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RESEARCH, DOCUMENTATION AND RESTORATION GUIDELINES FOR
DECORATIVE PLASTERWORK AT THE DAVENPORT HOTEL,
SPOKANE, WASHINGTON

by

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A THESIS

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This study attempts to profile a relatively neglected period of the art of decorative plasterwork by focusing on early twentieth century American plasterwork. Using examples from the Davenport Hotel, Spokane, Washington, work from this era is evaluated for quality of design, craftsmanship and historical interpretation. The immediate goal of this research was to update the literature on the restoration of this decorative treatment and to formulate recommendations for decorative plaster at the Davenport Hotel.

The subject of decorative plaster restoration was suggested by the diversity of plaster subjects within the Hotel, and by the range of technological and aesthetic issues confronted in these works. The course of research and the procedures offered here are meant to be useful guidelines for the preliminary assessment and research necessary for decorative plaster restoration. It was also intended that this study have broader application to similar projects involving the restoration of this decorative medium.

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CHAPTER 1

INTRODUCTION

This thesis will explore the subject of early twentieth century decorative plasterwork in the United States: innovations to the craft as it evolved from European traditions, the cumulative impact of these changes on the plastering arts, the nature of production during this era and possible methods of restoration. The Davenport Hotel, Spokane, Washington, has been chosen as the principal example because of its profuse and eclectic display of this decorative medium.

This particular plasterwork stands apart from many contemporary examples in its traditional conception and execution. By 1914, the year of the hotel's construction, many post Victorian critics claimed that the art of decorative plastering had been transformed into a prosaic business, and that the design and execution of the ornaments was no longer the province of the plaster artisan.

Certainly in some projects the attending architect conceived a basic design and then selected pre-cast items from a decorator's supply catalog. Still, the craft persisted in the hands of artisans working on custom projects or in casting shops. Despite criticism of the

composition, design and execution of much plasterwork during the eighteenth and nineteenth centuries, in the Davenport examples it is possible to detect persistent qualities which recall the best historical influences.

Decorative plaster in the Davenport Hotel represents one of the later phases in the history of interior plaster decoration. As the principle medium for historic interior revivals, ornamental plaster reached perhaps its most ambitious expression in the exotic movie palaces of the 1920s and 1930s. The following years saw a relative collapse in the industry of plaster ornamentation. Similarly, the proliferation of scholarly volumes devoted to the study of plaster technology and stylistic programs also ceased.

Still today, the status of decorative plaster production and the accompanying refinements since the early part of the century have received little attention. Dismissing this work as repetitious, uninspired and devoid of Old World craftsmanship, including examples of pre-cast plaster made from stock molds, many scholars neglect these later specimens and instead opt for study of the more exalted examples of the art- mainly those of the Neo-Classical or earlier periods.

In recent years there have been numerous restoration projects involving late Victorian and early twentieth century plasterwork. Plasterwork at the Davenport presents

the opportunity for the application of these restoration techniques; a study of stylistic programs and production methods popular during this era, and treatments for the repair and replication of painted finishes for surfaces featuring plaster enrichments.

My interest in the topic evolved during several visits to the hotel in the summer of 1986, at which time, inspection of the plasterwork in the lobby revealed several areas of damage caused by water penetrating the skylights in the ceiling. Water damage has caused the destruction of some decorative moldings, slightly loosened plaster with exposure of lath, efflorescence and general cosmetic damage to polychromed and grained surfaces.

The condition which prompted research of this particular aspect of the interiors is the impending fate of the building in response to grim economic indicators for the region. The Hotel had been closed for over a year, and demolition, though not imminent, was a prospect that could not be entirely dismissed. These grave circumstances created an urgency in matters of documentation for all aspects of the hotel, particularly since most of the architectural features both interior and exterior, are uncommon and represent the full spectrum of regional building materials and craftsmanship used during that era of construction.

The immediate goal of the study was the formulation of

a restoration program for the lobby plasterwork and for other rooms in the hotel featuring ornamental plaster. Guidelines are based on historical research and documentation of the plasterwork, analysis of the plaster composition, and stabilizing and recasting procedures for repair of damaged work. Aside from these concerns, most of the emphasis will be placed on the repair and replication of original painted finishes.

The broader objective was to evolve a set of restoration guidelines which could have wider application to similar projects. By presenting the Davenport example as a case study in decorative plaster restoration, chronicling the phases of proposed restoration and providing the essential steps for such a task, it was possible to address the range of technological and aesthetic concerns that would be encountered in most plaster restoration. A later section of the thesis offers other examples of ornamental plaster restoration in the Northwest and evaluates the success or failure of these projects.

At the close of this study, the interface between modern decorative plaster technologies and historic methods is considered. As with any subject of preservation, the use of contemporary materials and methodologies within existing historic fabric may be evaluated from philosophic, aesthetic and economic perspectives. It will be stressed that the craft as it is practiced today has changed little, with only

slight refinements having occurred in casting materials.

Certain objectives in this thesis were not realized because of an inability to carry procedures to their intended conclusions. For example, actual in-situ examination of some surfaces and matching of pigments with standardized color charts were not possible due to the perilous location of these areas, and because of fear of liability on the part of the hotel's owners. Such limitations have been compensated for with detailed procedures which can be readily employed once the commitment to restoration is made.

CHAPTER 2

THE DAVENPORT: HISTORICAL DEVELOPMENT AND ARCHITECTURAL DESIGN

The context of the plasterwork is a fourteen story hotel, built in 1913, which features a tripartite facade culminating in an elaborate Florentine arcade and attic story of patterned brick and terra cotta. The interior incorporates a rich palette of historical themes, exceptional craftsmanship and detailing and a high quality and variety of building materials, which makes the hotel a valuable index for building practices used during those years.

The hotel complex consumes an entire city block in the center of downtown Spokane and has offered its profile as one of the city's preeminent landmarks for over seventy years. The Davenport Hotel actually comprises three separate buildings; the two earliest buildings on the eastern portion of the block date to 1890. Louis M. Davenport established his Waffle Foundry in these simple two and three story brick buildings shortly after the great fire of 1889, which devastated most of Spokane's commercial center.

As the establishment prospered, he sought the design expertise of noted architect Kirtland K. Cutter who united

the simple brick structures in an elegant Spanish Renaissance envelope. This new facade enabled Louis Davenport to promote his operation as a top class hostelry, offering the finest in accommodations and cuisine to be found anywhere in the Northwest. The success and patronage of the Hotel exceeded its capacity, prompting Davenport to look to the remaining west portion of the block for further expansion. The brick frame structure known as the Phister Block was razed in 1912 to make way for the fourteen story hotel which became the dominant building in the hotel complex.¹

Again Kirtland Cutter, aided by his engineering partner Karl Malmgren, was chosen to design the ambitious new addition. Cutter's design strategy called for a tripartite facade of red brick and sandstone featuring a wealth of terra cotta details, most striking of which is the two story Florentine arcade and attic story located at the tenth through twelfth stories. This treatment referenced Italian themes established in the older portion of the hotel.

While the exterior is consistent in its use of one historical or regional theme, the interior presents an eclecticism often found in residential building of this time. The "period house" popularized around the turn of the century, with individual rooms featuring various historical programs, finds its ultimate expression in the

Davenport Hotel. Among its sixteen ball and dining rooms may be found such diverse themes as a Venetian banqueting hall, a Spanish Renaissance dining room, an Elizabethan banqueting room, an Arts and Crafts suite with Art Nouveau embellishment, a Louis XVI ballroom and the grand lobby space, already mentioned, which is patterned after the Spanish Baroque period.

Mold designs for plasterwork on beams and friezes were modelled and cast on-site expressly for the Davenport by the plaster craftsmen of J. J. Tinker of Seattle. Plaster paints and finishes were applied under the direction of Inar Peterson of Holslag and Company, Chicago.² During these years plaster ornaments were either produced in this custom manner or were derived from conventional stock molds. In buildings such as the Davenport the conception and execution of the designs by the plaster craftsman is more closely allied with Old World building traditions.³

1913
13/10/13

CHAPTER 3

PLASTER TERMINOLOGY-DEFINITIONS

Plaster (Interior):

A wall and ceiling finishing material which has a basic composition of either lime or gypsum, water and a fine aggregate such as sand.

Decorative Plasterwork/Ornamental Plasterwork:

A surface treatment, rendered in plaster, characterized by recessed and projecting designs and decorations of shallow or deep relief. The terms are used interchangeably throughout the body of this text.

Interior Ornamental Stucco:

Historically, interior stucco was distinguished from plaster by the addition of marble powder to increase durability. In many early volumes the term is used synonymously with "decorative" or "ornamental plaster."

Model:

To create a model, designs for ornaments are first sculpted or modelled, usually in clay or plaster. The model is then treated with a barrier coat, historically of marble powder, shellac or oils and waxes, to prevent adherence when wet plaster is poured around the model to

create a mold.

Molded Plasterwork:

Proliferated during the Renaissance, the technique produced ornaments individually cast in molds, which were affixed with lime, nails or screws to an assigned location. Regardless of the era of production, all plasterwork originating from this process is referred to as molded plasterwork. To insure uniqueness of design, custom molds were often destroyed at project's end by the artists.

Gelatin Molds:

A technique introduced in the mid-19th century for producing mold designs with vigorous and deeply undercut subjects. Simply stated, during the production of a mold, a gelatin mixture was poured around a model; the back of the mold was usually encased in plaster. The pliable nature of the gelatin insured that the piece could be removed from the mold without breakage of deeply recessed or angular details. In the Davenport's Hall of Doges, gargoyles and arcade trims were produced in this manner.

Cast Ornaments (also, Pre-Cast):

With the increasing demand for plasterwork after the Renaissance, craftsmen often produced duplicates of popular motifs by making multiple casts of a particular subject. In the Victorian years, pre-casting became a large-scale operation as decorating companies issued catalogues offering

a profusion of mass-produced ornaments.

Modelled Plaster (also, Modelled in-situ or Struck):

An amount of wet plaster, either unembellished or with rudimentary shapes, is applied to a surface; additional relief is then sculpted or modelled by hand before the plaster sets. Boldly projecting ornaments were often modelled onto a field of molded plasterwork.

Incised Plasterwork or Sgraffito:

Shallow designs are carved into a ground of wet plaster with a blade-like tool. This technique also serves as precursory design in order to outline the placement of modelled or molded ornamentation to be added later.

Press Molds:

Plaster poured into a mold made of carved wood or impressed metal, is held against an intended surface until the wet material adheres.

Lath:

In order to affix ornaments, moldings, or cornices, a rough surface must be provided to which the wet plaster can attach itself, or key-in. Until the turn of the century, decorative plaster lathing consisted of small, closely spaced wooden cross pieces. High style public buildings constructed during the era of the Davenport usually employed the newer diamond mesh metal lathing, although wood lath

persisted in common residential building until the 1940s.⁴

CHAPTER 4

HISTORICAL EVOLUTION OF DECORATIVE PLASTERWORK

Around the turn of the century in the United States and abroad, scholars lamented the decline of ornamental plastering claiming that work from this period no longer bore the originality and subtle irregularities of the craftsman's hand. Harsh criticism maintained that the role of the plasterer had been reduced from Old World artisan to that of an assembly line worker. However, only in some instances did the design process become the domain of the building designer. In these cases plaster designs were often sketched by the architect and reasonable facsimiles were picked from a catalog. The only activity left for the plasterer was the placement of the ornaments in their assigned locations.

In examples such as the Davenport Hotel the execution of ornaments remained somewhat faithful to Old World standards of production. The artisan spent his creative energies, without the guidance of an architect not only in the physical placement of the ornaments, but in the artistic conception of them as well.

Renaissance Rediscovery

The art of ancient decorative plastering was a "lost art" until the Italian Renaissance, when Florentine Cardinal, Giovanni de Medici, requested excavations of Rome's ancient city in hopes of retrieving the purported glories of Nero's vast Golden House. Delving into these ruins proved to be a major reconnaissance of ancient decorative arts, among which were some startlingly intact specimens of modelled stucco, composed of a fine but durable material not previously known to plaster craftsmen.⁵

A lavish building project, The Villa Madama, undertaken by the Pope's cousin, Guilio de' Medici, attempted the first replication of this substance using "grotesque" designs suggested by the walls of Nero's "grotto."⁶ The meandering vegetable motifs, animal and mythological figures of these designs have throughout history been misinterpreted as grotesque in the sense of horror and ugliness, when in fact the likeness refers to the context of these designs, having been recovered in an interred, grotto-like setting.

There is, also, frequent confusion with the term, "Arabesque," which is often attached to decorative themes which feature the delicate intertwined plant motifs, minus the often fanciful human and animal forms. The Arabesques of the Davenport have their origins in these ancient traditions.

These Early Renaissance revivals of ancient plastering methods and stylistic themes charted the course of

decorative plastering throughout Europe for the next three centuries. According to nineteenth century plaster authorities, the integrity of this craft was suspended during the nineteenth century with a decline in overall quality of execution, debased designs, and inappropriate scale and context of plasterwork. These judgments persist throughout writings of this period and should, perhaps, be regarded as unfair personal reactions to an unpopular stylistic period.⁷ The inventory of techniques and historic themes were not entirely abandoned, and, depending on the skills and cultural orientation of the plasterer, often manifested themselves to some degree in later examples such as the Davenport.

Before its transformation in the eighteenth century, plaster was an inexpensive and pervasive mode of interior decoration. When removed from Italy, the enthusiasm for ancient precedents and old technologies prompted a variety of regional interpretations, each occupying a distinctive period in the plaster record.

Aided by the diffusion of Flemish engravings during the sixteenth century, plasterers had a vast inventory of plaster designs from which to choose.⁸ Motifs such as cartouches, scrollwork, strapwork and putti were introduced throughout Europe by various volumes reproducing these Classically-inspired Renaissance engravings. Their borrowing from Italian sources included biblical and

mythological scenes; a tradition in plaster iconography which, in the middle Continent, found its boldest expression in robust, animated Baroque forms.

The visual success of early works, and their harmony with other interior details, were the results of close collaboration among architects, masons, plasterers and frescoists. Once a building was designed, and the masonry frame completed, the stuccoist was free to assess the potential of the interior environment into which his ornaments would be placed. Taking into consideration the immediate context, scale and decorative program of the proposed ornament's setting, he made specifications for ceiling configuration and wall treatments. Just as the fresco artist did not finalize the scale and placement of his subject until its context was completed, the stuccoist could not propose visually successful ornamentation without coordinating the finished structural medium with his original designs.

The autonomy of the plaster artisan over his selection and execution of ornament, and his freedom to calculate scale and appropriateness of decoration with respect to context and viewer, eventually became the province of the architect. With the rising status of the architect in the eighteenth century, many of the ornament's qualities; its design, scale and general disposition, were controlled by the architect himself, although the plasterer was still able

to make certain contributions to, for example, the expression and stance of figures.

Gradually, in the nineteenth century the architect absorbed more creative aspects of the design process. For these works the plasterer became merely the technical extension of the architect's hand. And because the architect was not exclusively a plaster craftsman but consumed with other duties of structural design, materials specifications and exterior ornament, he was not a devoted plaster artist, steeped in the historical methodologies and artisan traditions that had distinguished the craft.

Baroque and Rococo Periods

The pinnacles of achievement for plaster interior ornamentation lie within discreet periods and geographical settings. Italian stuccoists crossed the Alps, carrying with them the skills, recipes and repertoire of Classical designs that when adapted to Central Europe, assumed forms entirely separate from their Italian counterparts.

Many of their best efforts were spent in the region of Bavaria, making that country a focus of the plastering art in the seventeenth century. The increasing proficiency of the craftsman, and his expanded role in interior design, compelled him to create a profusion of ornaments which crowded and ultimately spilled beyond the Baroque panels and moldings.

The stylistic mandate of the Rococo tempered the exuberant forms of the Baroque with graceful Cyma Recta and Cyma Reversa curves, and an asymmetry which completely abandoned the formalist approach of the Renaissance. Perhaps surprisingly, Rococo details rendered in plaster did not achieve a high status in France, the country most commonly associated with the period. The decorative arts in France had a long-standing tradition of wood working which denied the plaster mode opportunity to assert itself into French interior design.⁹

Bavaria again generated the finest specimens, after the Imperial Government, in a move to emulate French standards, and perhaps surpass them, expanded the Guild System to encourage experimentation with materials and to promote excellence in the decorative arts.¹⁰ Although quality-obsessed, France had been more conservative in its support of craft guilds, and with a strong commitment to the wood working sector, did little to foster alternative modes of interior ornamentation.

