THE UPPER GALLERY OF THE JERÓNIMOS CLOISTER IS CROWNED WITH A PARAPET DECORATED WITH MEDALLIONS AND PORTRAITS OF PORTUGUESE EXPLORERS AND ROYALTY

...if thou seek for Merchandize
Produc't by the Auriferous Levant;
Cloves, Cinnamon, and other burning Spyce;
Or any good or salutiferous Plant;
Or, if thou seek bright Stones of endless price,
The flaming Ruby, and hard Adamant:
Hence thou may'st All in such abundance beare,
Dutt thou may'st bound thy wish and Voyage Here.

—Luis de Camões, *Os Lusíadas* (1572), Canto II, Stanza 4

by A. Elena Charola

Commissioned by King Manuel I in celebration of Vasco da Gama's 1498 discovery of a lucrative sea route to India, Lisbon's Jerónimos Monastery is the crowning achievement of Manueline architecture. Built on the site of the Santa Maria hermitage, founded by Prince Henry the Navigator in 1460, the monastery overlooks the Tagus River, where it empties into the treacherous waters of the North Atlantic. The monastery's buildings are replete with seafaring and oriental motifs—seahorses, elephants, ropes, shells, and armillary spheres—all exquisitely wrought in stone and affirming of Portugal's place as foremost maritime power of the sixteenth century.

Ground for the monastery complex was broken in 1502; the whole of its magnificent cloister and Church of Santa Maria de Belém were completed by the mid-sixteenth century. In 1567, a large, spring-fed lake was installed in the cloister courtyard.

King Manuel of Portugal...did not spare any expense to turn [the Monastery] into the most beautiful and magnificent holy place, as ancient kings had built their pyramids.

