachers, the children who have benefitted from these programmes will participate in a very real way in the time-honoured celebration of the Panathenaia.

C. Hadziaslani
Architect-Archaeologist, Head
I. Kaïmara, A. Leonti, Archaeologists
Information and Education Office
of YSMA

The Parthenon frieze

A. Photographic reconstruction: the Parthenon frieze

This is a photographic unfolding of the frieze of the Parthenon on a scale of 1:20, length 8 metres. The photographs and their assembly are by S. Mavrommatis and the text is by C. Hadziaslani. It was published in 2002 in Greek and in English.

In this photographic reconstruction photographs of all the preserved blocks and fragments of the frieze have been brought together and the preserved drawings of J. Carrey (1674) and J. Stuart have been used to fill in what is missing so as to give the fullest possible picture of the whole.

B. CD ROM: the Parthenon frieze – Virtual representation of the Parthenon frieze

The CD ROM was produced in 2003 by our Service (YSMA-1st Ephorate of Prehistoric and Classical Antiquities) in collaboration with the National Documentation Centre of the National Research Foundation. It was composed by A. Choremi, C. Hadziaslani, S. Mavrommatis, K. Antoniadis, E. Sachini and I. Kaïmara.

It is addressed both to the general public



The CD-ROM and the photographic reconstruction of the Parthenon frieze. Photo S. Mavrommatis, 2003

and to specialists. The main menu comprises six units: general introduction, tour of the frieze, in which the user is led around the monument in order to see the frieze in its entirety, from left to right and vice versa, and also a block by block description of the representations on the frieze, in which each block is shown by itself, magnified, with its own descriptive text.

The photographic unfolding of the frieze and the CD-ROM comprise a tool with which you can "read" and understand the frieze, observe the correspondence between the north and south sides, make observations about the composition of a brilliant work of art, a work in which nothing is haphazard, where everything is according to a plan, which serves political, symbolic and religious purposes.

New publications

- E. Papakonstantinou-K. Frantzikinaki-P. Pouli-V. Zafropoulos, The Parthenon west frieze: a study of cleaning methods, Study for the restoration of the Parthenon, 7, Athens 2002 (in Greek with an English summary).
- C. Paraschi-N. Toganidis, Study for the restoration of the south wall of the Parthenon, Study for the restoration of the Parthenon, 6, Athens 2002 (in Greek with an English summary).
- Th. Skoulikidis, Methods for the Conservation of Pentelic Marble, Athens 2002 (in Greek with an English summary).
- T. Tanoulas-M. Ioannidou, Study for the restoration of the superstructure of the central building, Study for the restoration of the Propylaea, 2, Athens 2002 (in Greek with an English summary).
- N. Toganidis-K. Matala, Study for the restoration of the north wall of the Parthenon, Athens 2002 (in Greek with an English summary).
- C. Zambas, The refinements of the columns of the Parthenon, Athens 2002 (in Greek with an English summary).
- C. Zambas, Study for the structural restoration of the north façade of the Parthenon, Athens 2002 (in Greek with an English summary).

During the past twenty-five years, the works being carried out on the Acropolis monuments produced a scene never before witnessed by visitors or even by the inhabitants of Attica, who saw –almost from one minute to the next– the Rock and its monuments shrouded in scaffolding, bridge cranes and cranes.

The astonishment of the first years gave way to familiarity in the years that followed without, however, reducing the almost daily questioning about “what is going on up there”. There was much pressure on both the Service and the Ministry for more information and thus, at the beginning of 2002, it was decided by ESMA, in addition to its publications, to hold a photographic exhibition that would inform both the general public and specialists about the projects being carried out and how the work was being done.

The photographs of the exhibition had to be documentary in character, educational and informative and they had to be pictorial, which in any case is our basic conviction and aim. Thus a very careful choice was made from the existing collection of photographs taken by the undersigned and a considerable number of new photographs were also made by the same.