Neo-Classical England

The evolution of decorative plaster in England, and the styles which issued from its development in that country are probably most closely allied with the craft as it was practiced during the founding years of this country. In England, the finest work in the medium can be confined to a

relatively brief episode in the early eighteenth century.

Before this time, the singular achievement in this field occurred during the reign of Henry VIII, when Italian artists were imported for jobs at Westminster Abbey, Hampton Court and Nonesuch Palace. Their efforts produced some exemplary exterior stucco panels at Nonsuch, and Classical friezes and ceilings in his Hampton and Westminster apartments. The technique used, that of plaster on lath, included the Renaissance prescriptive of carving the members of deepest relief in wood, and finishing these surfaces with a wash of gilded or painted gypsum or gesso.¹¹

The Italian manner of stuccoing did not easily disperse throughout England, perhaps because the more modest country architecture of this period did not offer the vast ceilings and other interior settings which invited the plasterer's handiwork. Unlike Imperial residences of the Continent such as the Italian palazzi, English homes often had flat, low ceilings which accommodated only simple decorative schemes.

In seventeenth century England, plastering had the benefit of more Continental artisans, and the spread of pattern books injected a variety of themes into the repertoire. The more sophisticated compositions united Arabesques, strapwork and mythological scenes with the simple, but robust modelled work of the Elizabethan period which had been sculpted in-situ. With this prelude, England was ready to plunge into a Classical Revival which marks the

pre-eminence of English decorative plastering.

Spurred by the Restoration of Charles I and inspired by the Classical reforms of Christopher Wren and others, the plasterwork of Master Plasterer John Grove found new possibilities in Wren's myriad church settings.¹² What set these projects apart from earlier, and also later examples, was their union of fifteenth century methodologies with the new freedom toward individuality of placement of decorative motifs. The quality of execution, custom design and liberated disposition of ornamental motifs were unprecedented in England. Plasterwork of this period is characterized by an all-white composition consisting of fruits, flowers, profiled ribs and heraldic devices.

At the turn of the twentieth century, scholars had placed the decent of English plastering into debased, and unoriginal forms, shortly after the Wren period and in fact cite projects completed just after his death, under the direction of Gibbs, as lacking in the optical qualities of earlier work. Carried to extremes, interior architecture became obsessed with controlled geometry based on Classical precepts of proportioning. Decorative plasterwork served only to lend visual reinforcement to the careful lines and planes specified in the writings of antiquity.

According to plaster authority George P. Bankart in 1908, the embellished surfaces in Wren's St. Martins-In-The-Fields had a mechanical placement, with little consideration

for the distance of the viewer's eye.¹³ Preoccupied with the canons of the Classical design, architects often selected inappropriate motifs, ill-scaled and serving only as linear accents. This criticism could, however, be dismissed as a purely stylistic argument.¹⁴

Ironically, the exhumation of Roman antiquity that spawned generations of imaginative plasterwork, had finally become a cultural obsession which at the end of the eighteenth century, resulted in a flurry of mass-produced, uninspired imitations. This mania for Classical ornament was fueled by Robert Adam with new studies of antiquity in Italy and Dalmatia (Split, Yugoslavia). The programs, which prescribed radiant ceiling medallions, meandering ribbons and delicate Arabesques, all contained within tight geometrical boundaries, were among the first plaster themes transplanted to the Colonies. His careful studies of Classical programs preempted the English fashion of vigorous ornament with deep relief and necessarily the role of plaster was somewhat diminished in the process.

Although the motifs were not original, Adam had recycled the Classical language using delicate compositions, shallow relief and unprecedented color schemes. The spectrum in these programs ranged from bold tints to pale pastels, making color a revolutionary vehicle for enhancing decorative ornament.

Part of this revolution was a revision of standard

plaster recipes and molding techniques. Adam achieved a monopoly with a patent for a mixture of gypsum with a glutinous material, known as Liardet's preparation, a recipe which he had resurrected from an obscure Renaissance formula. The process involved the placement of hot plaster into shallow metal molds.¹⁵

While the ambitious palettes and shallow relief of an Adam program offered new possibilities for interior designers, the subtle, but tense geometry of this style, once again, forced plaster into the secondary role of linear reinforcement. For purposes of comparison, these works should be aligned with samples from the Renaissance and Baroque periods, where the interface of plaster, with architectural details, frescos or other wall treatments, is not immediately apparent. This observation is not offered as an indictment of Neo-Classical plasterwork but, rather, demonstrates the adjustment of the mode to the stylistic dictates of various periods throughout history.

United States

In the American colonies there were few attempts at ornamental stuccowork. The rare examples were most often adaptations of the French "rocaille", or Louis XV style. These works abandoned some of the free asymmetry of the French traditions by using bold geometrical frames to contain the ornament.

An example regarded as the finest early American translation of a Neo-Classical program using stucco may be found at the Colonial mansion, "Kenmore" in Fredericksburg, Virginia. Under the direction of an unnamed French craftsman, the ceilings and friezes of Kenmore were all embellished with radiant medallions and Classical moldings. Allegorical plaster over the mantel is of particular interest because the disputed origin of its design illustrates the status of the plaster artist during this period.

Scholars finally concurred that the design for the theme had been suggested by a family member, perhaps even the brother of the owner's wife, George Washington.¹⁶ Such cases reveal that the subjugation of the plaster's art to the whims and interventions of his client was in effect in the earliest Colonial expressions of the craft. This trend continued in the United States and in Europe, as the architect exercised greater and greater control within all realms of the decorative arts.

Spanish Origins for the Lobby Plasterwork

With the exception of the Davenport's lobby many possible historical precedents for plaster enrichments of the Davenport have been described. Before discussing the last phase in the evolution of decorative plaster in the United States, brief mention should be made of the status of

the decorative medium as it was practiced in Spain. The Davenport's lobby is also an outgrowth of European traditions and takes its stylistic direction from the Spanish Baroque period. The lobby theme featured patterned carpet, polychromed balustrade, caen stone piers, Baroque sconces and hanging lamps and furniture exhibiting the twisted turnings of the Spanish "Churrigueresque."

Original carpeting no longer exists, and wall sconces and most furnishings have been plundered, and the caen stone painted-over. Only the plastered beams, friezes, soffits, and ornate metal hanging lamps verify the Spanish Baroque program. While it is not necessary to locate a definite precedent for this room, other decorative components lend regional authenticity to the program.

Twisted columns and other design details in the hanging lamps closely resemble period metal lamps from the province of Andalusia.¹⁷ It can only be speculated as to whether the plasterwork designs follow the same specific regional influence, however, given the comprehensive and faithful treatment of other historic themes throughout the hotel, such a speculation is not unreasonable.

In Spain, the typical Italian motifs made their appearance in the sixteenth century. However, the earliest plasterwork was tempered by Moorish "Mohammedan" principles of geometric decoration. Spanish plasterwork, or yeseria, was often carved, or modelled in-situ after having been

outlined before the material set. The execution of domestic plasterwork rarely involved a casting process.

Ornamentation was usually applied to door frames and window openings; but during the Renaissance and Baroque periods its province was extended to soffits, archivolts and friezes.

Because there was little stone carving in domestic architecture, and because wood-carving was confined to the frieze board alone, there was ample opportunity for plaster embellishment.¹⁸

The Davenport lobby, obviously a palatial rather than domestic interpretation, recalls both the Moorish legacy of polychrome, and the Spanish incorporation of wood-carved friezes with adjacent modelled plaster relief. The friezes, cornices and soffits, for example, harmonize with the use of real oak in nearby doors and frames.

The role of plaster in Spanish interiors was eventually supplanted by the preference for inlaid wood using prized woods from the Americas.¹⁹ As a result, Spanish plasterwork, after a debut in the American Southwest late in the seventeenth century, passed into relative obscurity. And, unlike Italian Palladian themes, Spanish programs were not usually emulated in Victorian revivals, making the thematic origin of the lobby work relatively uncommon.

Nineteenth Century Refinements

Late in the eighteenth century and throughout the

Victorian period the original role of the plasterer was constantly altered, not only by occasional deference of his craft to the architect but also by refinements in the molding process. Also, like many decorative mediums in the nineteenth century, plaster became subject to mass-production as technological advancements replaced the craftsman's hand.

The industrial revolution which enabled faster and more economical methods of construction, impelled the plastering arts to answer with similar reforms. Accompanying these pressures was a trend toward historic revivals which necessitated a diverse inventory of castings to recreate a number of period settings. In order to expand the repertoire and permit fast installation panels became larger and longer, and complicated ornaments, no longer assembled from several individual pieces, were molded in one step. Such singularly bulky pieces required inner fortification and improved keying agents.

Fibrous plaster became the preferred mode. The inner reinforcements eased the attachment of long slabs of molded work and large ornaments to assigned locations. This was accomplished by imbedding canvas or other woven fabric of one or two layers into a relatively flat, but wet, plaster surface. Although the process varied slightly depending on the project, the fabric inlay was usually accompanied by small wood pieces or wire, placed between layers, which then

projected from the back of an ornament for attachment purposes.²⁰

Where pre-cast ornaments of previous years were often secured only by the keying action of one wet plaster surface against another, these large fibrous sections were affixed to beams and friezes with screws that passed through holes pre-drilled in the ornament. The location of these screws was later disguised with the application of small decorative devices such as the regularly placed rosettes and nail heads found on many of the Davenport panels.

Although of French invention, fibrous plaster was most widely used in England. Architect and scholar, Owen Jones, is credited with its first patronage.²¹ With continued experimentation, architects discovered boundless possibilities for the new technique and the scale, depth of relief and subject matter exceeded anything tried in history.

The creation of large fibrous members of deep relief was assisted by a second modification to the molding process. Up to this time, sharp, deeply undercut detailing was hand-struck with a tool into a mass of not-yet-hardened plaster. These projecting details were usually applied to a field of relatively shallow relief. But the demand for rapid production precluded these slow methods. With new methods large Classical moldings could be generated by running templates over a mass of wet plaster. Molds

composed of gelatin eliminated the hand work, since undercut ornaments of bolder relief could be pulled from these resilient forms without breakage. As a result, ornaments emerged from the molds with details and edges of unprecedented regularity and crispness.

What had seemed commendable revolutions in the plastering arts began to draw criticism from historians who revered the imperfections of hand-made ornament and scorned a technological revision which cast-off artisan traditions. Where the old, softly beveled edges claimed a hand-forged technology, the clean, sharp lines of molded decorations could not conceal their easy removal from a gelatin mold. For some, these works had become too perfect, too refined.

As sand aggregate became more finely sieved, undulating plasterwork no longer bore a subtle, granular texture. In addition, the exclusive function of plaster as pure ornament was denied as the material was forced into imitative roles as woodwork, stone cornices or other running moldings.

As with many architectural improvements, developments in the plastering industry stemmed from a philosophy that "stronger is better," and concerns for visual quality were misplaced. The substance itself was also subject to new fortifications. Lime or gypsum had been the base of all plaster throughout history, but they were natural and imperfect materials. Burned at a temperature of 300-340

degree Fahrenheit for two or three hours, the calcined gypsum, nevertheless, retained its original chemical make-up. Most importantly, it still contained a sulfuric element which, when combined with atmospheric moisture, could prompt rust formation of the lath.

Around the turn-of-the-century, Keene's Cement was proposed as a solution to potential iron corrosion within traditional plasters. A refinement of the calcining process, pure gypsum was heated at a much higher temperature, which rid the material of its sulphur component and reduced it to an inert state. The result was then finely ground and mixed with uniform chemicals to create a mixture of perfect consistency and exceptional hardness which claimed the durability of marble.²²

The new substance was supposed to insure longevity for ornaments and surfaces which were historically subject to rust deterioration. Because of its strength Keene's Cement was also used in an imitative mode for scagliola or false marble. For example, the walls and piers of the Davenport lobby were finished with Keene's Cement and were then stippled to imititate caen stone. Still, the harder material did not supplant the softer plasters for all interior finishing. But detractors of Keene's Cement could include it as another of the unattractive strides in the plastering trade since such decorations were never intended to masquerade as marble or other stone materials.

reference

Ornamental plasterwork at the Davenport unites many European stylistic influences with the casting refinements of the nineteenth century. Though turn of the century critics would likely have defamed the lobby's use of grained plaster in an imitative role as wooden panels, this plasterwork could be acclaimed for its success in portraying another material. Decorative plaster from any era is perhaps best evaluated for its accuracy in interpreting a historic theme, its originality of design and for the sophistication of its paints and finishes.

CHAPTER 5

THE DAVENPORT PLASTERWORK: STYLISTIC
PROGRAMS AND CONDITIONS REPORTPhysical Damage, Lobby

Of the four rooms addressed in this report, the Davenport lobby is the only one which has sustained physical damage. Aesthetically, the impact of the lobby space has been greatly diminished by the painting and tarring-over of the skylights in the ceiling; an unfortunate response to black-out requirements during the Second World War. Without natural light flooding this space, the lively details of the plaster enrichment on beams and friezes are obscured in darkness. The condition of the plasterwork has been further aggravated by inadequate drainage of rain water from the roof which has allowed water to penetrate the skylights. Several areas of plasterwork have been damaged to the extent that some moldings are missing, rusted lath and plaster is exposed and original polychromed and grained finishes have been defaced.

Another condition which has undermined the stability of the plaster is the process of efflorescence and subflorescence, symptoms of which are visible in the granular or crumbling plaster, and flaking of painted

surfaces in certain locations around the mezzanine. In order to arrest this process, water penetration through the skylights must be stopped, and procedures for stabilizing weakened plaster undertaken. Techniques for securing damaged plasterwork with adhesives and grouts will be illustrated later.

Examination of early period photographs reveals the important role of natural light in the lobby space. It was this diffusion of light through the atrium and skylights that gave vitality to the Baroque motifs of the plaster relief.

Any credible restoration program will call for the removal of tar from the skylights in order to retrieve the interplay of light and details and allow the Baroque theme to reassert itself. Other important components of the Baroque theme are the suspended Brass lights, wall candelabra, and color scheme of the walls and furnishings. Over the years as the hotel shrank from its grandeur and fell into economic straits, most original furnishings, and many lighting fixtures, were sold, and original color schemes were abandoned during desperate periods of modernization.

Alterations to Color Schemes, Lobby

The quality of the lobby plaster, evident in the

subtle color treatments and simulation of oak frames, have inspired several narratives to describe the beamwork and friezes as enriched with fine wood carving. The plaster simulated carving has been applied to friezes and soffits, and all exposed sides of the steel beams which span the lobby space.

Additional plasterwork occurs on the friezes and beams of the second floor mezzanine which surrounds the lobby. The lobby takes its stylistic direction from the Spanish Baroque, a thematic program expressed in shallow relief using such devices as foliate motifs, shield emblems and portrait roundels, all highlighted with bronze/gold on a background of subdued greens and reds.

Friezes above the individual bays around the mezzanine feature shields flanked by recessed panels containing griffin figures and foliate scrolls. Centered in these panels is a roundel containing portraits either in profile or frontal. The panels terminate at the corners with rosette devices. Approximately thirteen different portraits and thirteen individual shield designs are recorded on these friezes. While many of the human faces are portrayed as kings and other noblemen, there are others resembling knights, women and commoners.

Review of the literature for the Spanish Baroque period suggests that the use of roundels featuring the

faces of past and present kings was a common practice, and their occurrence in the Davenport lends further credibility to this historical theme.²³

The basic features of medallion portraits were often molded and special features or likenesses modelled in-situ. Beginning in the Renaissance, and throughout the nineteenth century, artists commonly chose Roman emperors, philosophers and literary figures as their subjects, facsimiles of which appear on the lobby friezes. In European examples, few profile portraits have been documented.²⁴ Their scarce occurrence in the historical record, and their inclusion into the friezes of the lobby, suggest that there was a high degree of sophistication and broad-based knowledge of historical plastering in the conception and design of these subjects.

A surface of the beams which received a different plaster design is found on the underside of the shorter beams which span the second floor concourse. These areas compose foliate scrolls and interlaced strapwork with simulated nail heads. Overlying the principal friezes of the lobby beams are narrow paneled friezes of foliate scroll relief.