—Dom Philippe de Caverel, 1592

Chronicle in Stone

BUILT AS A MONUMENT TO PORTUGAL'S MARITIME PROWESS, A MANUELINE MASTERPIECE SHINES AFTER A FOUR-YEAR RESTORATION

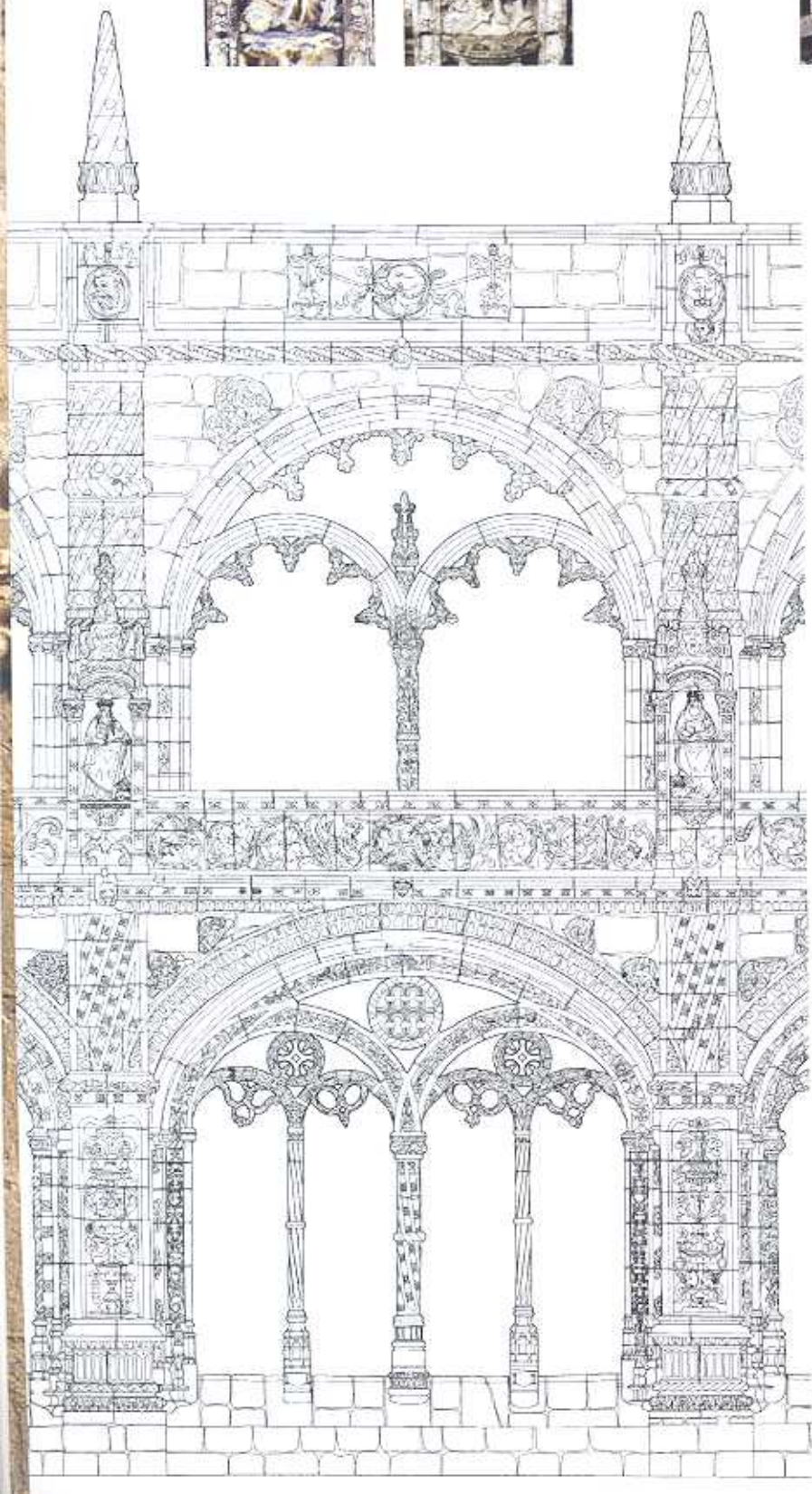
When Vasco da Gama departed for the conquest of the route to India, King Manuel went to accompany him to Belém. Before embarking, Gama, kneeling in the modest chapel built there by Prince Henry the Navigator, son of King John I, asked the Virgin Mary to protect him on his perilous voyage. He then proceeded to the fleet, accompanied by calm monks, whose pious chants rose to heaven, and a grieving crowd, because the departure appeared to almost all to be one without return. Manuel, who had carefully prepared this long expedition, was very moved by the occasion. Before taking his leave of the courageous navigator, he vowed to build the most magnificent and beautiful monastery and basilica ever built in Portugal, dedicated to the glory of Our Lady of the Heavens on the very spot occupied by the chapel and the monks abode built by Prince Henry. Gama returned after two years of dangerous travail, and work immediately started on the church and monastery according to a plan full of the wealth and grandness dignified by such a cause and a mission.

—Olivier Merson, 1857

Two superimposed suites of vaulted galleries, each 55 meters in length, compose the cloister, which is built on a square plan with chamfered corners. The cloister is crowned by a parapet decorated with medallions, portraits of explorers and Portuguese royalty, and other ornaments in bas-relief.

A bearded statue of Prince Henry stands at the south portal of the church. Dom Manuel and his wife Dona Maria preside over the west portal in the company of the four evangelists. Within the sanctuary are the tombs of Portuguese kings and queens—four of which are of marble and jasper, supported by carved pairs of stone elephants—along with those of two of the country's greatest heroes, Vasco da Gama and Luis de Camões, who extolled da Gama's discoveries nearly a century later in his epic poem *Os Lusíadas* (The Lusiad).

Since its construction five centuries ago, time had taken its toll on the monastery, which was severely damaged by an earthquake in 1755. This damage was compounded by the corrosive effects of routine weathering and airborne pollutants, as well as disfiguring biological growth. Over the past two centuries,



STATUES REPRESENTING SAINTS, ALLEGORICAL FIGURES, AND EVEN KING MANUEL HIMSELF, ABOVE, WERE PLACED IN NICHES IN THE CLOISTER'S UPPER GALLERY. A MOBILE CRANE, BELOW, WAS USED TO SURVEY THE CONDITION OF THE CLOISTER'S 56 VAULTS. FACING PAGE, MEDALLIONS DEPICTING EXOTIC PLANTS AND SHIPS ARE AMONG THE BAS-RELIEFS ADORNING THE JERÓNIMOS MONASTERY AND CLOISTER.

The cloister is of medium size with a good vaulted roof, carved and enriched with beautiful paintings, having a low gallery at floor level and an identical one above. Thus the gallery with the freshness that the fountain provides, built in the center of the square, outshines the other beauties. Pure water is led there by channels, which project from diverse points of a globe, from with it falls in showers into square pools and refreshes fish, which wander from one side to the other, playing in the sun's rays or looking for shelter and amusing themselves.