The exhibition was divided into four units:

- The reasons for the intervention, in which are shown synoptically the damage and wear inflicted on the monuments by nature and by man during the twenty-five centuries of their history.

- The preparation, in which is shown, likewise synoptically, the necessary work-site infrastructure that precedes the works.

- The main work carried out by the specialized personnel involved in the interventions and, finally,

- The monuments themselves, illustrating the various phases of the works during the past twenty-five years, and emphasizing at the same time the incomparable beauty of the architecture of the classical buildings of the 5th century.

The plan comprises two parallel courses, which “narrate” the development of the interventions. One course is followed through a series of large-scale photographs in which the pictorial aspect is the prime interest. Beneath these runs in parallel a second series with more and

smaller photographs, which explain or fill in the pictures seen above.

In this way the exhibition has two ways of being “read”. A shorter and more pictorial way for those who view exhibitions as purely artistic events, and a more analytical approach for those who find that the artistic exhibitions leave a void as far as information or learning is concerned.

The view of the Service, and my own opinion as well, is that archaeological photographic exhibitions should bring together a body of information, instruction and visual enjoyment, with the aim of attracting the widest possible spectrum of people with varied interests. This is one reason why the exhibition is accompanied by a video of 48 min duration, showing “alive” all that in the “still” photographs seems to be the past and history. A colored transparency of large dimensions adds to this, as it is a “window” on the Acropolis and the Pnyx.

In addition a photographic composition of some of the floor slabs of the Parthenon cella, of actual size, covers the floor of the centre of the hall, so that the visitor can actually walk on and experience intellectually what has in fact been impossible for the past twenty years and may be out of reach still longer.



The exhibition “Photographs 1975-2002 from the Works on the Athenian Acropolis” at the Parliament of Brussels (February 2003). Photo S. Mavrommatis



The exhibition “Photographs 1975-2002 from the Works on the Athenian Acropolis” at the Museum Benaki (October 2002). Photo S. Mavrommatis

Accompanying the exhibition, in addition, is a large catalogue of 160 pages, including all the photographs.

The first presentation was held in October 2002 at the Benaki Museum, on the occasion of the 5th International Meeting on the Restoration of the Acropolis Monuments. The exhibition was inaugurated by the Minister of Culture, Professor Evangelos Venizelos, on Tuesday 1.10.2002. Three days later, on Friday 4.10.2002, the Secretary General of the Ministry of Culture, Dr. Lina Mendoni, presented the exhibition to the participants in the 5th International Meeting.

Following this, on the occasion of the Greek Presidency of the E.U., the exhibition was presented at the Parliament of Brussels (February 2003), together with the exhibition “Athens, the Birthplace of Democracy” of the First Ephorate of Prehistoric and Classical Antiquity. During its ten-day duration, 1600 students and scholars from middle and higher education visited the exhibition.

In February and March of 2003, on the occasion of the 15th International Photog-

raphy Meeting, “Photosynkyria 2003», the section of the Parthenon cella floor was shown at the Museum of Byzantine Culture at Thessalonike.

In May-June of 2003, at the Museum of Photography of Thessalonike in collaboration with the Interdepartmental Programme of Faculty of Engineering of the Aristotle University of Thessalonike (AUTH), the exhibition was presented to the public of Thessalonike. It comprised part of the seminar “Preservation, Conservation and Restoration of Cultural Monuments», which took place on the 16th and 17th of May in the amphitheatre of the Polytechnic School of the AUTH. On the same occasion the film “The Works on the Athenian Acropolis” was shown to the professors and students, thus closing the two-day seminar.

The Photographic Laboratory and the Information and Education Office were responsible for all the above presentations.

In the meantime, there have been many proposals to hold the exhibition in various places and the following have already been confirmed:

- Institute of Archaeology of the University of London (September-December 2003), where it will be a focus of study by the postgraduate students of the Institute.

- Mercati of Trajan, Rome (November 2003-January 2004), where it will be shown together with the museum kits of the YSMA Information and Education Office.