Other elements of the plaster scheme include Classical moldings such as the egg and dart, and the bead and reel. Located between other more conventional moldings, is a

frieze-like molding which incorporates a series of triglyphs and metopes. In addition, there are several types of scrolled brackets which occur above the capitals of the pier, and on the friezes of the principal beams that span the lobby.

The appearance of wood carving has been achieved using two devices, one being the treatment of panel frames with graining to simulate rough grain or quarter sawn oak. The effect has been successful, particularly since it restates the use of real oak in neighboring door frames and other trims. The second technique is the recessing of the decorative friezes into panels to give greater relief.

The use of graining involved the application of an opaque ground color, followed by a slightly transparent coloring known as a glaze which while still wet, could be manipulated with a brush or other tool to imitate a desired wood. A typical oak ground color for this period was an admixture of ochre, burnt umber, Venetian red and white lead.²⁵

The most critical stage, the mixing and application of the glaze demanded a substance which did not dry too quickly but also held the contours of the combwork without running together. The material which set the action of the glaze, known as a meglip, historically was one of several different concoctions. Today, varnish is usually the

recommended meglip. A mixture of boiled linseed oil, varnish, paint thinner, paint drier and oil color would yield an appropriate glaze to replicate the grained finishes of the lobby plasterwork.²⁶

Graining was accomplished by dragging a special tool or comb across the wet glaze. Beginning in the nineteenth century, graining on a large scale could be done mechanically with the use of transfer paper textured with a variety of wood grains. This work should be readily identified by the repetition of grain designs. Graining on panels in the lobby does not exhibit any repeating in the design and therefore was likely produced with a quartered oak tool with comb or blender.

The panelled nature of these beams is an uncommon treatment for this time period and recalls at least visually, a method of production known as "press molds" which was first discussed by Vasari. The use of the technique of press molds has been identified in the Thuringia-Saxony region of England.²⁷ Molds carved from hardwood were pressed against a soft plaster surface. Because the background of the impressed surface was usually recessed slightly below the principal surface, the decorative panels developed a framed aspect.

No connection of this precedent to the grained frames of the lobby plasterwork is proposed, however, the framed

nature of these examples again confers, perhaps, a high level of craftsmanship and historical perspective for the architect and plaster artisans.

Apart from the design characteristics, the color scheme of the plasterwork is in itself an effective device for dramatizing the interplay of light on advanced and recessed surfaces. The most predominant colors are the patina green background of the panels and the bronze highlighting of the designs. More subtle is the use of pale red in the recessed surfaces of the design field, and projecting elements painted rich browns in order to imitate wood. The areas which have been water stained most often occur in the ceiling of the lobby, particularly around the edges near the concourse where puddling has occurred on the roof directly overhead.

By comparing the surfaces of the plaster on the lobby beams to those which are presumed to be unaffected, it becomes apparent that the damaged areas over the lobby space have received a darker paint to cover water staining. Historic photographs, and the consensus of staff members, suggests that ceiling beams were repainted entirely in white at some time in order to illuminate the darkness cast by the painted-over skylights.

Although it cannot be validated until complete sampling of the beamwork is allowed, the opinion offered

here is that, while the surfaces directly over the lobby spaces may have been painted white shortly after World War II, there are certain locations around the mezzanine that were spared this treatment. Sampling of these areas, discussed in the next chapter, confirmed that these schemes are original. Restoration of touch-ups will entail not only the matching of original color schemes, but also a revival of the grained treatments which are still intact on most of the mezzanine level.

Up to this point, discussion of the hotel's plasterwork has been confined to the physical characteristics of this enrichment; its stylistic qualities and design composition. The painted finishes have been noted for their distinctive qualities, and their effectiveness in communicating a carved wood treatment. It is the application of color which gives voice to the low relief details of the plasterwork. The friezes and beams are not simply picked out by a single hue or highlighted in gold, but have received a subtle layering of colors. The panels with their graining are not obvious deceptions, but are successful in their role as wooden features.

Determining the exact nature of the paint and finishing techniques applied to the plaster relief itself would require extensive analysis beyond the simple paint analysis prescribed in the next chapter. In a 1908 volume,

"The Art of the Plasterer," the use of tempera is hailed as the most successful coloring method for plasterwork of this era, and was the prevalent choice throughout history.²⁸ The mixture of egg yolks and powdered paint was most durable and predictable in its rate of absorption into the plaster. Still, it was always necessary to treat the surface of the plaster with shellac or other solution in order to retard the absorption rate. In this volume, "modern" Plaster of Paris was regarded as a dull material which demanded an equally dull or matte color finish.

Most surfaces around the mezzanine of the lobby plasterwork have a slightly glossy appearance. The beamwork directly above the lobby, however, displays a relatively matte treatment, perhaps owing to unsophisticated repainting campaigns that lacked the use of original colors and glazes. This speculation is prompted by less subtlety in the blending of color on some surfaces, and by stronger green and pale red hues which serve as the background for much of the relief. These surfaces appear darker, and the coloring more subdued than those of the surrounding concourse, indicating that some of the original color has been masked by quick-fix efforts to disguise water stains.

Thorough paint analysis will aid in determining the nature of the latest finishes directly over the lobby. This procedure will also enable the succession of color

applications beneath the surface to emerge. The coloring seen today is likely the product of several repainting and retouching efforts.

Aside from egg and dart and other decorative moldings, few surfaces of the friezes and beams have received physical damage to the extent of complete removal. Most of the damage to these surfaces is cosmetic necessitating the restoration of the colored finishes, but not the physical replacement of details.

Apart from the dominant cast enrichments, there are egg and dart moldings located directly beneath the skylights which have suffered the greatest distress from water damage. Some are missing entirely and will require replication. None of the moldings are running moldings and therefore, cannot be reproduced with the simpler methods of running bench molds, but will require a remolding and recasting process.

The vast lobby ceiling, because of its height and relative inaccessibility, has yet to be fully examined but the possibility of physical damage to these areas exists. Proper restoration of any damaged plaster will require the production of new molds, formed in-situ directly from original intact examples.

The lobby of the hotel presents the biggest task in restoration of the building's interiors, mainly because the

element of water has conspired against many of the decorative surfaces, and because of repainting campaigns which may have made the original finishes irretrievable apart from reproduction. There are several other rooms featuring plaster enrichment that will require restoration programs. However, since efflorescence and physical replacement will not need to be addressed in these rooms, procedures will be confined to the revival of original color schemes.

Marie Antoinette Ballroom

Inspection of other rooms suggested that colors have been altered from their original intent; often departing radically from the subtle schemes which gave texture and animation to the various plaster motifs. The plaster in the Marie Antoinette ballroom now appears in a monochrome scheme with some details picked-out in gold paint, and the walls and ceilings no longer feature the delicate rose, blue and French gray of the original Louis XVI program.

This room, actually two floors in height, incorporates a mezzanine with encircling iron railing. Predominantly Neo-Classical details of the Louis XVI program are expressed with Classical friezes, acanthus brackets and delicate panels more faithful to a Rococo program. Attribution of these features to the period of "Marie

Antoinette" is given credibility since the majority of the detailing in this eclectic room is Neo-Classical. Aside from the requisite motifs of this theme, there are less common and whimsical forms recurrent throughout the frieze. The frieze directly below the mezzanine cornice composes delicate vegetable forms, cherubs and lyres, punctuated occasionally by jester-like portrait roundels.

The misunderstood character of decorative plaster was demonstrated by a 1974 "restoration" campaign which defaced much of the plasterwork, including many of the details just described. Mistaken as "intricately carved molding" the plaster details of the Marie Antoinette Room were pronounced to have been carefully cleaned and hand-painted.²⁹ Once all surfaces had received a monochromatic veil of white paint, frieze, molding, cornice, and panel details were highlighted with gold, therefore reducing the original three-dimensional compositions to a two-dimensional aspect.

The irony of this treatment is that a paint job which is intended to visually awaken the entire plaster scheme, actually muted the finer details with a distracting and overpowering color. The strong gold paint unfairly draws the viewer's eye to seemingly superior motifs, where the original scheme gave equal voice to all details with the interplay of light and shadow. The original palette for

this room, now masked by several phases of repainting, specified period colors of cream, blue and panels of French grey, with occasional accents of soft rose.³⁰ This scheme can be retrieved with the methods prescribed in the later portion of this text dealing with plaster restoration guidelines.

Isabella Dining Room

The Spanish Renaissance plasterwork in the dining room on the first floor has also received a monochromatic treatment accented with gold highlighting. Such treatments reduce the lively details to a two dimensional nature, denying the themes their appropriate historical expression.

Other elements of the Renaissance program have been masked or suppressed by similar periods of repainting which altered the other public spaces in the hotel. Semicircular arches imitating caen stone, and grained frames and turnings on the walls have received the same cream paint which conceals the original beiges, soft yellows and other earth tones of the decorative plaster.³¹ There is some confusion over the original color scheme of this plasterwork since another source describes the frieze and ornamental plaster coloring as rose and gold.³²

Rabbits, hares, foxes, chickens, boys, turkeys and shells introduced onto the friezes and horizontal panels lend a degree of frivolity and innocence to an otherwise

serious Renaissance program. The originality of this plaster ensemble is enhanced by chandeliers issuing from open-mouthed demons and column capitals featuring whimsical human heads.

Hall of Doges

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Perhaps owing to its earlier construction date of 1905, the two-floor Venetian banqueting room features plaster enrichments of a kind not found in the other public rooms. And because of the slightly older age of this section of the hotel, alterations to these plaster finishes are perhaps more extensive than are those changes noted in the other rooms previously discussed. Visibly thick paint accumulations in many of the areas of deep relief support this speculation.

The Hall of Doges displays, not only the suspected use of shallow plaster molds, but also the likely employment of gelatin molds for deeply undercut and dramatically advanced plaster ornaments. In addition to recessed plaster relief there are boldly undercut and protruding forms such as gargoyles and Venetian gothic window tracery.

Semicircular arcades, previously open to hallways surrounding the Hall of Doges, are trimmed with moldings of densely configured fruits and vegetables. Directly above

is a frieze with shield and cartouche emblems connected by swages and garlands. The overlying window balustrades are visually supported by a series of gargoyles which constitute the boldest plaster expression in the hotel. The uppermost molded work consists of Venetian Gothic tracery in the window bays.

A plaster treatment which has not been encountered in any of the other rooms occurs in the suspended plaster ceiling which creates individual vaults for each of the window bays. And, although it departs somewhat from the focus of this thesis, the hand-painting on the plaster ceiling of this room cannot escape mention.

Spandrels between window bays exhibit various female figures accompanying Latin subjects such as "Musica" and "Drama." These subjects are painted onto a field of simulated mosaic work; a trompe l'oeil treatment occasionally found on Italian Renaissance ceilings.³³ Contained by an oval panel in the center of the ceiling is a Renaissance-type scene, probably of allegorical or operatic origin. Other painted features which have been lost beneath repainting, were Art Nouveau-inspired wreaths and running fruit and vegetable motifs incorporated onto spandrel surfaces of the first floor arcade.²⁸

CHAPTER 6

RECOMMENDATIONS AND GUIDELINES

Procedures described here for the repair and restoration of decorative plasterwork at the Davenport Hotel are methods drawn from several preservation disciplines. It will be demonstrated that a program for plaster restoration can be addressed as a composite of individual procedures taken from the areas of mortar analysis and historic paint analysis. Where these interventions usually have a specific application other than to plaster restoration, they have potential for broader application to this and other subjects within the general field of preservation. These recommendations are tailored to the specific needs of plaster at the Davenport Hotel, however, they are offered on the premise that a broader application to other plaster restoration projects is possible.

Repair and Reconsolidation of Plaster

Before there is any attempt to replace missing plaster elements, retrieve lost color schemes or replicate finishes, plaster must first be examined for decay of the

material itself, and steps undertaken to reconsolidate plaster which has been weakened or transformed by water.

Physical damage sustained in decorative plasterwork varies according to internal and external factors, but is usually associated with laths or keying agents that fail because of structural pressures or because of water penetration. Common problems of plaster restoration are the replacement or stabilization of deteriorated wood laths, or laths which are too tightly spaced and leave plaster members without adequate keying action.³⁴ The result is plasterwork that sags or falls away completely.

In the course of this study, there was little cause to implicate structural factors and metal lathing, which is exposed in some areas of the lobby, appears unharmed except for slight rust formation. However, water damage has undermined the stability of some plasterwork in the lobby causing slight deformation of decorative surfaces and crumbling plaster and finishes. The extent of this type of damage appears to be confined to the beams at the east end of the mezzanine. Still, there is the possibility of similar damage in areas directly above the lobby which because of their difficult accessibility, have not been fully examined.

Relative to other forms of plaster deterioration, this type of damage is minor and does little too detract from

visual quality. But until repairs are made to the skylights and roof above the lobby, water will continue to be absorbed by the plaster beams and friezes causing defacement of finishes and inevitable destruction of the material itself. Some of the plaster relief appears slightly buckled and deformed due to the internal process of subflorescence which causes dissolution of the material and the formation of salt crystals behind the substrate. In addition, salts carried in solution by the rainwater have redeposited on the surfaces causing a granular texture which would prevent proper adhesion of new paint.

The common practice for fixing decorative plasterwork in the nineteenth century was to apply a scratch or base coat of plaster, often reinforced with horse hair or other fibrous material. This surface was deliberately roughened so that the next plaster layer could better adhere or key-in. The base coat was then forced up through the spaces and out over the lath to create anchoring keys.³⁵ This surface was followed by a second, smoother surface known as the brown coat. Finish coats and decorative elements and panels were applied directly to the wet surface of the base coat, with no direct bonding or adhesion between the decorative surface and lath itself. Decorative plastering during the era of the Davenport commonly employed the superior diamond mesh metal lathing with plaster panels

further secured by screws. Although there was, aside from screws, little mechanical bond in between the brown coat and the finished surface of the decorative panels a chemical bond was provided as the plaster dried and chemical elements became enjoined.

For restoration projects involving decorative plasterwork of the nineteenth century or earlier, wood lathing presents greater complications because the keys themselves are often so severely deteriorated as to produce large voids behind the decorative surface. It is possible that physical damage to plasterwork in the Hotel is minimal because of the stability of the metal lathing. In water damaged areas of the lobby ceiling, voids in the plaster are minute and perhaps nonexistent in some locations.

The proposed method of reconsolidation is taken from procedures normally used for the reattachment of loose or sagging plaster or other decorative surfaces. The principal involved is the action of forcing a consolidating liquid through small holes in order to fill voids, or enhance the bonding capability of plaster components which has been diminished by water damage. Desirable characteristics for plaster consolidants or injection grouts are: the ability of the material to penetrate and disperse well, a quick setting time, little shrinkage, good adhesion with some tackiness after injection for

reattachment, an elasticity similar to the plaster itself and minimal soluble salts.³⁶ Time and space does not allow this study to explore the range of commercial consolidants used for this step in plaster restoration. The intent was to provide a viable example, with the premise that the choice of consolidant will be made from a thorough survey of a available products.

There are many commercial resins which provide adequate consolidating effects. Acrylic resins such as Rhomplex LC-67 and Rhomplex LC-76 for example, are valued for their low degree of shrinkage, and for their low viscosity which affords easy injection.³⁷ An epoxy adhesive such as Coneresive 1380, though normally employed for the reattachment of loose or sagging plaster, might also be appropriate for reconsolidation since it has an extremely low viscosity and would easily disperse to porous areas of water-damaged plaster.³⁸ The adhesive has been successfully used to create a strong mechanical bond between plaster and lath, and to reconsolidate weakened keys.

The finish coats, running molding and most decorative plasters used in the nineteenth century and throughout the early part of this century were gypsum, but lime based plasters were and still are the common wall and ceiling finishing material.³⁹ The finishing plaster and decorative panels in the Davenport are therefore most likely gypsum,

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however because a consolidant must be chemically compatible with the historic material, a consolidant should not be used until exact determination of the plaster composition is possible. The La Farge Binder which follows would for example, be compatible with the calcium carbonate make-up of the lime plaster, but not with the calcium sulfate of a gypsum plaster. When damage is shallow and confined to the gypsum finish coat, such as the case of plaster in the Hotel lobby, these surfaces respond well to synthetic epoxies and resins.

