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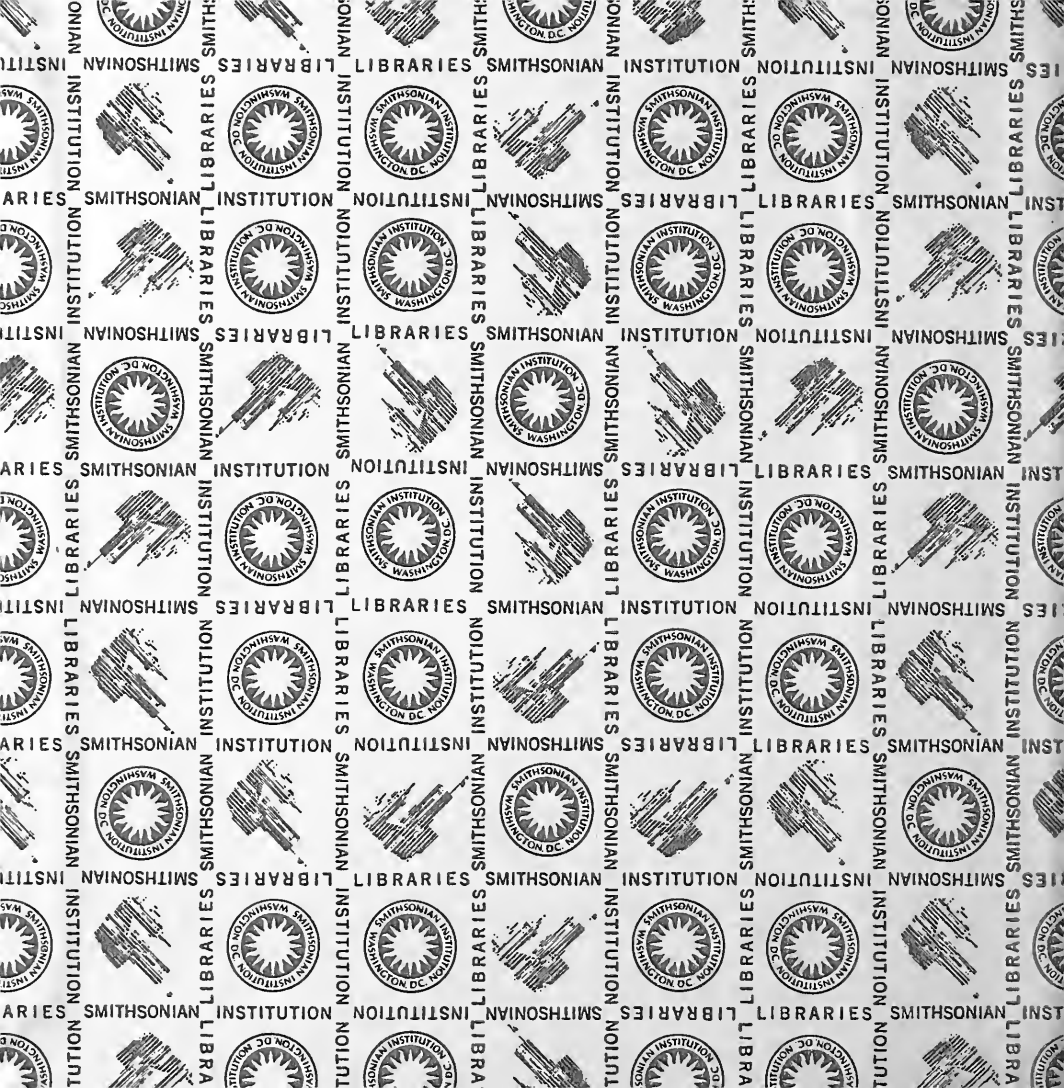
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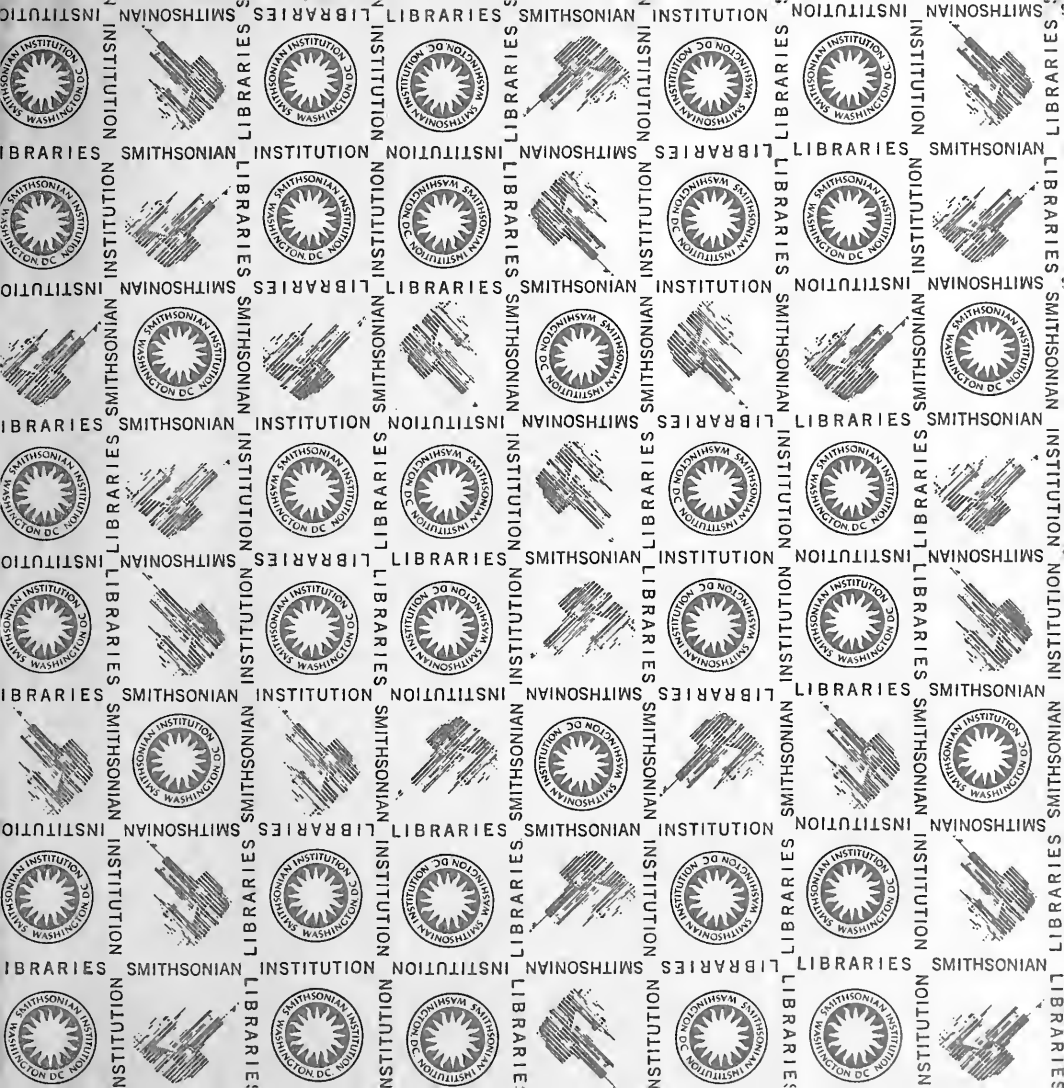
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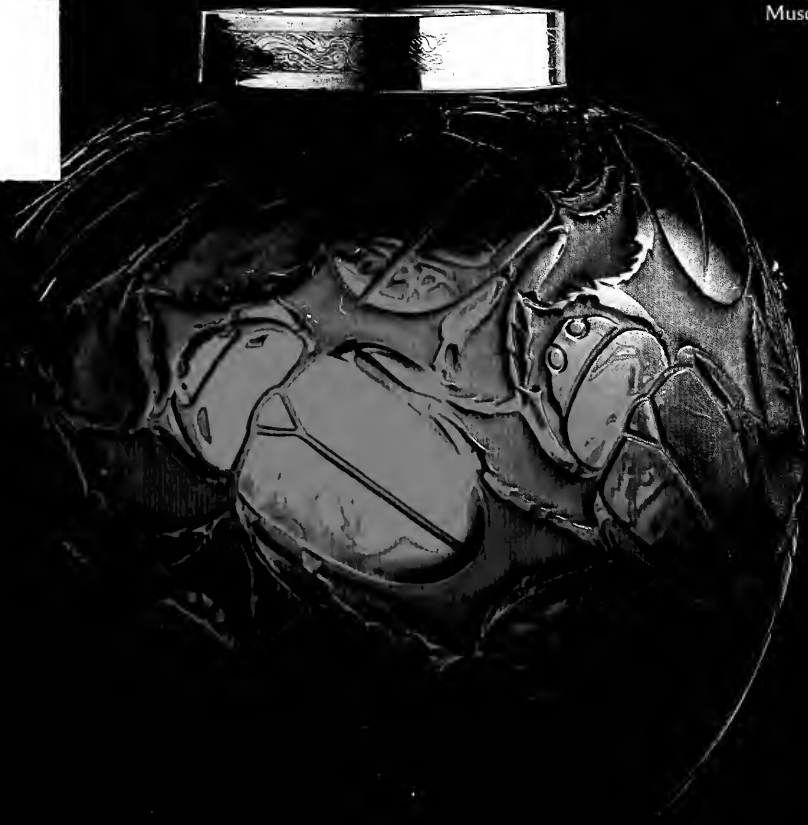