- Fairfield University, Connecticut USA (September-December 2004). The exhibition will be held together with lessons to be attended by students from various different departments, so as to constitute study programmes for the university.

The Service receives many requests for the exhibition. Indeed, it is clear that the initiative of ESMA and YSMA has been very well received. It has covered a large part of the need and obligation to inform the public both in Greece and abroad.

S. Mavrommatis
Photographer
Head of the Photographic Laboratory
of YSMA

Occupation with the restoration of ancient monuments has its moments of utter fascination, especially when unknown aspects of their history come to light. The dismantling of the sixth from north column of the east porch of the Propylaia brought to light new evidence, that enables us to reconstruct the history of perhaps the most unorthodox means ever employed for the restoration of the Acropolis monuments: the “big saw” of the Propylaia.

The history of the saw begins in 1836 when, in a climate of optimism and unrestrained enthusiasm, Kyriakos Pittakis inaugurated an ambitious programme



Revealing the “big saw” of the Propylaia. Photo C. Karanassos, 8.4.2003

for the restoration of the Acropolis monuments. In the same year, the inspirer of the programme and Alexander Rizos Rangabé, made an improvised intervention in order to remove foreign matter that had wedged itself between the fifth and sixth drum of the southernmost column in the east portico of the Propylaia. Neither the lack of technical knowledge nor the limited financial means at the disposal of the two colleagues were enough to dampen their enthusiasm. The intervention, together with the unexpected episode that followed, are described by A. Rangabé in a lively and immediate fashion

that touches the borders of naïveté: Then on agreement with K. Pittakis, an ample and large saw that was longer than the diameter of the column was ordered from a smith, and one day at an hour when the Acropolis was free of people, we set a ladder at each side of the column and climbed up, one on each side. Holding the two ends of the saw, we began with great care and attention to saw the foreign matter between the two drums and to remove it bit by bit, when we heard a loud cracking sound. The column and all this part of the gigantic construction shook as if from a strong earthquake, and suddenly it appeared



The east portico of the Propylaia from the SE with the saw between the 6th and 5th drum of its southernmost column. Photo P. Sebah, 1872-1875

remained beneath the ancient position of the occupying drum, with its ends projecting as a perpetual monument to a repair that was *ex tempore* and successful beyond all expectations.

While the idea that the saw would prove to be a “perpetual monument” to an entirely successful intervention seems today to be over-ambitious, we cannot deny that the saw, trapped as it was, has become historical evidence.

Trapped beneath the weight of five drums, its iron blade breaking the inflexible line of the members of the Doric column, the saw invited astonishment and perplexity, especially since the precise facts of the matter had faded from memory in the course of time. With its great size it made an impression, unique and surprising because of the position in which it had been trapped. The saw was not long in becoming a focus of attraction for the continuously increasing number of visitors to the archaeological site. Indeed, in one case, the saw was elevated to the position of a real exhibit, as is evident from a French guidebook of 1956, which mentions it and connects it with the intervention of Pittakis and Rangabé: “The saw that can be seen in the southeast column became wedged there during a restoration intervention carried out by Rangabé and Pittakis”.

The saw was to remain visible for many years more as an inseparable part of the modern history of the Mnesiklean building. Much later, according to information in the 1970’s, the two ends of the

saw were cut off in an effort to improve the appearance of the monument. This made the saw invisible to most visitors. Yet the main part continued to remain entrapped in the join between the two drums, visible to those who were studying the monument and those who were occupied with it daily.

Until recently, in all efforts at putting together the history of the saw it was taken for granted that it had remained unmoved ever since Rangabé’s and Pittakis’ intervention. Although Balanos reports some intervention in the area of the south column, comparison of the photographs taken before and after his anastelosis programme did not testify to the dismantling of the column drums. That, together with the fact that the saw remained visible in precisely the same place as shown in photographs of the late 19th century, ruled out the likelihood that there had been an intervention in the area of the fifth and sixth drums in the intervening time.