—Dom Philippe de Caverel, 1592

the monastery had undergone a number of restorations—many of them inappropriate—in piecemeal fashion.

In 1998 WMF Portugal, in partnership with WMF headquarters and the Portuguese Institute for Preservation of Architectural Patrimony, embarked on a four-year campaign to restore the cloister to its original glory. The monumental task included sealing the terraces against water infiltration, repointing destabilized masonry, cleaning and consolidating the fragile and deteriorating bas-relief, and applying a protective coating to the whole of the exterior.

The total stone surface in the cloister is about 210,000 square meters, held together by some 20,900 meters of mortar joints. A number of the stone blocks that make up the cloister balustrade had to be realigned. Deteriorated mortar was removed, joints were cleaned, new bedding mortar was injected, and the joints were repointed. Once the structure was stabilized, work began on the ornately carved stone surface.

Even if the earthquake had not left any other ruins and all the chronicles were lost, this building would talk; the seafaring spirit of Portugal lives in every stone.

—Edgar Quinet, 1844

The cleaning operation was probably the most complex aspect of the restoration. Numerous problems had to be addressed, such as removing biological growth and black crusts caused by airborne pollutants while preserving original pigmentation and minimizing any further damage to fragile and flaking surfaces.

Severe discoloration of the Lioz limestone, from which the monastery was built, was already noted in the nineteenth century. However, until recently, its causes were not entirely known. Before any cleaning and consolidation could be carried out, conservators undertook an analysis of the building's patina to assess damage and to determine the best possible cleaning methods.

From the beginning of the project, one of the key questions was whether traces of orange color found both on the exterior and interior surfaces of the galleries were remnants of an intentionally applied coloration or simply the result of natural weathering.

The material from which the building is made is beautiful white limestone…which possesses the two excellent properties of being easily chiselled, and of hardening upon contact with the air. However, the passage of time does darken it, and make it yellow like old ivory.