Glass

in the Collection of
the Cooper-Hewitt
Museum



The Smithsonian
Institution's National
Museum of Design

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Glass

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Museum,
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Cover
René Lalique, 1860-1945
France

Vase, "Gros Scarabées" about 1930
Acid-etched molded glass

From the collection of the late Stanley Siegel;
the gift of Stanley Siegel, 1975-32-7

Title page
Denis Diderot, *Encyclopédie* . . .
Paris, 1762-72.
vol. 10, plate 20



Black and white photographs by Tom Rose
Cover photograph by Scott Hyde
Design by Heidi Humphrey

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Glassmakers at work. From Georgius Agricola, *De Re Metallica*, Book 12, originally published 1556.

Foreword

The history of glass is one of a very special marriage of material and technique. The unique qualities of glass—its functional ability to hold liquids, its transparency or opacity, and its potential for reflecting and transmitting color and light—have fascinated and delighted both its makers and owners since early times

The collection of glass at the Cooper-Hewitt Museum provides a visual delight to the Museum’s visitors and is an invaluable resource for students and designers. It ranges in date from 1st-century Syrian-Roman examples to the present century. Within the collection are superb examples of 18th-century engraved glass which came to the Museum as part of the James Hazen Hyde collection of “Four Continents” material, wonderful Art Deco pieces designed by René Lalique, works produced in the studios of Louis Comfort Tiffany and other 20th century designers and companies, such as Steuben.

As with all of the collections at the Cooper-Hewitt, we are committed not only to building and caring for them, but to making them accessible to the public. It gives me pleasure to introduce our glass collection with this publication which was made possible through the generosity of Steuben Glass, New York.

Lisa Taylor
Director

The Cooper-Hewitt Collection: Glass

The history of the decorative arts is a visual record of a human ability to transform the natural materials of the world to meet varied requirements of usefulness, and to satisfy an innate desire to shape and ornament the necessary accoutrements of daily life. The creative gesture inherent in man's need to shape, and the inspiration and craftsmanship which they embody, become documents of man's place in time and culture. Of all the materials drawn from the earth's natural resources with which people have created functional and beautiful forms, few products have so elegantly combined technical knowledge and the human creative impulse as glass. Among the most fragile and precious of substances, at once both solid and ephemeral, glass retains a pride of position in history. The raw ingredients for making glass are basic and common; the transformation of these ingredients into jewel-like receptacles for light is one of the miracles of human effort.

A technical definition of glass describes the material as a liquid which cools and hardens without crystallization, becoming so stiff that it has the property of being a solid. Silica, usually in the form of ordinary sand,

provides the bulk of the raw materials that are melted together at extremely high temperatures, along with additives such as lime or soda to render the molten mass workable.

The process by which glass was created is of venerable antiquity; although research has indicated that glass was produced in Western Asia as early as 3,000 B.C., some of the earliest extant vessels have been found in the context of pharaonic Egypt. Since that time, craftsmen have elaborated upon basic techniques of production, although the processes have, in reality, changed comparatively little. The most basic process involves combining raw materials to form a "batch"; these materials are heated to over 2000° Fahrenheit to produce a viscous, red-hot liquid. Ultimately, the molten material is worked to create a formed and shaped solid. This process is a record of the triumph of ingenuity over material. To appreciate and understand the history of glass in its myriad forms, functions and contexts, it is important to recognize certain of the basic techniques involved.

The collections of glass at the Cooper-Hewitt Museum are ency-

clopedic in scope, with notable strengths, and present many of the processes of fabrication and the techniques of forming and ornamenting glass within an historical context. It is with techniques as a focal point that the collection of the Cooper-Hewitt is surveyed here.