In February 2002, the programme for restoration of the east portico of the Propylaia was begun, with the ESMA in charge of the scholarly aspect of the work. The aim was to correct the errors in the Balanos anastelosis. In the course of the work, a number of interesting discoveries were made that overturn previous hypotheses and reveal an unknown stage in the history of the saw. Specifically, while dismantling the architectural members of the entablature of the east portico, it was found that Balanos’ intervention went well beyond what had been suspected. The top surfaces of both the capital and the uppermost drums of the sixth column had “Lewis holes”, a clear indication that these members had been removed in the course of Balanos’ intervention. This conclusion was reinforced by the absence of the ancient wooden pins and plugs. To the astonishment of all it was found that the sixth drum, beneath which the saw was pinned, had the same Lewis holes as the drums above. It was logical enough to ask: if the drum had been dismantled in the past, then why was the saw in exactly the same place where it had been trapped at the beginning of the 19th century?

The answer to this was apparent with the removal of the drum. Then it became evident that the saw was no longer wedged between the two members, but had been carefully placed in a specially cut depression in the upper surface of the drum beneath. This carefully made cutting was only four millimeters in depth and it was oriented so that the saw could be placed in the same position in which it was found. Thus the picture of the original restoration was retained, even after the dismantling of the drums in the course of the intervention by Balanos.

The clarity of the facts suggests the following interpretation: on discovering the



The “big saw” of the Propylaia viewed from above. Photo T. Tanoulas, 8.4.2003

saw, Balanos chose to keep it in exactly the same position in which he found it, as evidence of an earlier intervention, unsuccessful perhaps, but certainly of interest. Yet the reasons of this solution remain unclear. Was his choice part of a general theoretical approach, according to which elements connected with earlier interventions are retained as “evidence” of previous phases of restoration? Or was it a personal choice made of his own accord, stemming from the fact that the Propylaia saw had now become a focus of attraction for visitors? What drove Balanos to replace the saw in its original

position? Were there reasons of a scholarly nature, or was it a desire to keep alive the myth represented by the saw, which indeed had proved to fascinate the public? Unfortunately the lack of documentation for the interventions by Balanos allows hypothesis only.

In any case it is certain that the recent intervention on the east portico of the monument recovered an unknown chapter in the long history of the saw. Finally relieved of the weight of the architectural members above it, with the mystery that had shrouded it so many years resolved, the saw can find in future a place in the display case of a museum. From there it

can continue to narrate, in eloquent and expressive way its tale, a tale about the enthusiasm and invention of its protagonists, in essence a tale about the “Greek genius”.

Evi Petropoulou
Archaeologist
Propylaia Work-site
Documentation Office of YSMA

From its very inception the ESMA made every effort to examine the proposals for restoring the Acropolis monuments from as many angles as possible and then to make objective decisions on the interventions to be carried out. These were necessities borne of international recognition of the Acropolis monuments as the symbols par excellence of western civilisation, and of their importance for the national feelings and sentiments of the Greeks of today. Part of this same effort are the scholarly studies for the restoration of the monuments that are made before any actual intervention, and in addition the process of thorough review and relevant decisions made initially by the Acropolis Committee, and finally by the Central Archaeological Council of the Ministry of Culture. The additional widest possible dissemination, presentation and examination of the proposals for restoration of the monuments at international meetings of experts improves both their quality and the effort made. The holding of these international meetings at regular intervals has established them as a characteristic feature of the Acropolis Restoration works. This is the first time, as far as I know, that such a procedure has been followed internationally.