Organic compounds and synthetics were used successfully to repair lime plaster in the decorative ceiling at in the First Baptist Church, Portland. However, suspension materials similar to the historic components in the plaster itself are also suitable. Based on historic mortars, these traditional mixtures contain such components as hydraulic and hydrated lime. The following binder, recommended to be prepared in two liter batches, is derived from traditional mortar formulas and has a favorably low salt content. This binder would be appropriate for the Hotel lobby or any other project only if disengagement of the primary or scratch coat from the lath is severe, and if this coat behind the decorative surface is found to be lime-based.

La Farge Binder- Parts by volume:

Hydraulic Lime

1

Water	3
Primal AC 33	10% of Hydraulic Lime
Sodium Gluconate (in 10% solution)	1% of Hydraulic Lime

When voids are sufficiently large, a consolidant will disperse easily. Since large voids are not suspected for this project, the injected binder must be highly fluid to enable the greatest penetration to any of the substrate which has lost cohesion due to water damage. Normally, before a binder is injected, there is the need to clean the substrate of any dirt or debris by pre-treating with a solution of alcohol (25%) in water.⁴⁰ The solution is injected with a bulb-type kitchen syringe, through the same 3 to 5mm holes that have been drilled for the final injection of the consolidant. Pre-wetting is beneficial because the contours of the voids will become more apparent as the solution is absorbed, and because clean surfaces prevent dirt from obstructing the bonding process between consolidant and plaster matrix.

If the pre-wetting solution is injected too vigorously there is always the unwanted prospect of dripping water which can stain and dissolve delicate finishes. This procedure is usually recommended only if original surfaces are severely damaged and repainting is already anticipated. Repairs to unstable plaster in the lobby can be accomplished without pre-wetting; the step is, however, often a necessary stage in many plaster restoration

projects where decaying lath has left considerable voids in the substrate.

Application of the binder is made by filling the injection gun or syringe and gently depressing until material is deposited, or until sufficient pressure indicates the substrate can receive no more of the material. It is generally recommended that holes for injecting be 3 to 5 mm in diameter. The size can be gauged according to the visibility, scale of plaster detail and stability of material. If the surface is especially loose or sagging, a padded framework should be gradually pressed against the repaired area to assure proper reattachment.⁴¹ Again, since damaged plaster in the Hotel lobby has simply eroded without disengaging from the lath, reconsolidation will probably not require the full extent of reattachment described here.

Plaster Analysis

Instances where plaster members or portions of decoration are missing will require some form of replication, either with ornaments cast of modern materials, or with decorations made from a material which approximates the original. If the project agenda has committed to reproducing the original plaster formula, steps for plaster analysis must first be undertaken.

However, plaster analysis is also critical for selecting an appropriate consolidant. Commercial strategies for producing replacement ornaments rarely attempt the purist approach of using original recipes. Because the highly durable, glass fiber reinforced gypsum plaster has become the preferred choice of recasting material, many plaster companies do not believe adherence to original formulas is necessary.⁴²

Historically, mortars and plasters feature three principal components in a myriad of proportions. They are: (1) the binder (basically calcium sulfate or calcium carbonate), soluble in acid: (2) the fines (finely textured impurities such as clay): (3) the sand or aggregate. The plaster test offered here provides only approximate information, and it should be cautioned that certain properties of the original recipe do not become evident in the procedure. For instance, the plaster/water ratio, mixing method, rate of drying and cleanliness of the aggregates are factors which cannot be discerned. Most critically, this test does not determine the chemical composition of the binder to be either gypsum or lime. The following test does, however, provide proportional information which is essential in replicating an original plaster recipe.

Plaster in the Davenport is suspected to be gypsum but

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available?

owner covenants against sampling prevented this exact determination. Once permission is granted this information can be obtained through professional assistance with chemical and microscopic analysis.

The simplified method which follows is a standard procedure for conducting mortar analysis for the replication of historic mortars and renders.⁴³

Simple Mortar or Plaster Analysis:

Equipment/Chemicals:

Oven, balance, mortar and pestle, beakers, funnel, filter paper, glass rods, heat lamp, sieve set, 14% solution of hydrochloric acid, deionized water.

Procedure:

A. Collection/ Examination/ Dissolution of Binder

1. Collect a sample and record the following characteristics: color, texture, inclusions, hardness.
2. Powder half of the sample (20-25 grams) with a mortar and pestle; leave the other half for further analysis.
3. Dry the powdered sample in the oven at 110 degree for 24 hours and then weigh it (W1) with a balance. Record the weight.
4. Place the sample in a 600 ml beaker and moisten it with water.
5. Immerse the moistened sample in a 14% solution of hydrochloric acid in order to dissolve the binder. Observe the reaction and record observations.

B. Separation/ Filtration/ Sieving

1. Label the filter paper to be used, weigh it (W2), and record the weight on the data sheet.
2. Fold the paper into quarter and place it in a funnel. Position the funnel so that it will drain into a large flask.
3. Add a few drops of hydrochloric acid to the sample to verify complete acid digestion of the binder.
4. Slowly add water to the remaining sample material.
5. Swirl with a glass rod to suspend the fines.
6. Slowly pour the liquid with suspended material through the filter, being careful to keep solid particles (sand) at the bottom of the beaker.
7. Repeat process (steps 4-6) until the water added to the beaker remains clear.
8. Dry the fines collected on the filter paper with a heat lamp.
9. Wash the sand with water several times and leave it to dry for 24 hours.
10. Weigh the filter paper with the dry fines (W3). Subtract the weight of the paper (W2) to determine the weight of the fines ($W3 - W2$). Record both values on the data sheet.
11. Weigh the dry sand (W4) and record the weight on the data sheet.
12. Express the amount of sand as a w/w percentage of the whole sample. Express the amount of fines in the same manner. The amount of dissolved binder is calculated by summing up the percentage of sand and fines and subtracting from 100%.

C. Characterization of Sand

1. Examine the sand with a binocular microscope. Record characteristics (color, particle shape and size, etc.).

2. Sieve the sand in a standard sieve set to determine the particle size distribution. Express the amount of each particle size as a percentage of the whole.

If the restoration agenda specifies the replication or patching of plasterwork using the original substance, this information would be sufficient to mix a replacement plaster which will have a texture and plasticity that is compatible with the original. Historically, when mixing and casting with lime plaster it was important to consider the coefficient of expansion in order that newly cast moldings or decoration would maintain the scale of adjacent enrichments and abut cleanly with original work. Gypsum plaster and the newer glass reinforced plasters expand very little as they dry and therefore do not demand the gauging or mixing of trial batches necessary with the older lime plasters.

Because decorative plasterwork of the Davenport era is commonly gypsum plaster, the use of glass-reinforced gypsum plaster would be compatible with the original material. With the widespread use of glass reinforced materials, it is unlikely that original plaster recipes would be recreated for repairs or new castings. However, usually the content of a twentieth century plaster is not unique and can be easily duplicated. Still, plaster analysis and aggregate testing may be valid only for purposes of research and documentation.

Modeling and Recasting

Of all the aspects of decorative plaster restoration, the modeling and recasting process is the one which has received abundant attention in the literature. This is probably because modeling and casting for architectural plasterwork is closely allied with methods used in the ceramic arts. For these reasons this section will not repeat the lengthy procedures which can easily be obtained from a number of written sources or from competent professionals who provide these services. The approach here is to inform of the basic methodology involved, with the understanding that a plaster restoration firm will normally be engaged to complete this phase of restoration.

It has been established that the only room in The Davenport that exhibits damage in the form of eroded surfaces and complete removal is the lobby. It is true that the damage is minimal with only an occasional Classical molding absent.

Moldings which are intact will serve as the model from which a new mold will be made for the replication of pieces. The basic procedure will demand that original members be repaired and stripped of original finishes.⁴⁴ This is necessary to maintain integrity of scale and sharpness of detail during the recasting stage. Like the

Davenport examples, much historic plaster has endured remodeling campaigns which have distorted scale and softened edges with thick accretions of paint. If these layers are not removed, the newly created mold will emulate the non-historic contours of repainted surfaces, and the application of color will only further these distortions.

In order to make a new mold from an in-situ model, some form of cradling will be constructed around the framework of the mold. Before plaster is poured into the mold the stripped and clean subject should be treated with a barrier coat or mold release to seal the pores of the plaster and prevent adhesion of the mold surface. A liquid urethane or rubber mixture is then painted onto the prepared surface. Additional rubber is poured around the subject to create a substantial mold.⁴⁵

Analysis of Paints and Finishes

Researching Photographs and Documents

Unless it is possible to find irrefutable documentation that existing plaster surfaces have retained their original color schemes and finishes, some degree of paint analysis should be undertaken in order to lend credibility to any restoration project. In recent decades, trends that favored monochromatic interior decorating schemes often extended to historic interiors, and original

decorative plaster finishes were often a casualty of these fads. If plaster was not repainted in a single color, it was sometimes victimized by a non-historic palette of colors popular in the late 1960s and throughout the 1970s.

In the Davenport Hotel, thick accretions of paint on walls and plaster surfaces are testament to periods of repainting and remodeling. Here, even a first glance leaves suspicion that plaster in these rooms no longer retains original finishes. By examining available period photographs it was possible to discern that original schemes were sophisticated and created greater depth and awareness of detail. In fact, in certain black and white photographs individual subjects and motifs are more pronounced than they are in-situ with their present, two-color treatments.

Examination of period photographs can validate concerns that original colors have been altered, and can also facilitate in-situ inspection of underlying original finishes. Even in a black and white mode, for example, reds and red-based colors, browns and oranges appear darker in many historic photographs as compared to the same photographs taken today with modern films.⁴⁶ The benefit of this approach is that it eliminates unnecessary, redundant or random sampling which can mar plaster relief. Once commitment is made to retrieve original color schemes, it is

necessary to probe these surfaces themselves with a technique for historic paint analysis. As with any preservation sampling procedure, the objective is to sample a surface as minimally as possible to avoid damage or defacement of the substrate.

Because the historical prominence of a building will vary, many projects will not have the volume of historical data that facilitated this research. Analysis of plaster surfaces at the Davenport was further aided by articles and historic pamphlets which described color treatments for various rooms. Both historical documents and photographs superceded visual estimates which are unreliable, and enabled minimal sampling of many surfaces.

Although the Davenport's lobby received the highest acclaim of all rooms described in pamphlets and articles, there was less discussion of the coloring of plasterwork than there was of other features. A promotional booklet composed by Louis M. Davenport gives brief mention to color treatments of the beams and friezes. Incorrectly described as "chaste carvings on beams and pilasters," the plaster decoration is noted for incorporating "subdued old reds, grayish blues and dull gold" onto the woodwork.⁴⁷ Touch-ups and repainting notwithstanding, the colors described in this narrative are close to those that appear today on the ceilings around the mezzanine.

The Isabella Dining Room is similarly described, though the colors of individual members in the ceiling beams and Arabesques are not isolated. The scheme is announced as predominantly old ivory, with soft colors introduced into the running plaster designs- the shading a blend from French gray to pale yellow.⁴⁸ An article in a periodical lending further support for the suspected use of multiple colors on these panels states that the center ceiling is painted old ivory. The beams are described as polychromed.⁴⁹

Both of these same sources record original treatments for the Marie Antoinette ballroom. Rococo-style plaster panels of the first floor are in French gray accented with light ivory moldings. The ceiling, pilasters and cornices are also described as light ivory, the same color extending to the fascia of the balcony and the capitals of the pilasters. The latter areas featured details picked-out in soft blue and rose. This delicate color scheme was later canceled by a harsh monochromism with unsophisticated gold highlighting.

Colors used in the plasterwork of The Hall of Doges are not specified in any of these publications. Black and white photographs by early photographer Charles Libby were most helpful in revealing gradations of color, and for indicating surfaces which originally lacked the bold

highlighting visible today.

In-Situ Cratering for Color Analysis

Examined in photographs, individual subjects in a plaster composition may appear in varying intensities of black and white, suggesting a polychromatic scheme. Aided by this information, a sampling field may be chosen which represents all subjects and motifs occurring throughout the rest of the room. Ideally, the sample is confined to one discreet panel. In effect, sampling need not be undertaken on redundant panels or recurring themes. If an element in a plaster scene is indicated by the photograph to feature a particular color, that motif or subject may be sampled individually.

The first, and simplest, method of in-situ sampling analysis is scraping. Underlying paint layers are exposed, one at a time, by gently scraping with an ex-acto-type knife or surgeon's scalpel. Mild solvents or paint removers are sometimes necessary to reach the original color surface. Such in-situ analysis at the Davenport may be accompanied on-site by several of the Libby photographs revealing plaster decoration. Where color changes on discreet subjects are indicated by different intensities of black and white, layers may be probed with the scraping method.

Cratering is an in-situ method which effectively displays the successive layering of colors over original finishes. After an area or motif is selected for sampling, a crater-like cavity is made in the plaster surface. Ideally, the crater penetrates the substrate, in this case plaster, and is then alternately sanded with fine sand paper and polished with mineral oil.⁵⁰ From this process a color profile of concentric paint layers emerges which, in the case of the Davenport, could be useful if employed at the juncture of two different motifs or subjects where colors are suspected to change.

Imbedding Extracted Samples

Because of the crumbly nature of plaster, scraping and cratering may not be totally successful in allowing an original color scheme to emerge. By removing a small section of plaster approximately three millimeters in length, it is possible to gain more complete information and match original colors with a standardized color chart.⁵¹ If possible, the sample should include part of the substrate, or plaster.

Although there are sophisticated procedures for imbedding a sample, simpler methods exist which can be accomplished quickly with a minimum of materials and expense. The following, taken from, "A Simplified Method

for Imbedding and Polishing a Cross Section of Plaster or Paint," was used for imbedding samples taken from the lobby beamwork:⁵²

Materials- polyester resin, catalyst for resin, modeling clay, Canada balsam.

Equipment- mixing vessels for resin, mixing rods, small plastic molds such as pipe caps (available in hardware stores), files, varying grades of fine sand paper, vice, microscope slide covers.

Procedure-

1. Imbedding the sample

- a. Put a layer of modeling clay in the bottom of the plastic mold to serve as a support for the samples.
- b. Stand the samples on edge in the modeling clay being sure to leave a sufficient amount of space between samples. Also be sure that a portion of the sample protrudes above the lip of the plastic mold.
- c. Using adhesive labels on the plastic mold, indicate the date, number and provenance of each sample.
- d. Mix the polyester resin and catalyst in proper proportions.
- e. Pour the well-mixed resin into the groove in the plastic mold so as to completely fill it (thus surrounding the samples with resin.) Be sure that the resin is level with the top edge of the groove.
- f. Allow the resin to harden overnight.

2. Polishing

- a. Using the file, flatten the surface of the sample until it is roughly level with the top edge of the plastic mold.

- b. Starting with the coarsest sand paper, polish the sample surface with increasingly fine grades of sand paper until all scratches and surface imperfections have disappeared. Again, it is important to exert a uniform pressure on the sample block in order to avoid deformation of the sample surface. Similarly, a finer paper should not be used until all the scratches of the previous one have disappeared.

3. Mounting

- a. When polishing operation is complete, glue an ordinary glass cover slide to the surface of each cross section using a thin layer of Canada balsam. Gently press on the cover slide with a piece of soft cloth to eliminate any air bubbles and excess balsam. Allow to harden.
- b. When balsam has dried, the cross sections are ready for observation with a magnifier.
- c. Upon completion of the investigation, the samples can be easily stored. A simple archival system of coding is recommended.

This procedure was performed on several samples taken from the Northeast corner of the lobby mezzanine. It was concluded that the secondary colors of red, blue/green and bronze were layered over a ground color. An article written in 1914 notes that this plaster relief was first treated with gold leaf.⁵³ The succeeding colors were obviously blended, most likely by rubbing with a cloth to remove most of the stain from the higher points. It appears that a thinner wash of bronze may have been applied as a final

accent to some of the relief.

Although its exact nature could not be determined, a barrier treatment must have been applied to the plaster prior to the application of the finishes. Because plaster is porous and readily absorbs color, on an untreated surface it would be possible to detect some penetration of the pigment into the substrate. This condition was not observed in any of the beamwork samples.