The origins of glassmaking are not entirely clear, although certain authors have suggested that the technique may have grown out of the knowledge and use of pottery glazes that, when fired, produce a shiny, transparent (or translucent), impervious surface on earthenware products. By the time of King Thotmes III of Egypt (1504-1450 B.C.), basic techniques for the production of hollow glass vessels were known. Early examples of Egyptian glass tend to be of solid-core fabrication. A core of mud, possibly mixed with straw, was shaped on the end of a rod; this form was dipped in molten glass and rolled on a flat surface to produce a smooth, rounded body. Dipping and wrapping the form in several layers of glass built up a body wall thick enough to withstand use, and with the removal of the internal core by crushing the mud, the glass body wall was self-supporting. These



small core vessels were among the earliest successes in the handling of the material, and in their simplicity belie the technical understanding involved, including the technology of furnace construction and varying composition of the raw materials. The colored, transparent, translucent and opaque effects which could be achieved with the material were quickly exploited, and early makers used glass to imitate precious and semi-precious stones, as Egyptian jewelry indicates. In addition to its functional qualities, it was recognized that glass could create forms that, in essence, captured air and light in a transparent shell, a quality which remains to the present day a basic and primary characteristic of the material (Fig. 1).

Subsequent to the production of solid-core vessels, mold-casting, and carving of raw blocks of glass, a major advance in the manipulation of the material occurred. It was discovered, either accidentally or intentionally, that the red-hot liquid was viscous enough to be balanced on the end of a hollow pipe while air was introduced into the center of the molten gather (a quantity of molten glass) through the bore of the pipe. This technique permitted craftsmen to easily and quickly create thin-walled bubbles of glass of varying shape and size, thus paving the way for the brilliant history of blown glass. After the initial blowing of the body, the bubble could be removed from the hollow rod, exposing an open end. The opposite end was then reattached to a solid rod with a lump

1. J. and L. Lobmeyr factory
Vienna, Austria

**Water Glass, Finger Bowl, Candlestick
and Two Bonbonnières, 1926**
Blown clear glass

Purchased in memory of Georgiana L.
McClellan, 1958-98-1, 3, 8, 4



2. Detail of a typical "pontil" mark.

of molten glass; the vessel could then be worked further. This attachment is known as a "pontil" - on blown glass one can often detect the rough surface which remains when the completed vessel is broken away from the pontil (Fig. 2).

The process of blowing glass has been described by many authors, from antiquity to the present. In 1556, Georgius Agricola published his important work *De Re Metallica*, a lengthy tome on mining, metallurgy and related processes. In this book Agricola includes a description of the fabrication of blown glass vessels, which describes the technique as follows:

"The glass-makers often test the glass by drawing it up with the blowpipes; as

3. Group of Syrian-Roman vessels,
1st – 4th century A. D.

Blown glass with applied decoration.

- a. Purchased in memory of William G. Saloman,
1959–111-1
- b. Purchased in memory of Marie Torrance Hadden,
1958-26-2
- c. Gift of Mrs. Leo Wallerstein,
1961-88-7
- d. Gift of Rodman Wanamaker,
1919-24-13



soon as they observe that the fragments have been re-melted and purified satisfactorily, each of them with another blow-pipe which is in the pot, slowly stirs and takes up the glass which sticks to it in the shape of a ball like a glutinous, coagulated gum. He takes up just as much as he needs to complete the article he wishes to make; then he presses it against the lip of marble and kneads it round and round until it consolidates. When he blows through the pipe he blows as he would if inflating a bubble; he blows into the blow-pipe as often as it is necessary, removing it from his mouth to re-fill his cheeks, so that his breath does not draw the flames into his mouth. Then, twisting the lifted blow-pipe round his head in a circle, he makes a long glass, or moulds the same in a hollow copper mould, turning it round, then warming it again, blowing

it and pressing it, he widens it into the shape of a cup or vessel, or of any other object he has in mind. Then he again presses this against the marble to flatten the bottom, which he moulds in the interior with his other blow-pipe. Afterward he cuts out the lip with shears, and, if necessary, adds feet and handles. If it so pleases him, he dyes it and paints it with various colours. Finally, he lays it in the oblong earthenware receptacle, which is placed in the third furnace, or in the upper chamber of the second furnace that it may cool.” [Translation by H. C. Hoover and L. H. Hoover, 1912.]

It was during the Roman period that free-blown and mold-blown glass was first produced in enormous quantities; the thousands of simple domestic vessels and containers

which have survived to the present day give some indication of the extent of production (Fig. 3a, b, c; d). It is thought that the earliest efforts to blow glass occurred in Phoenicia sometime before the birth of Christ; during this period of time it was recognized that this highly desirable material could also provide a lucrative income to merchants and itinerant glass blowers, and glass fabricated in Syria and Egypt was transported as far away as present-day Cologne by way of the Romans. The Roman period is noteworthy for the amount of glass produced, and for the variety of techniques which were developed for forming and decorating the glass. The Romans were adept at manipulating rods or “canes” of colored glass which could be combined in patterns, sliced, and



4 a. Syrian

Bowl, 1st century A. D.

Blown and tooled glass

Gift of Mrs. Leo Wallerstein,
1961-88-9

b. Graeco-Roman

Cup, 1st century B. C. to 1st century
A. D.

Blown glass with folded edge

Gift of Louis Cable Chard,
1953-183-1

joined to produce a “millefiori” or “thousand flowers” pattern familiar to modern paperweight collectors. However, free-blown vessels by far outnumber other varieties of glass from this period. Syrian-Roman glass is of two basic types—luxury products made for aristocratic connoisseurs, and simple and easily produced domestic forms. The Museum collection is fortunate to possess fine examples of the latter type, in the form of beakers, vials, cosmetic bottles, and medicine containers, most dating from the 1st through 4th centuries A.D. Many of these early examples came to the Cooper-Hewitt through the generous gift of Rodman Wanamaker.

Decoration of Syrian-Roman

domestic glass took several forms. The simplest decoration resulted from the shaping of the body itself, and consisted of manipulating the glass bubble to give it a distinctive shape, particularly in the length of the neck, by rolling the upper edge of the sheared bubble to produce a smooth, reinforced lip (Fig. 4b), or using pincers to squeeze and stretch the soft, hot glass in predetermined shapes, such as ribs (Fig. 4a). Other decorative or functional features could be applied to the previously formed body—a blob of glass could be pulled to form a handle (Fig. 3d), or the threads could be attached to the surface for purely decorative reasons, producing a mesh-like entwined surface covering (Fig. 3b, c).