The 1st International Meeting was held, under the aegis of UNESCO, in December 1977 at the Evgenideion Foundation. Forty-seven archaeologists, architects and civil engineers, chemists, biologists, geologists and mechanical engineers participated. During this meeting the “Study for the Restoration of the Erechtheion” was examined, a joint work by young scholars appointed at the time by the Acropolis Technical Office, under the supervision of specialists of the Acropolis Committee. The Erechtheion study was a pioneering work for those days, at least for Greece. For the first time, the problems of a monument were examined scientifically prior to intervention –from the archaeological/architectural, structural and physico-chemical aspects– within the theoretical framework for the principles of intervention set by Professor Ch. Bouras and specific pro-

posals were made for the restoration of the monument. These proposals formed the main topic of discussion at the meeting, while the final conclusions of the meeting set the standard for interventions by the ESMA on the Acropolis monuments for all the years to follow. The “Study for the Restoration of the Erechtheion” was considered to be a model for future anastelosis. The removal of the sculpture of the monuments, in this case the Caryatids, their protection in the Acropolis Museum and their replacement on the monument itself by cast copies was approved as a necessary evil, in order to save them from the atmospheric pollution that was slowly but surely destroying them. The same held for the dismantling of parts of the monument that had been restored earlier. This was considered absolutely necessary in order to remove the rusted metal pieces of earlier restorations, which were breaking the members of the monument and endangering the continued existence of the monument itself.

The next two meetings were devoted to questions concerning the restoration of the Parthenon. The 2nd International Meeting for the Restoration of the Acropolis Monuments was held in Sep-

tember 1983 at the National Research Foundation, under the aegis of the President of the Hellenic Republic at that time, C. Karamanlis. Participating were 42 archaeologists, 28 architects, 9 civil engineers, and seismologists, 11 chemical engineers and chemists and 7 colleagues from other fields. The “Study for the Restoration of the Parthenon” by M. Korres and Ch. Bouras was examined at this meeting, and particular attention was given to its general proposals for the twelve individual restoration programmes for the monument. The “Study for the Restoration of the Parthenon” was greatly admired for its unique depth, its detail, its pioneering and acute analysis of the monument’s architecture, especially its structural-tectonic aspect. With this were tabled also new parameters of anastelosis, in order to surpass its characterisation as purely “rescue work». This was due to the great numbers of scattered architectural members recognised by M. Korres as belonging to the Parthenon and to the proposal to set them again in their original places on the building both to save them from further wear and to fill in and display the original architectural composition of the Parthenon. It was due likewise to the plan to correct errors of placement in Balanos’ intervention

with the new restoration of architectural members to the monument and to the proposal to enhance the Parthenon with cast copies of the architectural sculpture now in the Acropolis Museum and museums abroad. These proposals elicited much thought and lively discussion on the part of the participants. The necessity of removing the west frieze from the monument in order to save it –accomplished ten years later– had already been emphasised at the meeting, together with the need for a New Acropolis Museum to house and display the sculpture removed from the monuments.

Speculation about the anastelosis proposed in the “Study for the Restoration of the Parthenon” was notable also in the 3rd International Meeting for the Restoration of the Acropolis Monuments, held in the spring of 1989 at the newly established Centre for Acropolis Studies. The meeting had many participants, with 80 archaeologists, 67 architects, 20 civil engineers, 20 chemical engineers, chemists and conservators, 12 participants from other fields and a large audience (52). The focus was the restoration of the Parthenon pronaos. M. Korres’ proposal for a full restoration of the pronaos colonnade –on the basis of 70% of the original architectural material– and including casts of the east frieze, led a number of participants to raise questions, especially about the legitimacy of changing the inherited picture-ideogram of the monument, changing its aspect as a ruin, reducing its historicity or making a forgery of its material authenticity. Some participants raised the subject of the aesthetic rendering of the new works –especially in respect to cast copies of the sculpture but also to the additions to ancient members– emphasising the incomparable quality of the Parthenon, its character and “Olympian calm”. Others emphasised that the pronaos intervention should be carefully examined in the framework of the overall programme for restoring the Parthenon. Despite these reservations, most participants were in favour of complete restoration of the pronaos colonnade in their answers to the questionnaire distributed for the first time



From left: Ch. Bouras, E. Touloupa, M. Merkouri (then Minister of Culture), M. Andronikos, G. Dontas during the 3rd International Meeting of 1989



The exhibition “The Acropolis at Athens: Conservation, Restoration and Research” at the Centre for the Acropolis Studies during the 4th International Meeting of 1994. Photo P. Psaltis

to the participants by the Acropolis Committee. At this same meeting, the “green light” was given for dismantling the restored sections of the side walls of the Parthenon cella and the ceilings of the central building of the Propylaia that had been restored by Balanos so that the members could be cleaned and studied on the ground for a new restoration proposal.