Overall these samples displayed only a single paint scheme with little evidence of alteration. The panel colors of red, blue/green, brown and bronze visible in this corner of the mezzanine are thought to constitute the original palette for the lobby plasterwork. Any restoration to plasterwork on other surfaces of the beams and friezes may be accountable to this scheme. Although not sampled in the manner described, the grained frames which surround this painted relief are also thought to be intact in this location. Water damaged graining in other areas may be revived with the historic method of applying glazes discussed earlier.

Historic paint analysis for decorative plasterwork may be defined not only as the probing of discreet surfaces bound by framing elements and structural members, but also as the analysis of individual characters within a composition. Because the author of an original paint

schedule selected colors appropriate for the scale, function and depth of relief of each plaster character, any deviation from this schedule will naturally cancel the original intentions of the artists and deny motifs their proper optical expression. Most critically, non-historic colors can distort the scale of some elements and obscure finer details. The current paint schemes for decorative plaster in the four rooms of the Davenport demonstrate this principle.

Anticipating a return to original schemes, a proposed sampling field was selected in each of two rooms. The eventual recording of this information suggested a specialized form which documents not only original color schedules, but cites present colors as well. The following tables are examples of the type of information form which can be used for paint analysis documentation once permission is granted for comprehensive in-situ scraping and color matching throughout the Hotel. The intention of the decorative plaster paint analysis sampling form was to lend a systematic approach while providing documentation of alterations to original paint schemes.

TABLE 1. Decorative Plaster Color Analysis Form

Building: Davenport Hotel, Spokane, WA

Room: Lobby

Fig. 5

Location: NE Mezzanine

Description of Sample Section: Frieze Panel- Inclusive of
central shield, griffins,
foliates, portrait roundel,
corner rosette, recessed
background and panel frames.

Key for Color Contrast Indicated by Black and White Photo:

Lightest Shade A

Contrasting Shade #1 B

Contrasting Shade #2 C

SAMPLED ELEMENT	COLOR		
	B & W Period Photo	Present	Original Munsell Color ID
Background			
Panel Frames			
Shield			
Griffins			
Foliates			
Roundel			
Rosette			

TABLE 2. Decorative Plaster Color Analysis Form

Building: Davenport Hotel, Spokane, WA.

Room: Hall of Doges

Fig. 13

Location: SE Bay

Description of Sample Section: Frieze Panel- Inclusive
of background, shield, swag,
garlands, moldings, bracket,
gargoyles and cartouche.

Key for Color Contrast Indicated by Black and White Photo:

Lightest Shade A

Contrasting Shade #1 B

Contrasting Shade #2 C

SAMPLED ELEMENT	COLOR		
	B & W Period Photo	Present	Original Munsell Color ID
Background			
Shield (crosses)			
(chevrons)			
Bracket			
Swag			
Garland			
Upper Molding			
Lower Molding			
Gargoyle			
Cartouche (oval)			

CHAPTER 7

RELATED DECORATIVE PLASTER RESTORATION IN THE NORTHWEST

Throughout the Northwest and the rest of the United States there have been numerous projects involving the restoration of decorative plaster. The most striking and most easily recalled examples are the theatres and movie palaces whose interiors seem to explode with color and plaster relief. Most cases in plaster restoration do not always demand all of the technological and cosmetic treatments reviewed in this study. For example, the greater majority of projects are confined to one aspect of plaster restoration such as the reattachment of loose or sagging plaster ceilings or the reproduction of missing plaster elements.

In Olympia, Washington, the Temple of Justice at the State Capital provides the opportunity to study modern refinements in the recreation of decorative plaster. The main chamber of this building features a coffered ceiling enriched with dense foliate relief and simulated walnut finishes. Behind the ceiling in this room, it was discovered that asbestos powder had been absorbed onto the back of decorative plaster surfaces. Since there was also speculation that the outer decorative surfaces had

accumulated this fine powder the decision was made that the entire decorative plaster ceiling be removed.⁵⁴

The state has since committed to reproducing the decorative plaster ceiling in its entirety. The firm chosen to create the replacement ceiling will employ glass reinforced gypsum plaster to recast all of the members. Glass reinforced gypsum plaster is stronger than historic materials and enables the creation of decorative panels that are lighter and devoid of the complicated backing and reinforcements that were necessary in historic castings.

Because of glass reinforced gypsum plaster and improved methods of recasting it will also be possible to bypass another historic component of plaster production. The Cyma Recta moldings and other conventional running moldings that frame the coffers were originally produced in-situ with the movement of templates over a ground of wet plaster. For the Temple of Justice it will be possible to recast in one large piece not only the highly ornamental friezes, but also the running moldings and coffers.⁵⁵

In cases such as this there is an economic preference for larger modular pieces that eliminate on-site hand work. Adherence to historic methods in the recasting process will necessarily be abandoned due to the high cost and time of production, however, such liberties would not be acceptable for all cases of decorative plaster recasting.

Departure from historic methods in the physical

replacement of plasterwork does not significantly affect its appearance, whereas deviation from original color schemes can have a negative impact. The Elks Building (Princeton Building), and the Paramount Theatre, both in Portland, Oregon, demonstrate the important role of original paint schemes on decorative plaster surfaces. Contrasting philosophies regarding the use of color on plasterwork emerged in the restoration of plasterwork in each of these buildings, and revealed the critical relationship between color and plaster relief.

The interiors of the Elks Building exhibit a profusion of pre-cast plaster enrichments. Consistent with the facade's reference to the Farnese Palace in Rome, the stylistic programs of the plasterwork are predominantly Italian Renaissance. Before transition to an office complex, some of the building's interiors had undergone remodeling campaigns that altered original color schemes. However, many of the original painted plaster finishes had survived.⁵⁶ During renovation, original palettes that gave depth and richness to the various Renaissance motifs were retained, requiring only occasional cleaning and repair.

Rooms in the Elks Building which feature Corinthian columns and the requisite dentiles, moldings, friezes and other Classical components received a monochromatic treatment of white paint. The single color dramatizes the interplay of light with plaster relief creating rich

textures and heightened visual awareness. These three dimensional plaster motifs are visually assertive because they are defined by light and shadow, and not by the selective highlighting which reduces dimensionality. Plasterwork in these rooms may be compared with plaster relief in the Davenport that has been carelessly brushed with gold paint.

One ballroom in the Elks Building features a decorative plaster ceiling composed of ornate interlocking coffers. Though not monochromatic in the sense of the rooms just described, the colors here are subtle variations of gold and bronze. Careful blending of these plaster surfaces provided great depth and texture. Most importantly, the treatment has again been successful in dramatizing the overall composition without drawing unfair attention to individual plaster devices.

Unlike plasterwork at the Elks Building, the restoration agenda for plasterwork in the Paramount Theatre imposed a non-historic paint schedule based on contemporary tastes. Because the original palette of the theatre included dull grey-browns, greens and reds in tempera based paints, surfaces were incorrectly judged to be dirty, therefore justifying a brighter treatment.⁵⁷ The most radical departure occurred in the auditorium where a veil of flat gray paint was applied to historic finishes.

The disposition of the colors is also unfaithful to the

original scheme. Historically, the tendency was to blur the juncture between background and relief with careful blending. At the Paramount Theatre lobby where moldings, brackets and rosettes are emphasized by strong colors which contrast sharply with the ground color there has been no attempt at blending. The harsh collision of these colors has reduced the overall appearance of the plasterwork to a two dimensional nature, much in the same way highlighting canceled much of the plaster detailing in the Davenport.

The First Baptist Church in Portland, Oregon, is a case study that profiles another task of plaster restoration by demonstrating the act of reconsolidation. As structural pressures caused the decorative plaster ceiling to contort and separate from the keys, the hand painted scenes were in danger of falling away entirely. The chosen remedy was to recreate a mechanical bond by injecting an epoxy consolidant into damaged keys and behind the decorative surfaces.⁵⁸ Once the keying was reestablished, restoration of the ceiling proceeded with the repainting of slightly deteriorated painted surfaces. While epoxies are commonly used for plaster reconsolidation it should be noted that plaster in the First Baptist Church is lime reinforced with horse hair and would, therefore, be compatible with the La Farge binder mentioned earlier.

Review of other plaster restoration projects again confirms the success of contemporary solutions in the more

technological aspects of plaster restoration. These interventions often prove to be more economical, permit faster restoration and extend the life of the plaster mediums. However, where there is only the occasional need for a replacement panel, such shortcuts as using modular plasterwork are not recommended in a context with original work.

The position taken is that most technological refinements are not notably different from historic practices and are of little threat to the integrity of decorative plasterwork. But because adherence to original paint schedules insures visual success and integrity, this aspect of plaster restoration should not be compromised.

CHAPTER 8

EVALUATION OF PROCEDURES AND CONCLUSIONS

Depending on the economic, aesthetic or philosophical vantage, some of the technological interventions reviewed in this study may be deemed inappropriate for the Davenport Hotel or any given case of plaster restoration. Having presented the current options for decorative plaster restoration these techniques may now be evaluated for their economic feasibility, aesthetic contribution and philosophical value. The intent of the author is not to project a single course of action based on one of these three concerns, but rather to consider how each rationale can affect decisions about plaster restoration at the Davenport.

The first option for repairing plasterwork which has deteriorated from the dissolution of chemical components is to fill voids and replace cohesion with an injection of a consolidant. As a conservation effort, this approach is costly, but obviously retains the majority of historic fabric. Certain professionals however, report little success in the reconsolidation of plasterwork that has deteriorated to this extent. They claim that the injections do not insure longevity for these decorative surfaces and

insist that the consolidating process does little to fortify crumbling or granular surfaces weakened by efflorescence.⁵⁹ Generally, a consolidant is most appropriate injected behind plasterwork where the decorative members have lost the mechanical bond with the lath- as in the case of the First Baptist Church, Portland, or if the decorative surface is irreplaceable. But, since most damaged ornament in the Davenport can be easily re-casted ~~extensive~~ reconsolidation is not suggested.

Because several areas in the Hotel lobby have suffered, not mechanical separation from the lath, but superficial ^{sub-} degradation from efflorescence, injection of a consolidant may have limited application. Still, the immediate recommendation is not for removal and recasting of these areas, but rather for a trial injection of a consolidant into water damaged plasterwork. The success of this intervention can then be evaluated and a decision made whether or not to continue with reconsolidating efforts, or to undertake recasting.

The placement of re-casted ~~plaster~~ members in a context with original work could evoke concerns for historic integrity of materials and honest representation of restoration work. Once affixed and treated with appropriate colors and finishes, new plasterwork is not ^{easily apparent} obvious. In matters of preservation ethics, there has always been debate over the use of reproductions which obscure the interface

between old and new technologies and which leave no visual record to educate the viewer's eye about the physical evolution of a building. However, aside from modular work, new workmanship and materials are almost identical to old practices. Concerns for visual integrity are perhaps better left to additions and alterations rather than restorations. Accurate documentation of restoration locations, replacements and materials should of course be maintained.

Economic concerns are minimal in the issue of replicating original painted plaster finishes, although determination of the original palette and proper application of these colors does involve a lengthy agenda of paint analysis, color matching and careful repainting. One option in the retrieval of these color schemes is to uncover the original surfaces by stripping with a solvent. This approach may pose a risk since original surfaces could be harmed if the solvent is applied too liberally or acts too quickly once it reaches the original finish.

The other option is to paint directly over altered or defaced finishes. There is an inherent compromise in this approach if repainted surfaces already have thick accretions and paint drips which have reduced the sharpness and depth of relief. Once the new finishes are in place, the underlying details of this medium may not appear as crisp in detail as did the plaster relief when it received its initial painting.

The decision to strip plasterwork in order to uncover original color schemes or simply repaint over altered finishes will have an economic component. The economic feasibility of using a solvent to reach original painted surfaces will depend on the nature of non-original overlying paints and the ease of their removal. However, the expense of recreating original painted finishes should also be anticipated.

In certain projects, a philosophical commitment to retrieve as much original material as possible may or may not be compromised by the economic constraints of either approach. For the Isabella Dining Room, Marie Antoinette Ballroom and Hall of Doges, the most desirable approach would be the removal of non-historic paints and finishes. These concerns will of course be addressed only if there is a commitment to return plasterwork to its original appearance. The decision will also weigh the success of solvents in removing later paint schemes against the cost of repainting in accordance to the original paint schedule.

Of the technological remedies considered in this report, it can be said that current methods of casting and recasting decorative plaster ornaments are compatible with the evolution of the craft throughout history. General methodologies for plaster casting have persisted but have been enhanced by stronger materials and improved techniques which have permitted faster and simpler execution.

In late Renaissance England, the revolutionary stucco duro eclipsed the use of traditional lime and sand plasters since the addition of a glutinous substance yielded a stronger more durable plaster and enabled the production of deeply undercut ornaments.⁶⁰ Similarly, fibrous plaster emerged in the Victorian era as a means to economize production and expand the repertoire of historic plaster designs. Now, glass reinforced gypsum plaster is the latest in a long chronicle of decorative plaster refinements that attempted to upgrade the plastering arts with fortified materials and reduced production costs.

The merits of modern recasting methods for the restoration of decorative plaster are largely economic. It has been suggested that these methodologies have remained fairly consistent throughout history, the only true revolutions having occurred in the introduction of new and more durable materials. From a historic viewpoint, it was inevitable that modern techniques would override previous methods in the physical production of plasterwork. In this study, such liberties have also been accepted because modern materials and refinements in the recasting process are not radically different from historic modes and because they do not greatly affect the optical qualities of decorative plasterwork. The position has been maintained, however, that allegiance to original color schemes and historic finishes cannot waver if the historic role of plasterwork as

pure ornament is to be realized in the Davenport Hotel, or in any other case of decorative plaster restoration.



Fig. 1 Main Portion of the Davenport Hotel
Built in 1913. (Source: Cheney Cowles Museum, Spokane.)

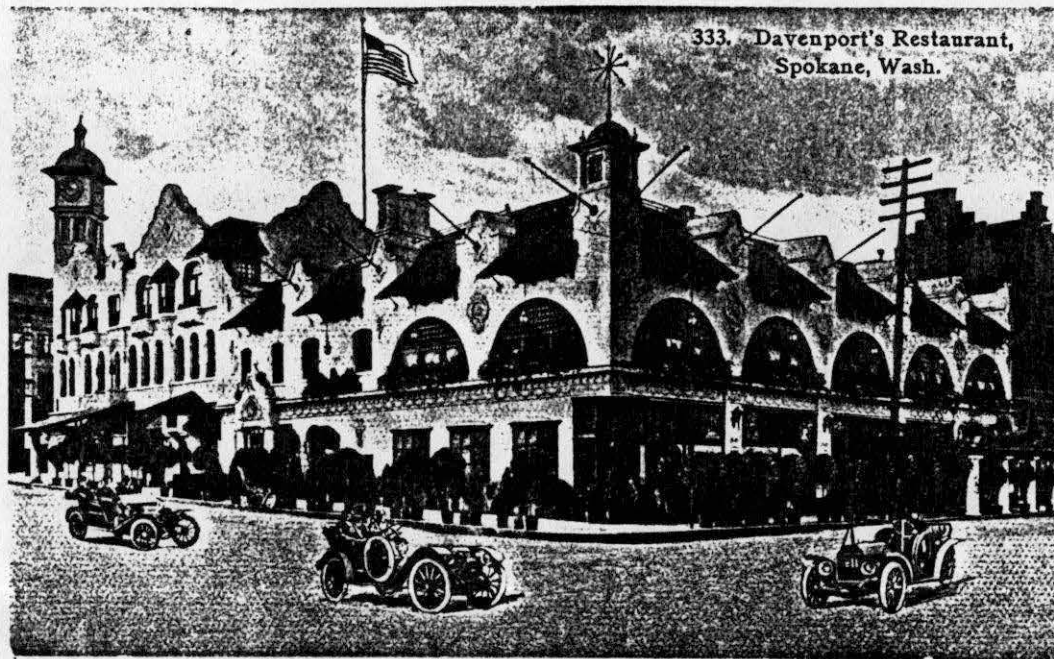


Fig. 2 Oldest Portion of the Davenport Hotel. This section contains the Hall of Doges. (Source: Spokane Post Card Company.)