Due to the nature of the raw materials, Roman and Syrian glass was generally of a greenish transparency. Those vessels which survive are often of peacock-feather iridescence, although that was never the intent of the glassmaker. The radiant surface which we find so appealing is actually the result of deterioration of the material; the composition of glass is such that, given centuries of exposure to chemicals in the environment, it will slowly react. Since much Egyptian and Roman glass has been preserved through accidental or intentional burial in the earth, these pieces exhibit the characteristic iridescence. These changes cause the crystalline structure of the glass to reflect certain colors in the spectrum of light. Iridescence is unrelated to

the original color of the glass, only to the light rays that it absorbs or reflects. This accidental beauty was intentionally exploited in the latter part of the 19th century; the works of Louis Comfort Tiffany Studios, among others, stand as supreme examples of the technique of man-made iridescence (Fig. 5).

During the 18th century, Persian glassmakers revived the traditions of free-form and mold-blown glass. Sinuous, long-necked flasks were produced by stretching and twisting the air bubble while it was still on the blowpipe (Fig. 6). The two ewers, whose bodies are simple bubbles with extended necks, have applied handles and spouts (Fig. 6).



5. Louis Comfort Tiffany (1848-1933)
New York

Vase
Blown iridescent glass

From the collection of the late Stanley Siegel; the gift of Stanley Siegel, 1975-32-11



6. Iran

Flask and Ewers, 18th century
Blue, amber, and green blown and mold-blown glass

Gift of Rodman Wanamaker,
1929-24-86, 90, 93

7. Attributed to Bernard Perrot
France, active 1662-1688

Scent Bottle

Blue mold-blown glass

Bequest of Mrs. Sarah Cooper-Hewitt
1931-6-59



Free-blown glass has never diminished in popularity, although the principle of air expansion within a gather of molten glass lead to other developments within a relatively short time. It was rapidly understood that the still supple bubble of glass could be altered by pressure on the exterior surface to create impressions or indentations in the body wall. Potters had long been familiar with the technique of pressing soft clay into a patterned mold to produce regular, standardized shapes and ornaments; glassblowers adapted this technique to produce mold-blown glass. A mold impervious to the intense heat of the glass, usually constructed in two separable and close-fitting halves, allowed the insertion of a gather of molten glass. Air blown through the blowpipe

which held the gather of glass caused the glass to expand and take on the shape of the surrounding mold. When cooled and hardened the mold was opened and removed from around the glass, producing a shaped and decorated vessel. The Cooper-Hewitt collection contains a fine, rare example of a 17th century use of this technique: a scent bottle in the shape of a man's head produced in a two-part mold (Fig. 7). Although rather crudely modelled, the details such as the hair texture are distinct. This deep blue bottle has been attributed to the French glassblower Bernard Perrot (active 1662-1688).

Since the traditional technique of mold-blowing permitted rapid production of ornamented and shaped containers, and due to the fact



8. Dyottville Glassworks
Philadelphia, Pennsylvania

Quart Flask, about 1850
Mold-blown glass

Gift of Miss Eleanor Garnier Hewitt,
1931-40-1

that the mold insured regularity of form, the technique had obvious commercial implications. By the 19th century, this process was fully exploited by producers of bottles for medicines and spirits (Fig. 8); these often amusing bottles are frequently decorated with commemorative devices or portraits of well-known figures, and sometimes with the name of the bottle producer or the commercial purchaser who used the container for packaging. An extension of this process of mechanical reproduction of forms and decorations, in which molten glass is poured into a patterned mold and subjected to pressure, produces the familiar “pressed” glass. The process was patented in the 1820s by an American, Deming Jarves, the founder of the Boston and Sandwich

Glass Company.

Of great interest to historians and students of glass making are the processes used in the formation of the glass body; the techniques described above — solid-core dipping and forming, free-form blowing, mold-blowing, and pressing — are among the most basic. The ornamentation of the glass is the next most important consideration. Ornamentation may take many forms, only a few of which can be surveyed in any detail in this catalogue, but certain basic techniques can be described which give the craftsman nearly unlimited possibilities for the ornamentation of objects. In addition to the manipulation of the glass surface as described above, other techniques of ornamentation

are well represented in the Cooper-Hewitt collection, and are of interest both from a technological and art historical point of view.

These processes include: applying decoration to the surface of an object in the form of additional glass, colored enamels or gilding; removing portions of the glass through cutting, engraving or etching; controlling the color and opacity of the material to produce unusual effects with the reflection and refraction of light, and combining various colors and types of glass within one form. It is rare that a single decorative technique is used in isolation in the production of a piece of glass, and many of the techniques are closely related; over the centuries glassworkers, designers and artists have skillfully combined these techniques to pro-

duce glass in great variety of forms, each style with its own attraction.



9. Louis Comfort Tiffany (1848-1933)
New York

Stemmed Bowl,
"Favrile" glass, about 1900
Blown, iridescent glass with applied
decoration

Gift of Joseph L. Morris,
1965-55-9

Applied Decoration



10. France (Nevers)

Female Figure, 18th century
Colored opaque lampworked glass
Gift of Frederick T. Victoria,
1969-39-1

Applied details on glass vessels often had a functional purpose, such as forming a handle or foot. However, the decorative potential of glass added to the surface of an object was quickly absorbed into the context of fabrication. Even earlier than the Roman period, the Egyptians had trailed multi-colored glass threads across the surface of solid-core vessels to produce striations of brilliant color. By Roman times this technique had common acceptance; often the glass threads thus applied were of the same color as the body, the difference in color resulting from the varying thickness of the material.

Each addition of glass on the surface requires that the body of the piece be heated to a temperature which will allow the added glass to fuse to the surface without melting and collapsing the hollow form. The careful control of the heating process, in which the vessel is inserted into a “glory hole”, heated to between 2300° F. and 2700° F., is a primary requisite of good craftsmanship. Applied blobs of glass, stretched and manipulated to produce tapered drops is exemplified in a stemmed bowl produced at the Louis Comfort Tiffany Studios (Fig. 9), one of a pair in the Museum’s collection

bequeathed by Joseph L. Morris.