Expansion of the subject and examina-



The exhibition “The Acropolis at Athens: Conservation, Restoration and Research” at the National Gallery during the Meeting of 1983. Photo A. Papanikolaou

tion of the restoration of all the Acropolis monuments characterised the 4th International Meeting, held at the Centre for Acropolis Studies in May 1994 with the participation of 63 archaeologists, 52 architects, 13 civil engineers, 23 chemical engineers, chemists and conservators, and 34 from other fields. The meeting was accompanied by a plethora of publications including the preliminary publication of 7 studies, general and particular, for the restoration of the monuments: “The west wall of the Parthenon and other monuments” by M. Korres, “Study for the Restoration of the opisthodomos of the Parthenon” by P. Koufopoulos, “Structural Study of the Parthenon” by C. Zambas, “Study for the Conservation of the west frieze of the Parthenon” by Th. Skoulikidis, E. Papakonstantinou, A. Galanou and Y. Doganis, “Study for the Restoration of the side walls of the cella of the Parthenon” by N. Toganidis, “Study for the Restoration of the Propylaia” by T. Tanoulas, M. Ioannidou and A. Moraitou, “Study for the Restoration of the temple of Athena Nike” by D. Giraud. At this meeting too, there were discussions focussing particularly on the quality of the casts replacing the original sculpture that is removed (in this case the blocks of the west frieze) and on the limits and methods of the new restorations in areas where an intervention is carried out (res-

toration of the ceiling of the west colonnade of the Parthenon, the roof of the Pinakothek in the Propylaea, anastelosis of the orthostates of the side walls of the Parthenon cella and resetting, even if in random positions, of dismantled or other newly identified wall blocks). Raised as well were matters relevant to protecting the monuments in the open from unfavourable weather conditions (addition of a shelter over the opisthonaos of the Parthenon and the Pinakothek in the Propylaea) and to the theoretical principles or values that should govern during interventions (the subject of the removal of the last Frankish remains from the superstructure of the Pinakothek and the restoration of its classical cornice, or the dismantling of its west wall, never restored in the past, in order to correct its inclination from the vertical). Again, in answer to the ESMA's written questionnaire, most participants stated clearly their agreement with interventions beyond purely rescue work (majority vote in favour of the proposal to restore partially with new material the ceiling of the west colonnade of the Parthenon or the restoration of the orthostates of the cella side walls with the addition of new marble, and the resetting, even if not in precisely original position, of their preserved wall blocks). They supported also the need for protecting the opisthodomos or the interior space of the Pinakothek with a modern canopy that would be invisible from outside, while continuing a long tradition they accepted the emphasis placed in the interventions on the classical phase of the monuments, voting in favour of the restoration of the classical cornice on the superstructure of the Pinakothek in opposition to saving the last Frankish remains. An overwhelming majority of participants remained faithful to the principle of carrying out new interventions, to the extent possible, only where the monuments had undergone restoration in the past, thus rejecting the proposal to dismantle the west wall of the Pinakothek.