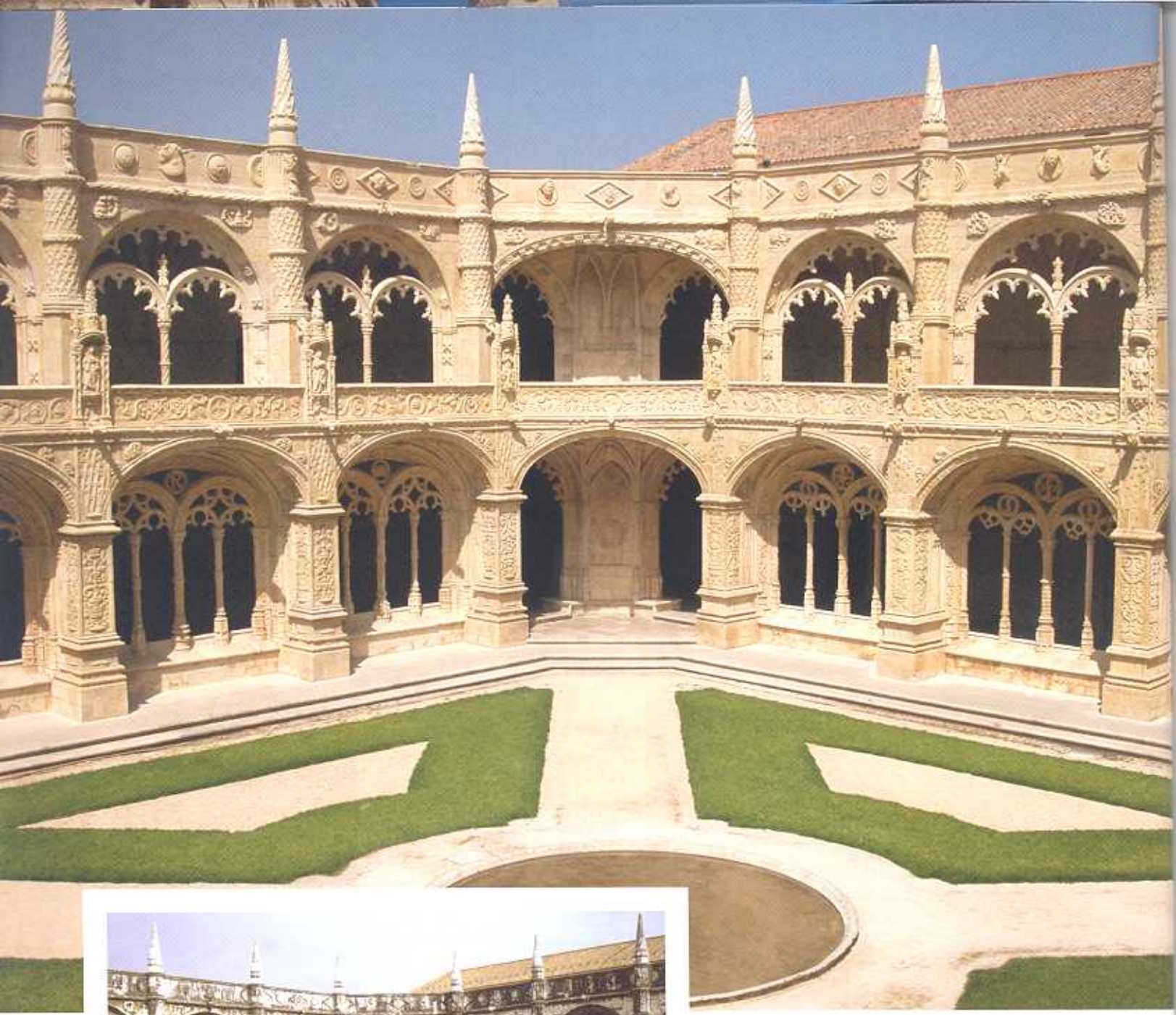
—Prince Lichnowsky, 1842

As it turned out, the pigment was embedded in a thin layer of wax/oil/fat that had been applied over a lime wash sometime in the late-sixteenth or early-seventeenth century. Therefore, it was important to preserve as much of this color as possible during the cleaning process.

In addition to dark crusts formed by airborne pollutants, the cloister was further disfigured by an extensive biological colonization. This included both a surface colonization of algae, lichens, mosses, and even grass, as well as algae growing just beneath the stone surface, which imparted a grey pallor, a result of the dark melanin produced by these organisms. Removing the algae was no easy task, as the only effective treatment presented yet another conservation issue; the biocide left a faint yellowish color.

The aforementioned cloister…has rather deteriorated even though the earthquake saved the monastery….the poetry has disappeared entirely, and a stigma of degradation is daily imprinted on those porticos.

—Prince Lichnowsky, 1842



THE CLEANED AND CONSOLIDATED CLOISTER, TOP, AND THE WAY IT LOOKED BEFORE RESTORATION, ABOVE. A VIEW, RIGHT, THROUGH ONE OF JERÓNIMOS' EXQUISITE VAULTED GALLERIES.

A majority of the cleaning was carried out using water nebulization and atomization. However, removal of pollution crusts from flaking and powdering areas required laser cleaning. Following cleaning, these areas, found on the arches of the lower gallery, were consolidated with an elastified silicate ester product.

The final phase of work involved the application of an ammonium oxalate treatment to exterior surfaces to reduce mechanical erosion from water flow over the limestone. Over this, a tinted lime wash was applied to the building to even out the color—balancing the cleaned white or yellowish surfaces with the original pigmentation on the arches of the lower gallery—and act as a sacrificial layer. Atop this wash, the surface was treated with a water repellent to reduce water penetration and microbiological colonization.

Upon completion of the cloister's restoration this past spring, this Manueline masterpiece, which, along with its Church of Santa Maria de Belém, was inscribed on UNESCO's World Heritage List in 1983, has regained its prominent place in the history of architecture and exploration 500 years after ground for its construction was broken. ■

When you step into the cloister, the fruits and plants from recently discovered continents—coconuts, pineapples, grapefruit—are picked and hung in bas-relief. The spirit of adventure, of danger, of science, of discovery, breathes in these walls more than any chronicle.

—Edgar Quinet, 1844

When the old navigators, after having conquered new worlds, returned home, they disembarked in front of the door of the Monastery of Belém; it was the door "through which all the triumphs of Portugal enter."

—Edgar Quinet, 1844

MEDALLIONS DEPICTING EXPLORERS AND PORTUGUESE ROYALTY, BELOW. THE CHURCH OF SANTA MARIA DE BELÉM, ADJACENT TO THE CLOISTER, RIGHT.