Applied glass may also be used for the entire construction of objects, as exemplified in the work of craftsmen at Nevers, France in the 18th century (Fig. 10). These figures were produced by manipulating multi-colored rods of glass over the heat of a lamp, fusing the applied pieces together. The technique is described by Johann Kunckel, a chemist and glass-maker in Potsdam in 1679; his book *Ars Vitraria Experimentalis* or *Vollkommene Glasmachkunst* (*The Complete Art of Glassmaking*) includes the following passage:

“This is what I call the minor art of glass-blowing, which is executed at the lamp. Though it is not the most useful of arts, it is nevertheless one of the most delicate in all glass-making and the source of much delight. How these pretty and elegant objects are made I will now relate:

First obtain from a glass-house a number of little rods or tubes of good and pure crystal glass in divers colours; little pieces of broken Venetian glass serve our purpose best. Take a small tube such as I have mentioned above, soften it at one end, and by blowing into it you can form spheres and other shapes;



11 a, b. Switzerland,

Beaker and Pitcher, 18th century
Enamelled glass

The C. Helme and Alice B. Strater
Collection; the gift of C. Helme Strater,
John B. Strater, and Margaret S. Robinson,
1976-1-43, 46

anyone who understands how to manipulate the glass will be able to produce whatever he fancies in this way, such as pictures, figures, crucifixes, small vessels and anything you can imagine. Very often you need for this purpose small pliers and little clamps made of wire, in order to hold a piece when your hands are occupied with various others, and when you have to heat several pieces which are to be welded together in the flame.” [Translation from F. Kampfer and K. Beyer, *Glass; a World History* . . . (1966) no. 144]

Applied Decoration: Enamels and Gilding

For many centuries glass has been ornamented with colors painted and affixed to the surface. The decoration may be “cold” — that is, painted on the glass with a non-permanent and chemically unrelated material, such as oil paint. However, most enamelled glass on which the decoration survives is “hot” work using enamels composed of metallic coloring combined with a compatible flux that fuses the color permanently to the surface of the glass. The process of enamelling was known as early as Roman times, and has remained popular to the present. A striking resurgence of the technique occurred in Germany in the 16th century, particularly in Bohemia; bright, opaque

enamels were used on many forms, including large cylindrical drinking vessels known as *Humpen*. The enamel tradition survived into the 18th century; the Cooper-Hewitt collection is particularly rich in Swiss enamelled glass of 18th century date through the generous gift of enamelled folk glass from the C. Helme and Alice B. Strater Collection. Enamel decoration on these vessels was often applied for purely ornamental reasons, and patterns included flowers, scrolls, foliage, and abstract motifs. Equally important were enamelled designs of family, religious or political interest; an enamelled beaker with the symbols of the Passion exemplifies this style (Fig. 11a).

An unusual variation in the enam-



12. Daum Factory
Nancy, France

Vase, late 19th century
Blown, cased, enamelled, and acid etched
glass

Purchased in memory of Jacob Schiff,
1969-48-1

elling technique may be found in the late 19th century vase made at the Daum factory in Nancy, France (Fig. 12), in which the enamelled design of a landscape with realistic birch trees is entirely encased in another layer of glass, giving great depth to the painted decoration. The outer surface of the vase has been cut to produce three-dimensional tree trunks. This process involves multiple cycles of heating and cooling the object.

A thin layer of gold, usually applied in an oil medium, could also be used to ornament glass; on an 18th century wine glass (Fig. 13) the gilded details of lip and cut shell motifs is skillfully combined with delicate engraving. A related technique for ornamenting glass consisted of inserting patterned gold foil between two separate layers of glass, held together with an adhesive.

Cutting, Engraving, Etching



13. Silesia

Wine Glass, mid-18th century
Cut engraved and gilded glass

Purchased in memory of James Loeb,
1951-147-1

Ornamentation of glass through the removal of a portion of the body may be extreme, as in the case of severely abrasive cutting and faceting, or it may be fine and delicate as in diamond and copper-wheel engraving, or it can be highly textural or frosted through acid etching.

The technique of cutting away of large areas of glass to produce facets that sparkle with reflected prismatic light is frequently employed on the stems of wine glasses and goblets (Fig. 14a), although a standard use of cutting was in the production of brilliant faceted drops for chandeliers, candleholders, and sconces (Fig. 15). The cutting of glass is a jeweller's



14. Germany

- a. **Standing Cup**, 18th century with representations of the Four Continents
Engraved and diamond-cut clear glass
Gift of the Trustees of the Estate of James Hazen Hyde, 1960-1-84

Silesia

- b. **Beaker**, early 18th century with representations of the Four Continents
Engraved clear glass
Gift of the Trustees of the Estate of James Hazen Hyde, 1960-1-80

technique, related to the faceting and carving of various minerals, such as rock crystal, and precious stones. The cutting of glass is recorded early in the history of the craft. Pliny (A.D. 23-78) in his *Natural History* (XXXVII, 28) states: "It is marvellous how closely glass-ware have come to resemble those of rock crystal . . ." Cutting can be accomplished by means of a cutting wheel, in which the object is pressed against the moving wheel; the abrasion of contact and wet sand wear away portions of the glass. A much more complex and time-consuming method is carving the surface with sharp, abrasive hand tools. This technique is frequently used in combination with cased glass, which consists of two or more layers of glass, usually of varying colors,



15. England

Candelabrum, late 18th century
Cut glass, bronze and stoneware
Gift of Judge Irwin Untermyer,
1956-179-1 A, B

fused together on one object. Carving through the layers produces relief decoration, either in a color which boldly contrasts with the underlayer or a subtle gradation of tones similar to cameo-work in stone or shell. The Museum collection includes noteworthy examples of layered and carved glass. Of great interest are carved bottles from China (Fig. 16a, b). Glass was known in China as early as the Han dynasty (206 B.C.-A.D. 220), but native production may have occurred later. For the Chinese, glass became a substitute for the highly prized jade, and was painstakingly carved in techniques and patterns clearly derived from work in stone. Overlays of richly colored glass in relief designs contrasted with the underlying surface.

16 a, b. China

Snuff Bottles, 19th century
Carved overlay glass

- a. Anonymous gift, 1952-164-5
- b. Gift of the Misses Hewitt,
1931-64-51



17. Emile Gallé (1846-1904)
Nancy, France
Vase, about 1895
Cut and etched overlay glass
Gift of Harry Harkness Flagler,
1949-89-2

Oriental cut overlay glass was one source of inspiration for late 19th century European glass-makers. A genius in the use of carved and etched layered glass was Emile Gallé (1846-1904), who adapted the Chinese style to produce sensuous and delicate naturalistic patterns of flowers and foliage (Fig. 17). A glass form, such as this vase, was overlaid with layers of colored glass, varying in thickness according to the design plan. In early Gallé pieces produced by this technique, the layers of glass were carefully cut away on the wheel to produce multi-colored patterns and extremely subtle gradations of tone and opacity. In another example of layered, cut and etched glass, a vase probably made in Stourbridge, England about 1910, the layers of glass have been etched with acid to



18. Attributed to Thomas Fereday
(1854-1942)
For Thomas Webb and Sons, Stour-
bridge, England

Vase, about 1910
Overlay glass, acid etched, with yellow
ground, red and white overlay

Gift of Harry Harkness Flagler 1949-89-1



19. Detail of wheel engraving.

reveal the underlayers and to produce a matte, velvet-like surface (Fig. 18).