Examined at all four international meetings, together with the proposals for restoration, were the structural problems in

the interventions on the monuments. So too their physico-chemical problems and how these could be resolved. Decried in the 1st International Meeting, with the decisive contribution of Professor S. Angelidis, was the basic principle of respect for and retention of the original structural function of the monuments in their restoration. Adopted at the same time was the proposal of Professor Th. Skoulikidis for the use of a titanium amalgam to replace the rusted iron. The question of the antiseismic efficiency of the Parthenon was paramount in the 2nd International Meeting, that of its structural restoration in the 3rd, both on the basis of rel-



M. Korres guiding the participants of the Meeting of 1989 at the Parthenon

evant studies by C. Zambas. In the 4th International Meeting, together with the structural problems of the Parthenon, those of the Propylaea were examined, on the basis of the relevant study by M. Ioannidou. At all the meetings there was a common conclusion that it is necessary to study and explore further this part of the work, on the basis of facts to be gathered from monitoring the behavioral reaction of the monuments and from laboratory tests as well. On the subject of conservation of the monuments, the group of chemical engineers and chemists at the

2nd International Meeting, among other things, emphasised that the use of polymers in the conservation of the sculpture of the monuments must be excluded. In the 3rd Meeting of 1989, the presentation of the "pilot programme" by the conservators Y. Doganis and A. Moraitou marks the beginning of surface conservation of the monuments and as a result the extension of the work-site staff to include conservators. The 4th International Meeting focussed particularly on the question of conservation of the blocks of the Parthenon west frieze, which has already been removed to the Acropolis Museum. Three methods for cleaning the frieze had already been proposed by Prof. Th. Skoulikidis and the chemical engineer E. Papakonstantinou as suitable (laser, absorptive poultices and gypsum inversion), methods which were to be tested in the ensuing years with excellent results.

The 5th International Meeting for the Restoration of the Acropolis Monuments held in October 2002, was praised for its qualified organization (contributing to which in large measure was the use of the splendid halls in the New Administration Building of the National Bank of Greece). It was fully attended (77 archaeologists, 73 architects, 23 civil engineers, 44 specialists in conservation of stone, 60 participants from other fields, and a very large audience of 351) and it was accompanied by the preliminary publication of many specialised studies for the restoration of the monuments: "Study for the Restoration of the north façade of the Parthenon" by C. Zambas, "Study for the Restoration of the south wall of the Parthenon" by C. Paraschi and N. Toganidis, "Study for the Restoration of the north wall of the Parthenon" by Kl. Matala and N. Toganidis, "Study for the cleaning of the Parthenon west frieze" by E. Papakonstantinou, K. Frantzikinaki, V. Zafropoulos and P. Pouli, "Methods of conservation of Pentelic marble" by Th. Skoulikidis, "Study for the Restoration of the superstructure of the central building of the Propylaea" by T. Tanoulas and M. Ioannidou. Significant was the presence at the meeting

of young scholars, who have been on the staff of the Acropolis works since 2000, and who gave many reports (39). Most presented the current works being carried out on the monuments; others presented solutions to problems of concern raised in previous meetings (for example, reports connected with the conservation of the west frieze, the restoration of the ceiling of the central building of the Propylaea or the restoration of the side walls of the Parthenon cella). A number of papers were about a new approach to the problem of structural restoration of architectural members of the monuments, which was well received, while M. Korres in his report presented his vision of the final restoration and appearance of the Acropolis rock itself. The great number of papers, the relatively short time available for exchange of opinions, a lack of deeper theoretical speculation in the discussions, all define the 5th International Meeting, making it, rather, a medium of information for Greek and foreign scholars about the progress of the past years in the Acropolis projects.

The works of restoration that have been carried out over the past twenty-eight years on the Acropolis, the theoretical principles, the procedures established, the methods and their technical aspects comprise today's "school" of restoration of ancient monuments in Greece. Will this perhaps be the subject of the last and final International Meeting for the Restoration of the Acropolis Monuments?