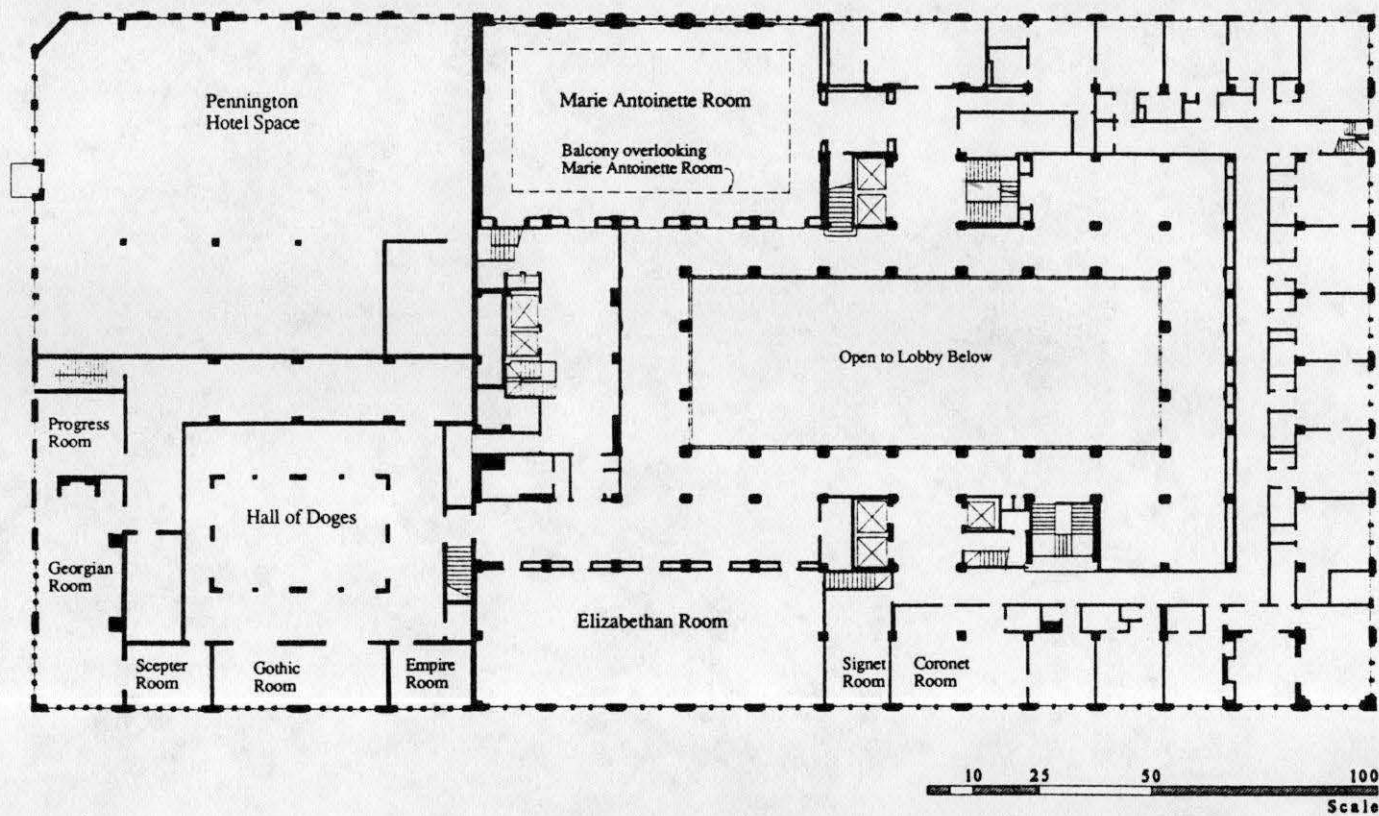


Fig. 3 Davenport Hotel, Second Floor Plan.

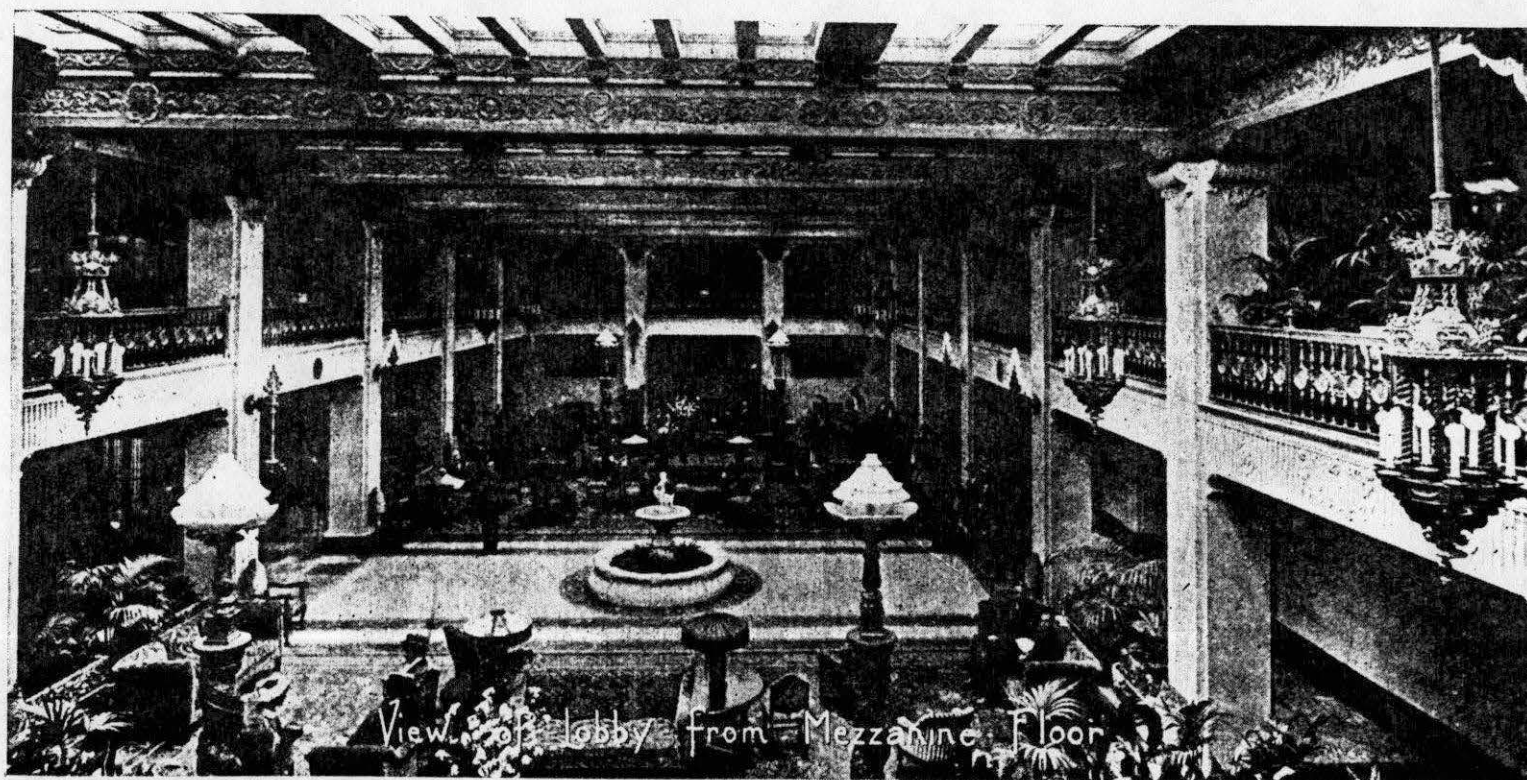


Fig. 4 Davenport Hotel, Lobby, Showing Beamwork Illuminated by Skylights, 1914. (Source: The Architect and Engineer.)



Fig. 5 Davenport Hotel, Lobby Mezzanine Friezes, Present. (Source: author's photograph.)

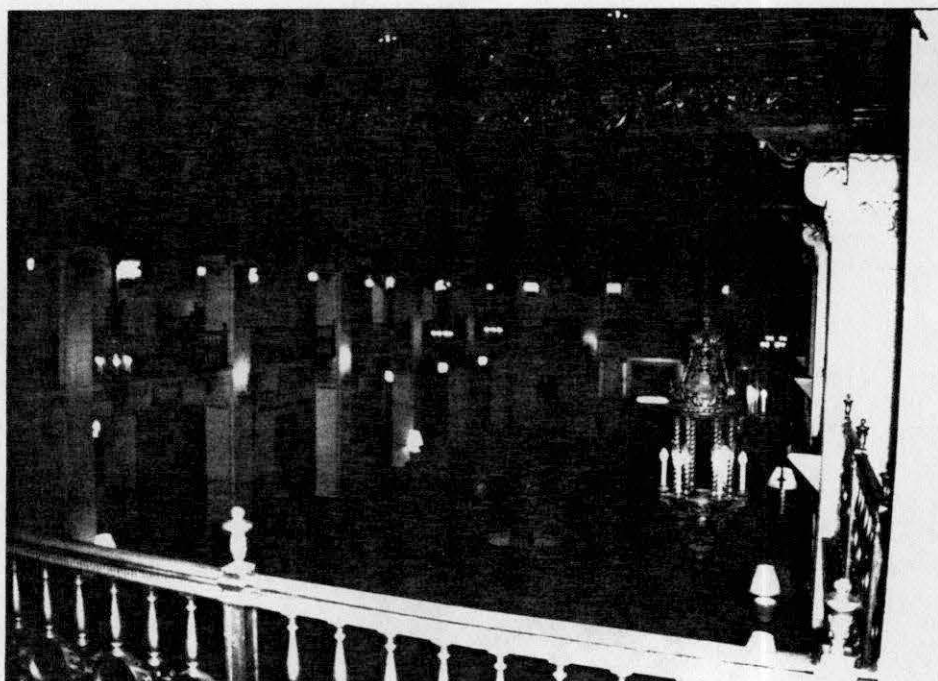


Fig. 6 Davenport Hotel, Lobby Beamwork, Present. (Source: author's photograph.)



Fig. 7 Davenport Hotel, Underside of Beam, Present. (Source: author's photograph.)

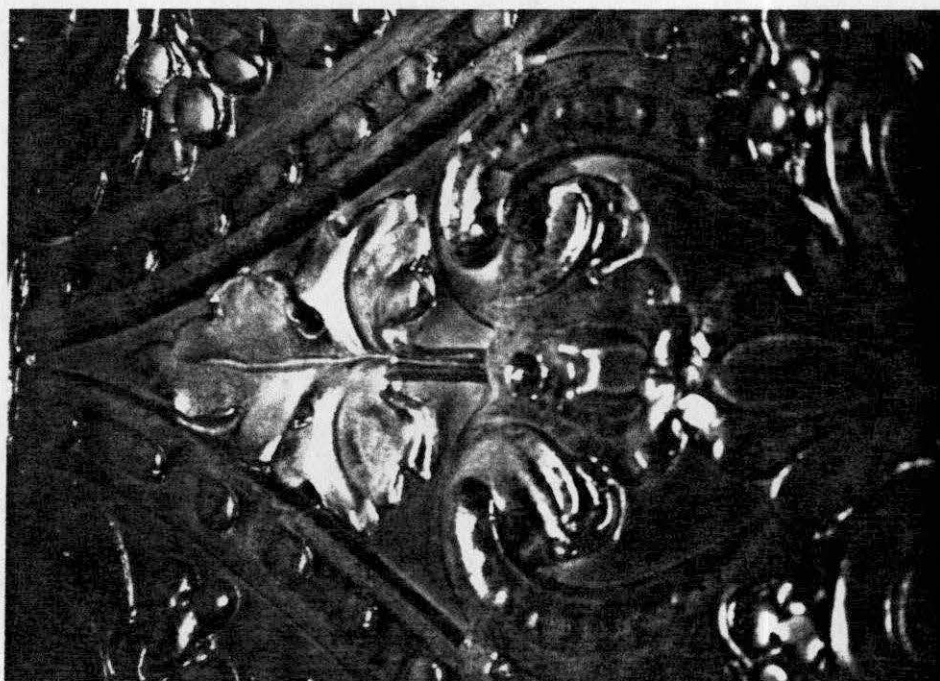


Fig. 8 Davenport Hotel, Underside of Beam, Detail. (Source: author's photograph.)

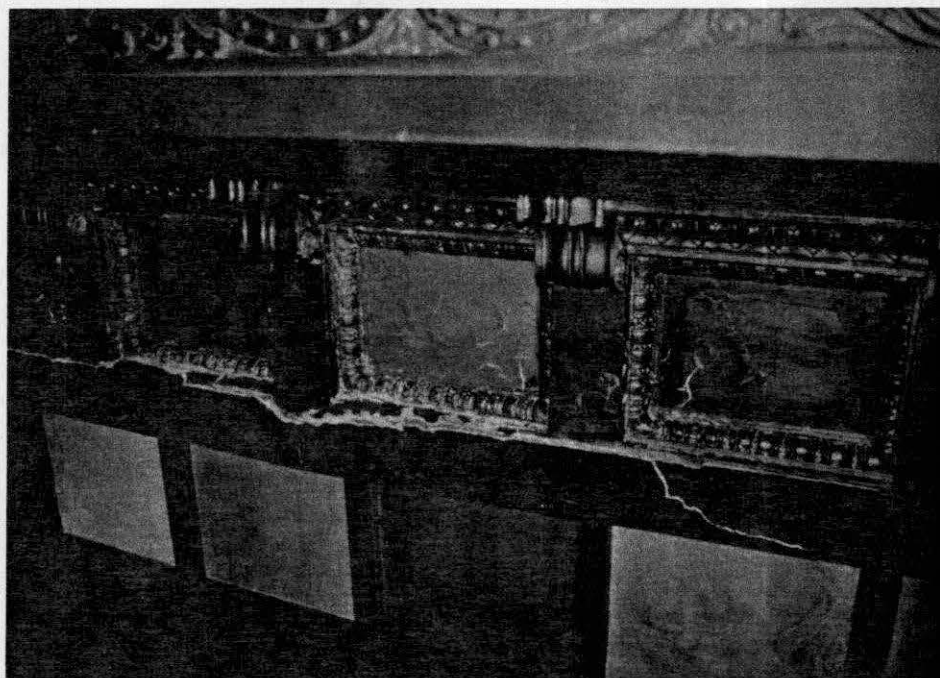


Fig. 9 Davenport Hotel, Lobby, Damaged Skylights, Present. (Source: author's photograph.)

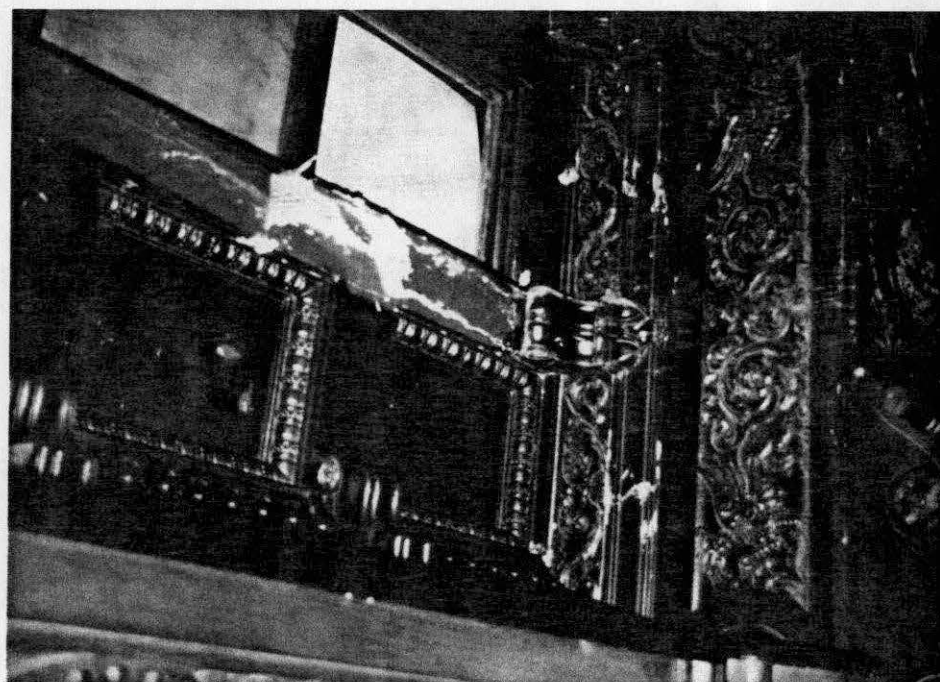


Fig. 10 Davenport Hotel, Lobby, Water Damaged Plasterwork. (Source: author's photograph.)