Engraved decoration may also be a machine or hand process. For hand engraving the point of a diamond, hand held, is the standard tool. Alternatively, extremely small and delicate wheels, usually made of copper, are rotated with a coating of fine abrasive; when the glass object is brought into contact with the wheel, the delicate abrasive causes a white scratch on the surface of the object. Continuous scratches in carefully controlled patterns and at varying depths create subtle gradations of reflected and absorbed light. Engraving techniques were known as early as the Roman period. Impressive engraving on glass occurred in

the Germanic countries during the 18th century, clearly exemplified in a superb group of goblets and vessels in the Cooper-Hewitt collection engraved with representations of the Four Continents (Fig. 14a, b), a bequest of the Trustees of the Estate of James Hazen Hyde.

Many less sophisticated examples of engraving, upon close examination, will reveal the blurred edges of individual wheel marks (Fig. 19), a help in distinguishing between wheel engraving and the smooth-edged acid etching.

It was probably in the 17th century that it was discovered that hydrofluoric acid was one of the few substances which could quickly attack the surface of glass, and could be

used alone or with other chemicals to create a brilliant polish, a matte frosted surface, or deep cuts, depending on the concentration and composition of the etching solution.

To produce an acid-etched pattern on glass, the surface of the object was first coated with a material such as wax or resin that resists the acid. Scratches cut through the resin allow the acid to come in contact with the surface at specific points. Acid etchings may be used with overlays of colored glass to achieve subtle gradations of tone (Fig. 18), or to achieve equally subtle contrasts of glass on matte surfaces, as in the René Lalique (1860-1945) "Gros Scarabées" vase (cover), or to produce deep incisions on textured surfaces, as in the Koloman Moser vase

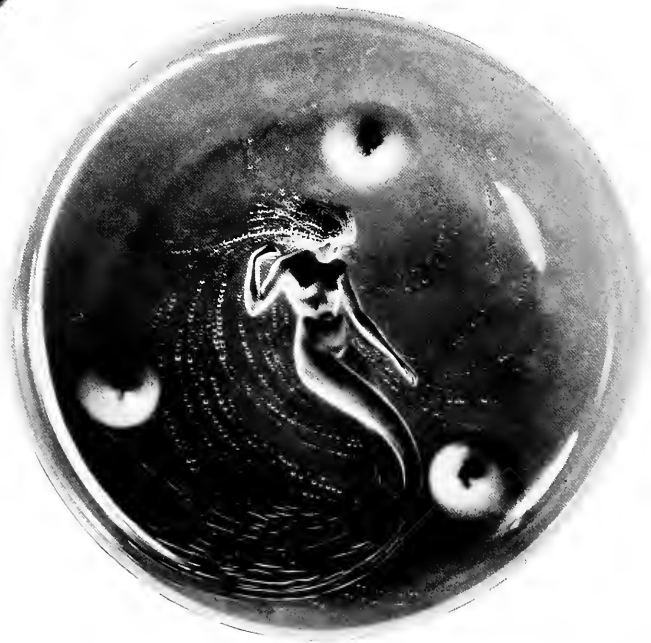


20. Koloman Moser (Moser Glass Works)
Vienna, Austria

Vase, about 1925
Clear and blue-streaked cased glass,
acid etched

Gift of Mrs. John Ralph from the Collection
of her sister Mrs. Evsie Belousoff and
in her memory,
1961-113-2

of about 1925 (Fig. 20) with a complex pattern of fish and seaweed. Lalique's particular contribution to the use of matte surface glass is his skillful contrast of a shiny, sparkling surface with the velvet-like, nearly powdery surface to achieve solid sculptural forms in the Art Deco style (Fig. 21).



21. René Lalique (1860-1945)
France

Footed Dish: "Sirene", about 1930
Frosted glass

Gift of Jacques Jugeat,
1969-126-5

Color

Among the most appealing characteristics of glass is its potential for crystal clarity and total absence of color in the transparent material, or brilliant, clear, and jewel-like colors. Color was an important component of glass in the early Egyptian days of glassmaking; both the body and decorative additions were fabricated in bright hues of yellow, turquoise and deep blue. Control of the color in the molten mixture demands a sophisticated and specialized knowledge; for example, the addition of copper to the mixture and the careful control of furnace atmosphere and temperature can turn glass various shades from green to blue or deep red. Copper may even be caused to remain in suspension to create sparkling metallic flakes in the glass.

Various elements and metals can be added to the glass mixture to produce a rainbow of colors. Among the more important are:

Cobalt: the most intense of the coloring additives, cobalt can produce a blue color so deep as to appear nearly black.

Gold: gold is used to produce a range of red colors in glass; particularly noteworthy is a deep and rich

red, frequently used to case clear glass, and subsequently cut through on the engraver's wheel to produce a striking contrast of red and white.

Antimony: produces an opaque yellow glass.

Iron: produces a range of color from yellow to green to blue; when added to a batch of glass in the form of iron oxide will produce the familiar deep "bottle" green.

Copper: as noted above, copper added to glass mixture can produce blues, greens, reds, and glittering metal in suspension.

Manganese: can be used to produce an amethyst color.

Certain colors of glass were more popular than others at particular times. For example, during the latter part of the 18th and early 19th century, a typical deep sapphire blue glass was produced that was used alone, brilliantly faceted, as in an Irish pitcher of about 1820 (Fig. 22), or it frequently appeared as a simple plain-bodied liner for pierced silver objects such as salt cellars.

A striking use of color to achieve



23. Possibly Bohemia

Covered Vase, late 19th century
Clear and ruby-colored glass, cut and engraved

Gift of James B. Ford
1920-8-10



22. Probably Ireland

Pitcher, about 1820
Dark blue cut glass

Anonymous gift,
1956-187-1

splendid effects of light reflection is seen in the Museum's covered vase from the second half of the 19th century (Fig. 23). The massive vase, composed of geometrically cut moldings and a twisted knob has been covered in a thin layer with brilliant ruby coloring. The wheel-engraved decoration of scrolls, foliage, and birds surrounds a central oval containing a delicately engraved buck in a landscape setting. The engraver's wheel has cut through the red outer layer to reveal the crystal clear glass underneath.

A more sophisticated use of the refractive quality of glass legitimately falls within the category of color manipulation. Drops of clear glass, faceted at the cutter's wheel and polished to a high gloss, as in the

24. Louis Comfort Tiffany (1848–1933)
New York

Vase, about 1910
“Aquamarine” glass, with colored
opaque occlusions

From the Collection of the late Stanley
Siegel; the Gift of Stanley Siegel,
1975–32–14



late 18th-century candelabrum (Fig. 15), prismatically shatter incident light into the color spectrum, constantly changing according to the environmental conditions. Color in its purest sense—as light—has been captured by the glassmaker in this example.