Fani Mallouchou-Tufano
Archaeologist Ph.D.
Head of the Documentation Office
of YSMA

With the establishment of the Committee for Conservation of the Acropolis Monuments (ESMA) in the 1970's, during the first years after the fall of the military dictatorship, a technical office was organised and excellent young technicians engaged as well as an archaeologist who specialised in the anastelosis of monuments. Then a number of basic principles were set out. The most important was that no intervention be made on a monument without a preceding restoration study that would have to pass various stages of examination and receive final approval. In many cases it was considered necessary to hold an international meet-



View of the participants at the 3rd International Meeting of 1989. First row from left: Th. Skoulikidis, V. Lambrinouidakis, A. Delivorrias, V. Petrakos, C. Trypanis. Second row from left: M. Parent, R. di Stefano, R. Lemaire, A. Papageorgiou-Venetas

ing to discuss the projects proposed. We should not forget that the man who established these basic principles in 1976, when the memorable Nikolaos Platon was still President of the ESMA, is Professor Charalambos Bouras, who has tirelessly guided the works as President of the ESMA since 1986, after the departure of George Mylonas.

We have acquired many faithful friends in the five international meetings that were held in Athens from 1977 to 2003. I do

not count our own collaborators and colleagues of the Archaeological Service who naturally follow the works and communications of the ESMA closely. I confine myself to naming some of the scholars who regularly attend these meetings, such as Judith Binder, Veronica Mitsopoulou-Leon or Professor Theodosios Tasios of the National Technical University of Athens (NTUA) (who indeed at one time made clear his disagreement on a matter related to his specialty). We missed seeing Professor Sokrates Angelidis, one of the pioneer members of the Acropolis Committee, and the chemical engineer Nikos Beloyannis at our last meeting.

Among our German friends, the most faithful are Wolfram Höpfner, Ludtz Schwandner and Hermann Kienast. Yet last year we missed Gottfried Gruben, Wolf Koenigs, Dieter Mertens and Helmut Kyrieleis.

We missed others of our special friends too, Ernst Berger from Switzerland, Jim Coulton from England, Eric Hansen from Denmark, Friedmund Hueber from Austria, Olivier Picard from France, Luigi Beschi, Antonino di Vita, Paolo Marco-

ni from Italy. We saw, however, for the first time at our Meeting the Keeper of the Department of Greek and Roman Antiquities in the British Museum, Dyfri Williams who was present for a special discussion of the need to incorporate in the monuments being restored a number of architectural members that were taken off by Elgin along with the sculpture.

It is sad indeed to list those whom we have lost in the meantime: John Travlos (another pioneer member of ESMA), Frank Brommer, Anne Jeffrey, Paul Auberson, William Bell Dinsmoor Jr., René Ginouvès, William Coulson, Homer Thompson, Antonino Giuffré, Alessandra Melucco Vaccaro, Jos de Waele, Raymond Lemaire. We will always remember them with gratitude for their observations. Recently we have lost our irreplaceable sculptor, Stelios Triantis and a few years ago the architect Alekos Papanikolaou, among the pioneers of the Acropolis restoration works.

Among other pioneers, of the 1970's, Maria Ioannidou, Tasos Tanoulas, Evi Papanikolaou-Zioti and Fani Mallouchou-Tufano continue to work at the Acropolis. The architect Manolis Korres left the

Acropolis, since he became Professor at the NTUA. It is, however, splendid that he is taking part in the ESMA and that he is continuing to advise all the young who ask. The civil engineer Costas Zambas is no longer at the Acropolis but with his experience and ability he has become invaluable in other great works of restoration in our country. The communications of both these men at our last meeting were among the most brilliant.

It is indeed heartening that, through funding by the 3rd Community Support Framework and a beneficial Presidential Decree, many young scholars, architects, civil engineers, archaeologists and conservators have been employed by the Acropolis Restoration Service (YSMA). At the meeting last year we listened with great interest to the reports they gave on their various subjects. It is particularly encouraging that the Acropolis has become, as it were, a nursery producing new young specialists in conservation of the ancient monuments.

Evi Touloupa
Ephor Emerita of the Acropolis
Member of the ESMA



The participants at the 3rd International Meeting of 1989 visiting the works in the Parthenon

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