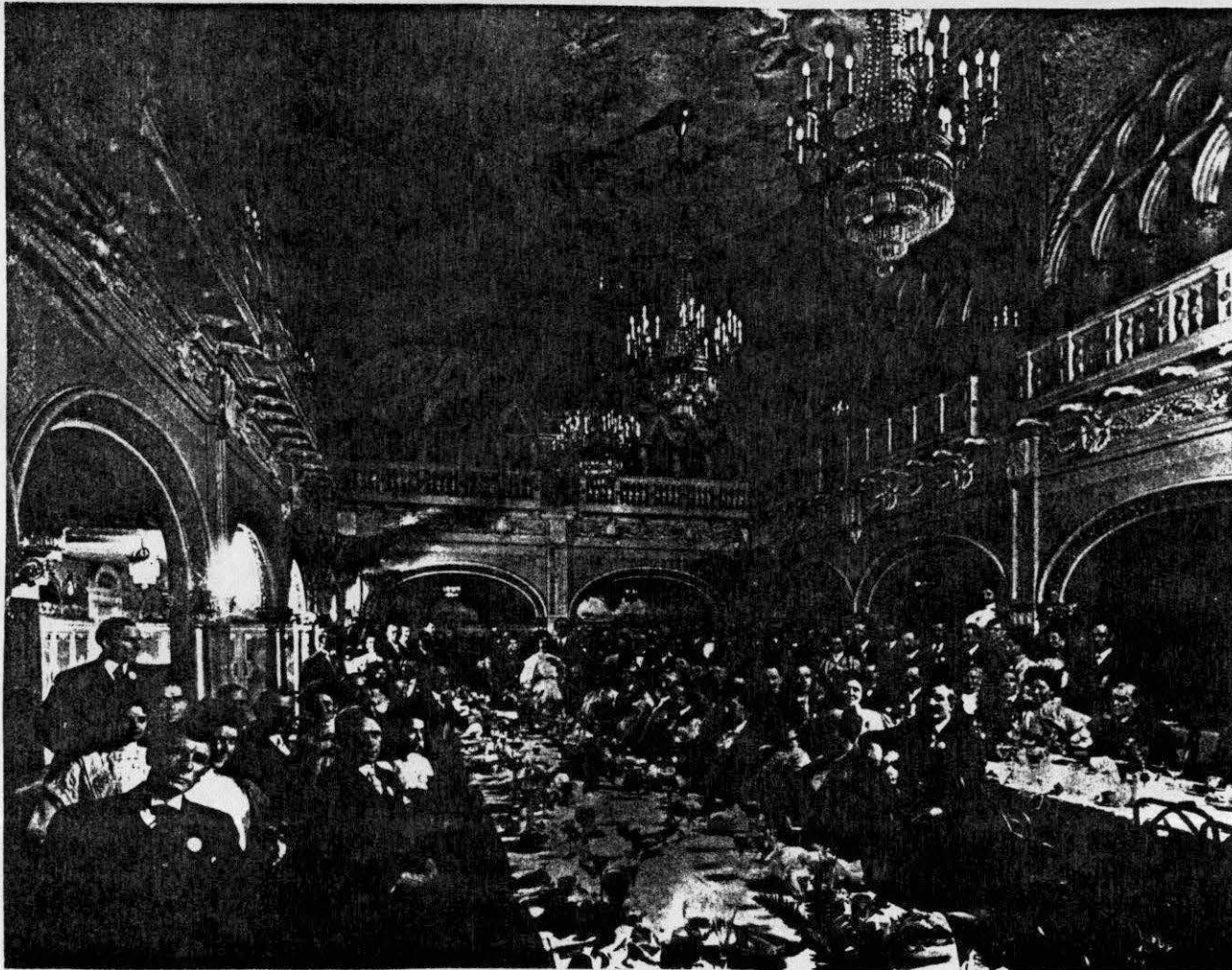


Fig. 11 Davenport Hotel, Hall of Doges, 1908.
(Source: Libby Photograph Collection, Cheney Cowles Museum, Spokane.)

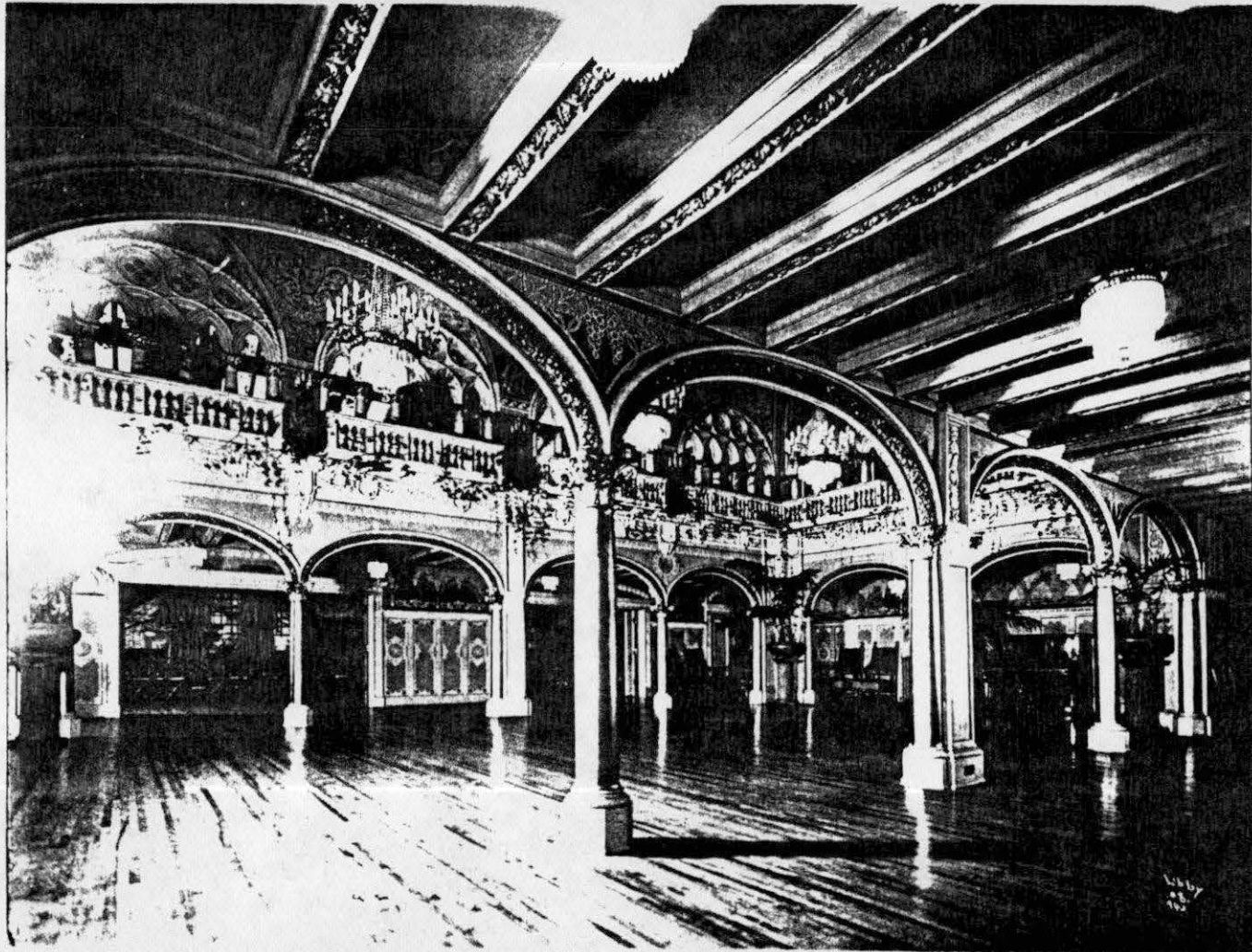


Fig. 12 Davenport Hotel, Hall of Doges from Arcade, 1908.
(Source: Libby Photograph Collection, Cheney Cowles Museum, Spokane.)

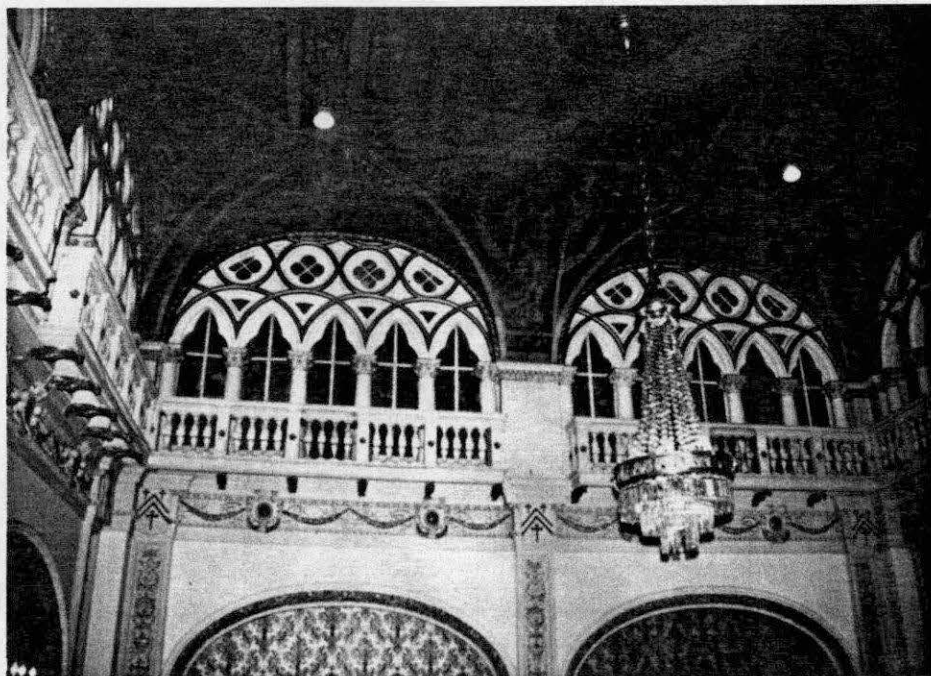


Fig. 13 Davenport Hotel, Hall of Doges, Present. (Source: author's photograph.)

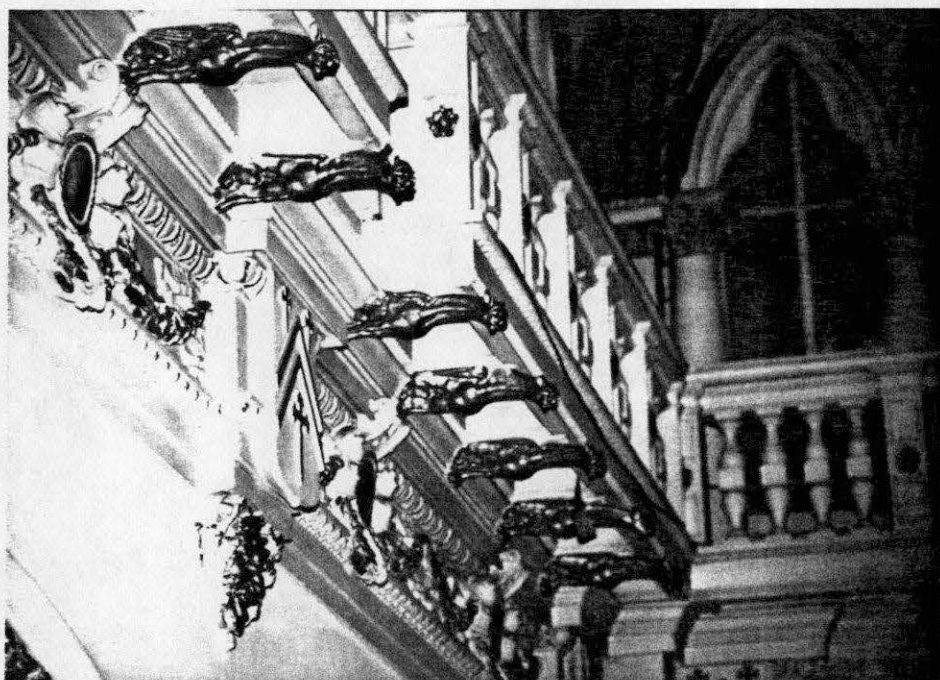


Fig. 14 Davenport Hotel, Hall of Doges, Frieze Detail, Present. (Source: author's photo.)

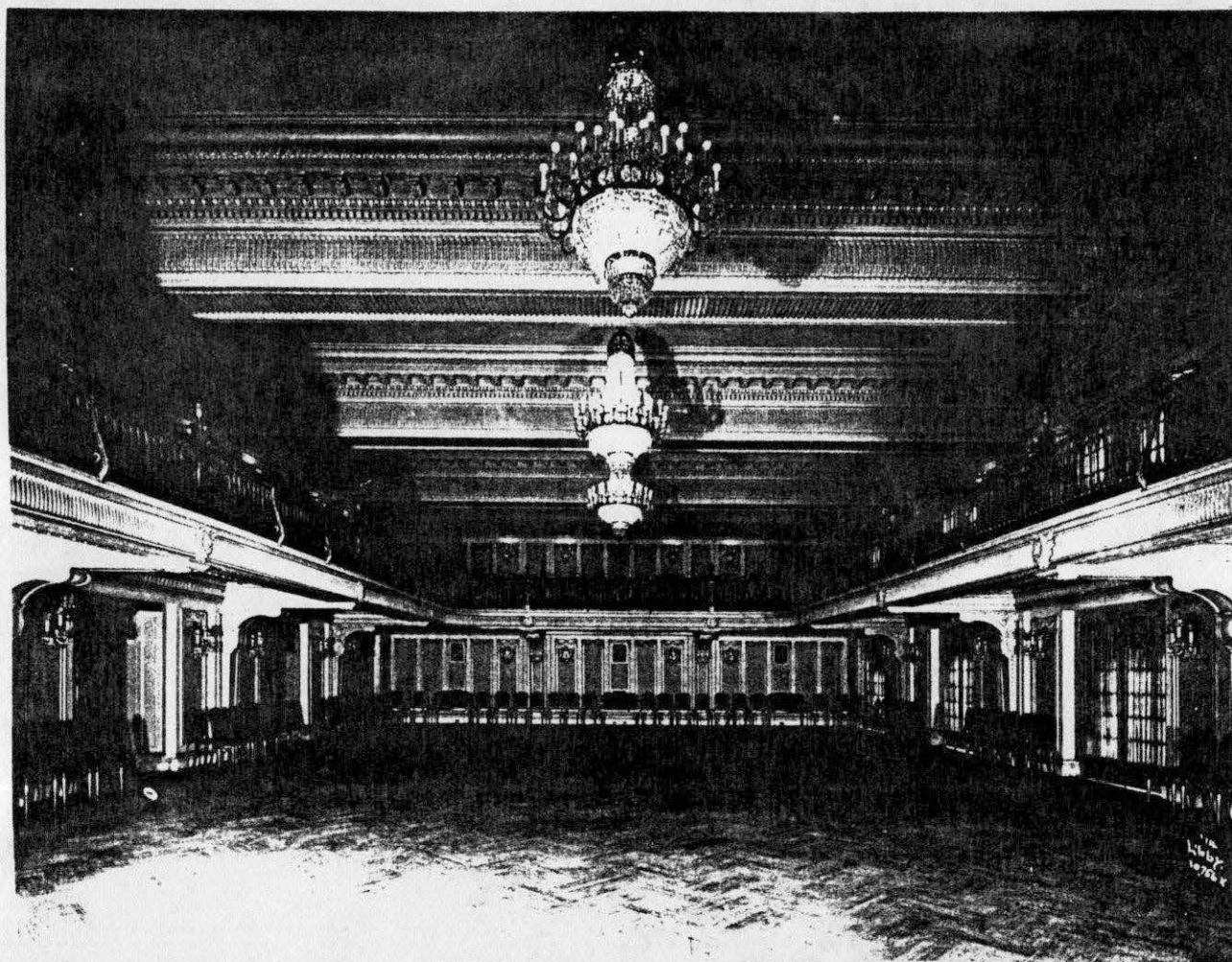


Fig. 15 Davenport Hotel, Marie Antoinette Ball Room, 1914.
(Source: Libby Photograph Collection, Cheney Cowles Museum, Spokane.)