Surface color may also be achieved by exposing the glass to various chemicals, thus causing iridescence on the surface, not unlike the natural iridescence found on ancient glass vessels. The primary exponent of this lustrous and evanescent surface was the American, Louis Comfort Tiffany (Fig. 5). Born in 1848, Tiffany studied landscape painting with George Inness; in 1879, he, along with Samuel Colman and Candace Wheeler, founded a decora-

ting firm. Tiffany collected ancient glass and admired the brilliant surface iridescence and organic, often irregular forms, of the free-blown that Tiffany began producing iridescent glass at his studios. The collector Samuel Bing once described Tiffany’s glass as “. . . so subtle, delicate and mysterious that the water of an exquisite pearl can alone be compared to them.”

Different colors of glass may also be combined in the same piece to produce patterns. In the heavy stemmed vase by Tiffany (Fig. 24), canes or rods of various colors are carefully built into successive gathers of clear, pale-tinted glass; each layer of glass is heated in the furnace to fuse the individual pieces into one. Several dis-

tinct layers of glass may be detected on close examination. Finally, the blossoms, fabricated from thin slices of colored canes of glass, are laid on the tops of the stems and the entire piece surmounted by a free-blown glass bowl, fused to the stem.

Cased glass is best represented in many modern works in the Cooper-Hewitt collection (Fig. 25). Casing of glass consists of adding successive thick or thin layers of glass to a core; often these are of contrasting color.

This brief overview of the techniques used by glassmakers over the centuries suggests some of the possibilities for forming and decorating glass objects. It is important to recognize that this material, so prized and admired by the ancients,

still holds a magical fascination for artists and designers. The Cooper-Hewitt collection of glass, covering an admirable and impressive period of time, continues to expand in scope and variety, and is a fundamental resource for the study of techniques and the enjoyment of the beauty of the material.

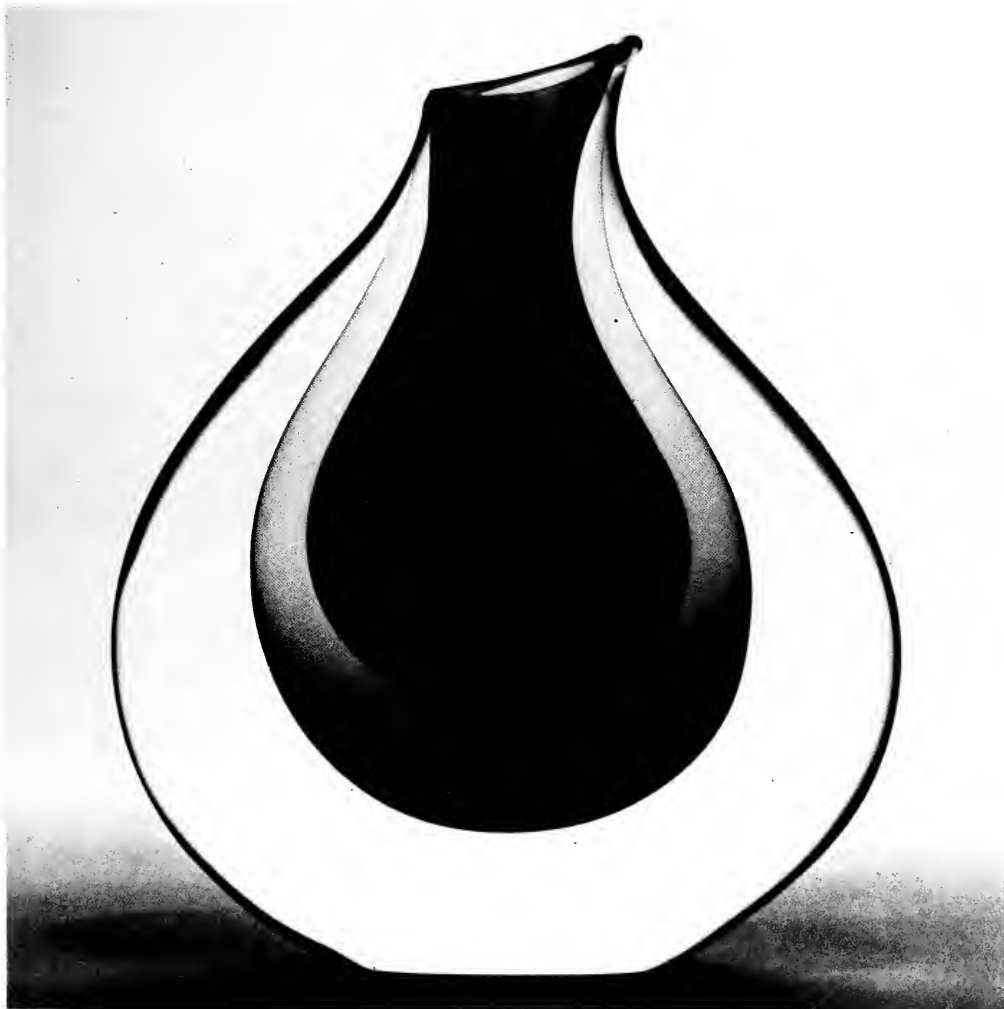
David Revere McFadden
Curator of Decorative Arts

25. Salviati Factory
Murano, Italy

Vase, about 1960

Cased clear, blue, and red glass

Gift of Michael Lewis Balamuth,
1971-66-2



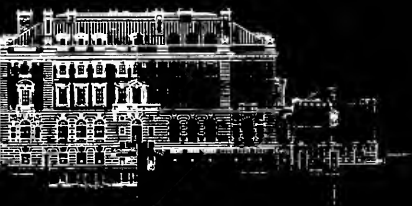
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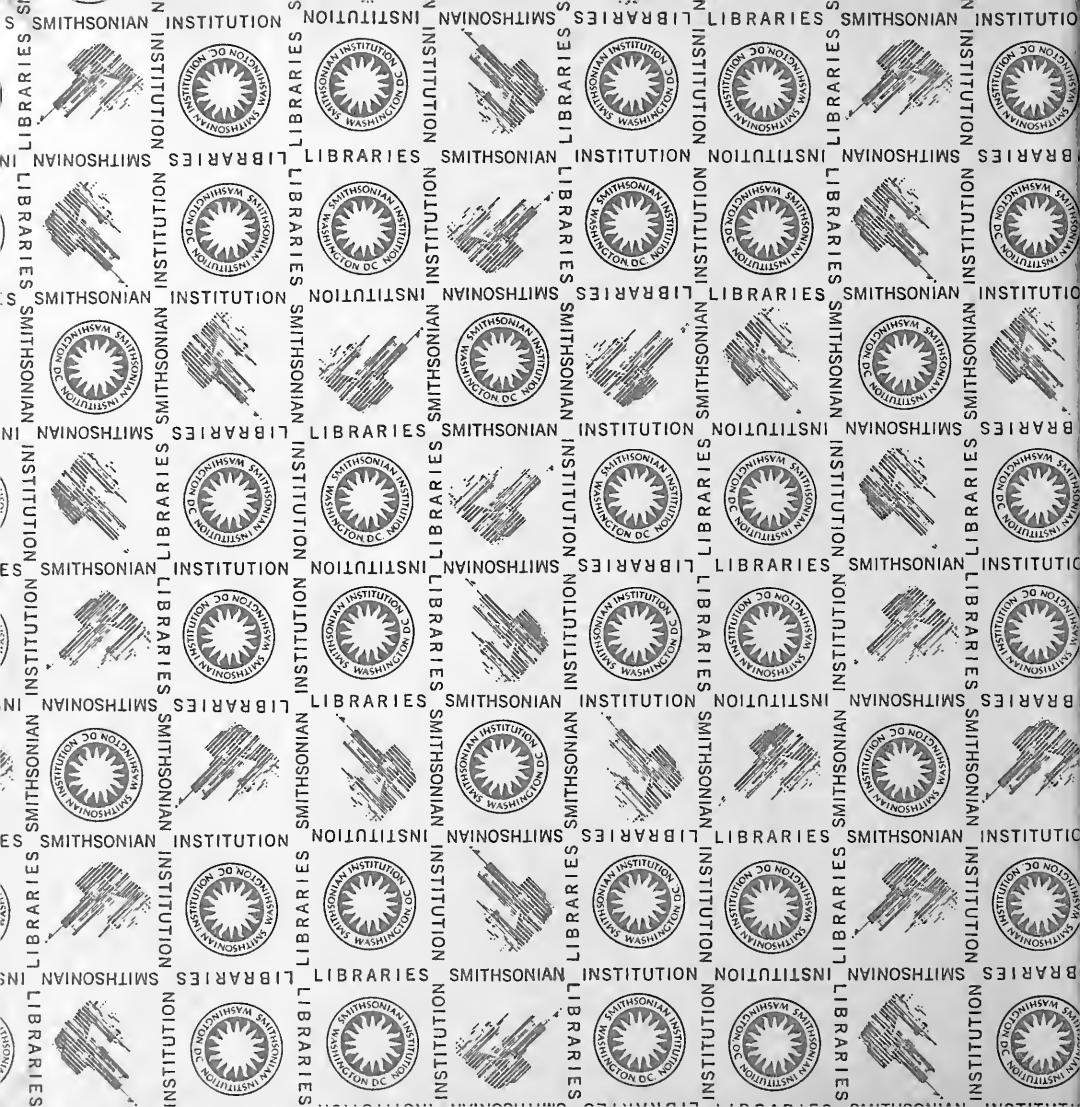
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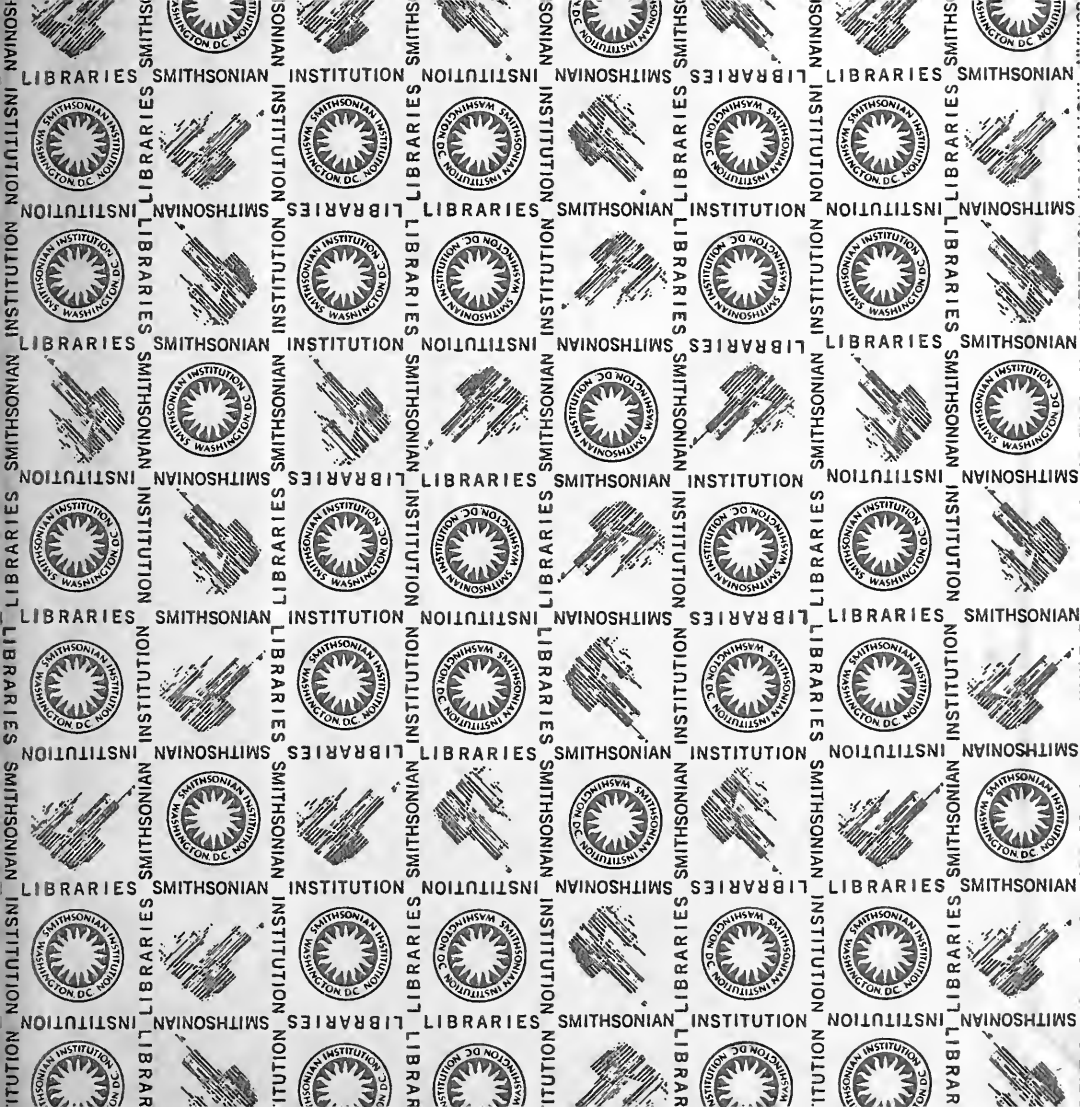
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