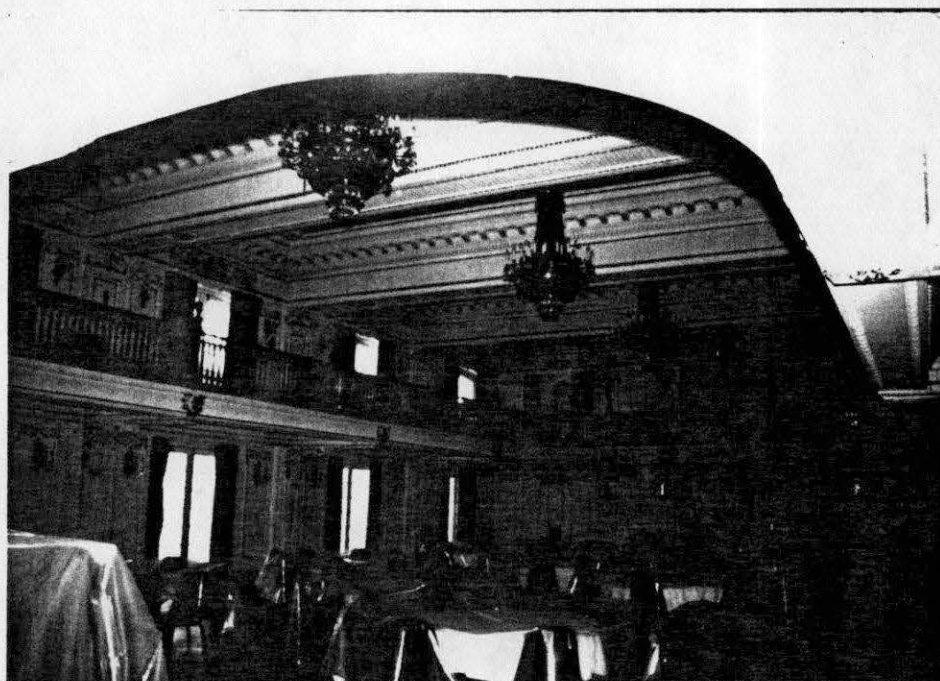


Fig. 16 Davenport Hotel, Marie Antoinette Ball Room, Present. (Source: author's photograph.)



Fig. 17 Davenport Hotel, Marie Antoinette Ball Room, Present. (Source: author's photograph.)



Fig. 18 Davenport Hotel, Isabella Dining Room, 1914.
(Source: Libby Photograph Collection, Cheney Cowles Museum, Spokane.)

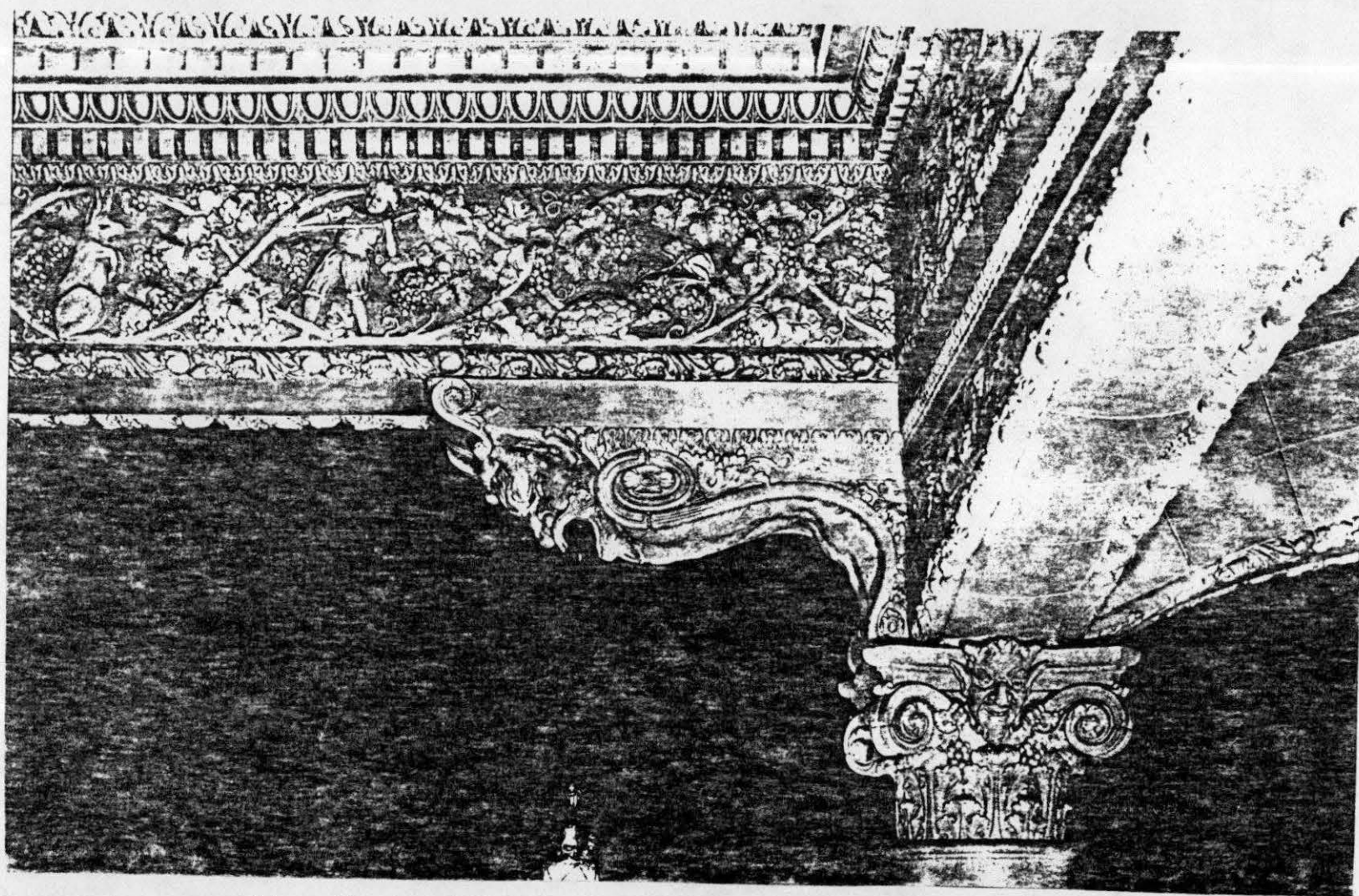


Fig. 19 Isabella Dining Room, Plasterwork Detail, 1914.
(Source: Libby Photograph Collection, Cheney Cowles Museum, Spokane.)

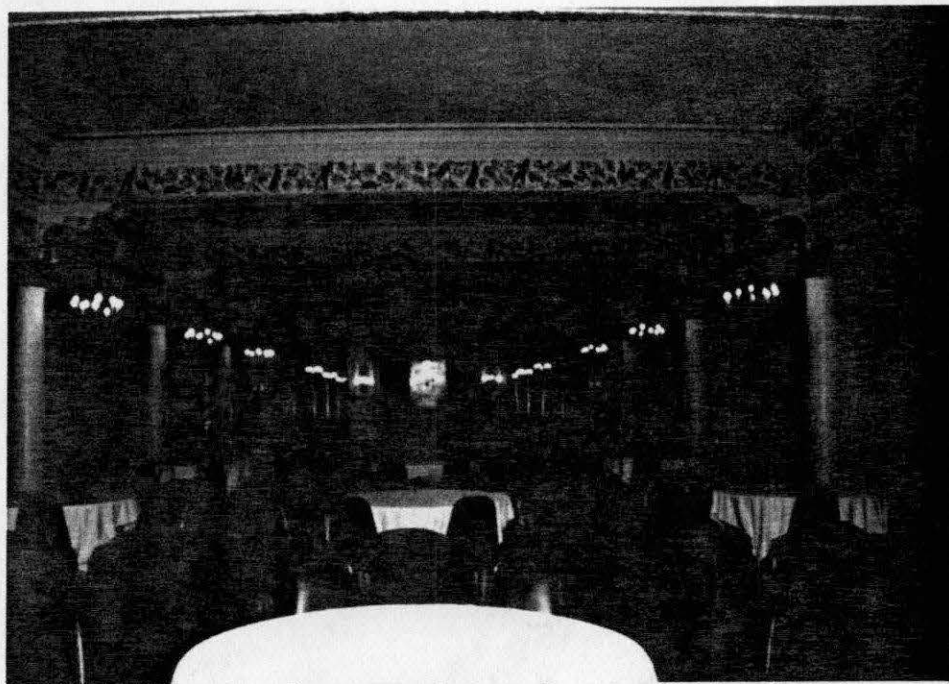


Fig. 20 Davenport Hotel, Isabella Dining Room, Present. (Source: author's photograph.)



Fig. 21 Davenport Hotel, Isabella Dining Room, Present. (Source: author's photograph.)

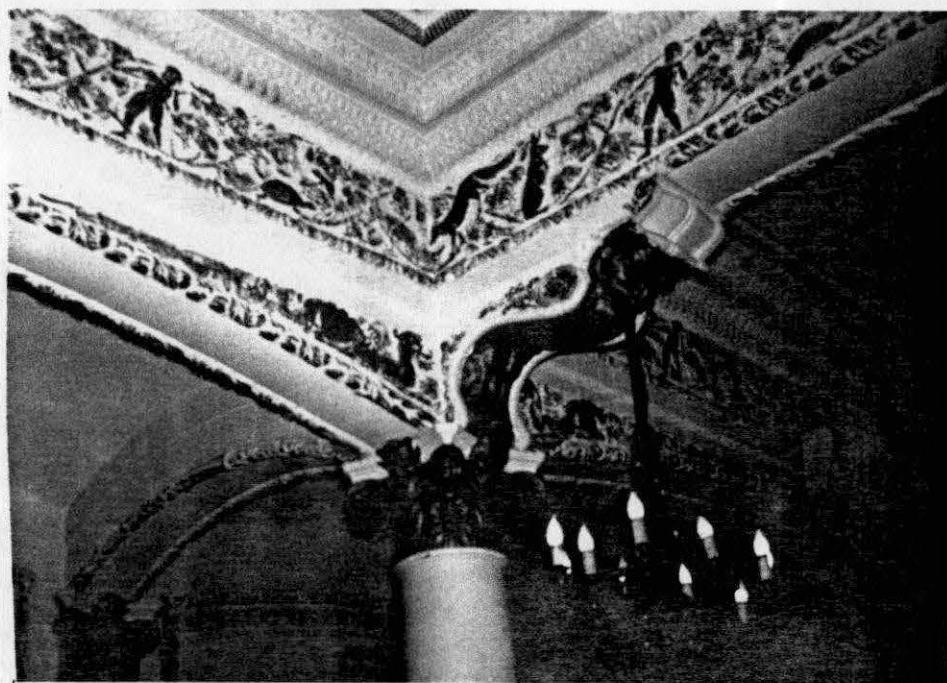


Fig. 22 Davenport Hotel, Isabella Dining Room, Present. (Source: author's photograph.)

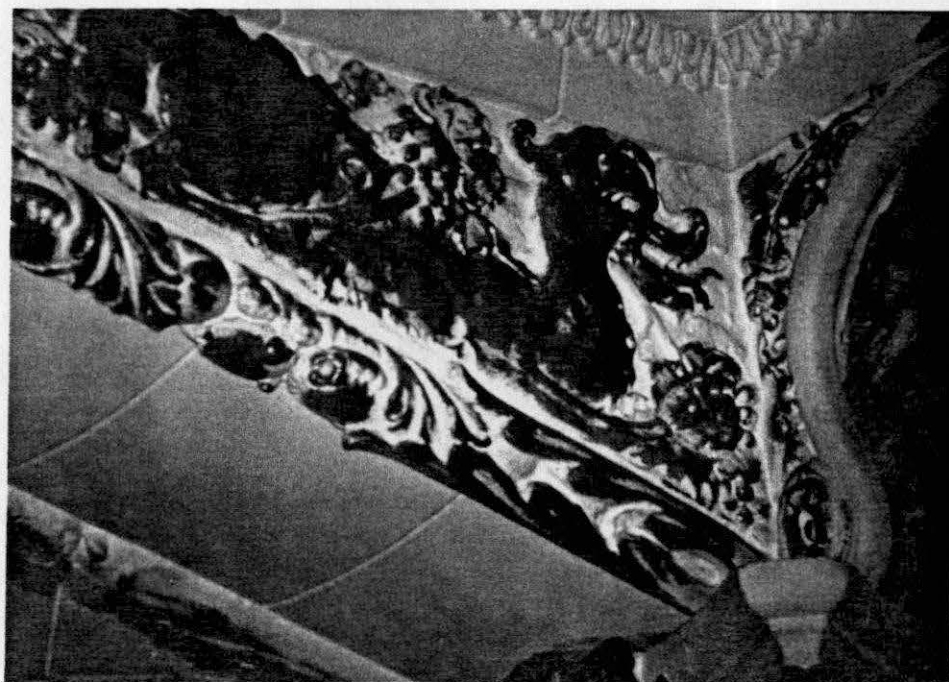


Fig. 23 Davenport Hotel, Isabella Dining Room, Plaster Detail. (Source: author's photograph.)

NOTES

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⁷Staehli, consultation.

⁸Beard, pp. 24.

⁹Ibid., pp. 26.

¹⁰Ibid., pp. 113.

¹¹Ibid., pp. 42.

¹²Ibid., pp. 71.

¹³Bankart, pp. 283.

¹⁴Staehli, consultation.

¹⁵Bankart, pp. 306.

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¹⁹Beard, pp. 72.

²⁰William Millar, Plastering Plain and Decorative, (London: Batsford, 1897), pp. 46.

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²²"Interior Plastering," Pacific Coast Architect, March 1915, pp. 133.

²³Owen Jones, The Grammar of Ornament, (London: Bernard Quaritch, 1910).

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²⁸Bankard, pp. 324.

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³⁰"The Davenport Hotel, Spokane, Washington," The Architect and Engineer, March 1915, pp. 87.

³¹Louis M. Davenport, Davenport Hotel Spokane USA (promotional booklet), pp. 15.

³²Spokane, (WA.) Spokesman Review, 28 November 1913.

³³Pierre Klossowski, "The Bath of Diana," FRM, June 1984, pp. 121.

³⁴Morgan W. Philips, "Adhesives for the Reattachment of Loose Plaster," APT Bulletin, Vol. 12, No. 2 1980, pp. 37.

³⁵Adhesive and Engineering Company, "Epoxy Adhesives Restore Two Historic Ceilings, Save Owners Approx. \$1 Million," CONSTRUCTION Bulletin, September 1978, Vol.13, No. 2.

³⁶Jean Marie Teutonico, lecture held during Summer Program in Architectural Conservation, Siena, Italy, August 1987.

³⁷Philips, pp. 42.

- ³⁸Adhesives and Engineering Company, (no page numbers).
- ³⁹Staehli, consultation.
- ⁴⁰Teutonico, lecture.
- ⁴¹Philips, pp. 52.
- ⁴²David Talbot, interview held at Architectural Reproductions, Boring, Oregon, February 1988.
- ⁴³ICCROM, "Mortar Analysis: Simple Method, Ex. 21" ICCROM publication, Via San Michele, Rome, Italy.
- ⁴⁴"Ornamental Plaster for Restoration and Modern Designs Available Through Special Process," Architectural Record, Mid- October 1979, pp. 15.
- ⁴⁵Talbot, interview.
- ⁴⁶Staehli, consultation.
- ⁴⁷Davenport, pp. 11.
- ⁴⁸Ibid., pp. 15.
- ⁴⁹John Willy, "Davenport Hotel Spokane," Hotel Monthly, Vol. 23, No. 270, September 1915.
- ⁵⁰Carole L. Perrault, "Techniques Employed at the North Atlantic Historic Preservation Center for the Sampling and Analysis of Historic Architectural Paints and Finishes," APT Bulletin, Vol. 10, No. 2, 1978, pp. 11.
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- ⁵³Harry D. Lackore, "Construction of the New Davenport Hotel," Pacific Builder and Engineer, December 26, 1914, pp. 356.
- ⁵⁴Talbot, interview.
- ⁵⁵Ibid.
- ⁵⁶Eric Eisemann, interview, Portland, OR, Nov. 1986.
- ⁵⁷Staehli, consultation.

⁵⁸Adhesives and Engineering Company, (no page numbers).

⁵⁹Talbot, interview.

⁶⁰Lawrence Arthur Turner, *Decorative Plasterwork in Great Britain* (London: Country Life, 1927), pp. 129.

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