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## NOTES & MONOGRAPHS

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T331

CATALAN ENAMELED GLASS VASE  
*New York, The Hispanic Society of America*



# HISPANIC GLASS

WITH EXAMPLES IN THE COLLECTION OF  
THE HISPANIC SOCIETY OF AMERICA

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BY

ALICE WILSON FROTHINGHAM

Corresponding Member  
The Hispanic Society of America



WITH 125 ILLUSTRATIONS

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# CONTENTS

	PAGE
I MEDIAEVAL GLASS AND GLASS MAKING IN SPAIN . . . . .	1
II GLASS MAKING IN EASTERN SPAIN FROM THE RENAISSANCE TO THE TWENTIETH CENTURY . . . . .	31
III ANDALUSIAN GLASS . . . . .	69
IV CASTILIAN GLASS OF THE SIXTEENTH TO NINETEENTH CENTURIES	81
V THE ROYAL GLASS MANUFACTORY AT THE PALACE OF LA GRANJA, SAN ILDEFONSO . . . . .	99
VI GLASS MAKING IN PORTUGAL AND THE SPANISH COLONIES . . .	115
VII SPANISH GLASS IN THE COLLECTION OF THE HISPANIC SOCIETY OF AMERICA . . . . .	127
NOTES . . . . .	171
REFERENCES . . . . .	192
INDEX . . . . .	196

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ILLUSTRATIONS

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CATALAN ENAMELED GLASS VASE (T351) . . . . . Frontispiece  
*New York. The Hispanic Society of America*

FIGURE	PAGE
1 LAMPS . . . . .	7
Detail of mural painting from the Church of <i>Santa Maria</i> at Mur. Twelfth century. (Courtesy of the Museum of Fine Arts, Boston)	
2 LIPSANOTECAS . . . . .	7
Eleventh century. <i>Cataluña. Vich. Museu Episcopal.</i> (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
3 GOBLETS AND FLASKS . . . . .	8
Detail of miniature in Bible from Monastery of <i>San Pedro de Roda</i> . Eleventh century. <i>Paris. Bibliothèque Nationale.</i> (From Domínguez Bordona, Jesús. <i>Spanish illumination.</i> Firenze, New York [19-?]. v. 1, pl. 39)	
4 EWEYS AND GOBLETS . . . . .	8
Miniature in <i>Decretum Gratiani cum glossa</i> , 2 <sup>nd</sup> f. 318. Early four- teenth century. <i>Vich. Museu Episcopal.</i> (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
5 PHARMACY FLASKS . . . . .	11
Woodcut in Ketham, Johannes de [ <i>Fasciculus medicinae</i> . Sp. tr. by unknown]. <i>Epilogo en medicina y cirugía</i> . Burgos, 1495. <i>New York.</i> <i>The Hispanic Society of America</i>	
6 JUG AND DECANTER . . . . .	11
Detail of <i>The Last Supper</i> . Panel from <i>Retablo of the Virgin</i> . Catalan School. Late fourteenth century. <i>Barcelona. Museu d'Art</i> <i>de Catalunya.</i> (Photo. Arxiu "Mas", Barcelona)	
7 DECANTERS . . . . .	12
Detail of <i>The Marriage at Cana</i> . Panel from <i>Retablo of the</i> <i>Transfiguration</i> . Catalan School. About 1445. <i>Barcelona. Cathedral.</i> (Photo. Arxiu "Mas", Barcelona)	
8 HANGING LAMP . . . . .	15
Detail of <i>The Presentation</i> . Panel from <i>retablo</i> by Pere Espalargues. Catalan School. Dated 1490. <i>New York. The Hispanic Society of</i> <i>America (A5)</i>	

FIGURE	PAGE
9 LANTERN	15
Detail of <i>The Betrayal in the Garden</i> . Catalan School. Early fifteenth century. <i>Vich, Museu Episcopal</i> . (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
10 DECANTER	16
Detail of <i>The Annunciation</i> by Pedro de Córdoba. Fifteenth century. <i>Córdoba, Cathedral</i> . (Photo. Arxiu "Mas", Barcelona)	
11 WINDOW GLAZED WITH CROWN GLASS	16
Detail of <i>The Visitation</i> . Panel from <i>retablo</i> . Aragonese School. Fifteenth century. <i>New York, The Hispanic Society of America</i> (A17)	
12 GORLET	19
Fourteenth century. From the Monastery of <i>Santas Creus</i> , Cataluña. <i>Tarragona, Museo Provincial</i> . (From Gudiol Ricart, Josep. <i>Els vidres catalans</i> . Barcelona [c1936]. pl. 4)	
13 CANADILLA	19
Fourteenth century. From the Monastery of <i>San Benito de Bages</i> , Cataluña. <i>Barcelona, Collection of Don Ramón Casas</i> . (Photo. Arxiu "Mas", Barcelona)	
14 CUP	19
Fifteenth century. Cataluña. <i>Barcelona, Collection of Don Joan Prats</i> . (From Gudiol Ricart, Josep. <i>Els vidres catalans</i> . Barcelona [c1936]. pl. 7D)	
15 GORLET	25
Fourteenth century. Paterna, Valencia. <i>Barcelona, Collection of Don Alfonso Macaya</i> . (From Gudiol Ricart, Josep. <i>Els vidres catalans</i> . Barcelona [c1936]. pl. 8)	
16 BOWL	25
Detail of <i>Saint Anthony of Padua</i> . Valencian School. Early fifteenth century. <i>Valencia, Cathedral</i> . (Photo. Arxiu "Mas", Barcelona)	
17 MIRROR	27
Detail from miniature in a manuscript on natural history. Late fourteenth century. <i>Granada, University Library</i> . (Photo. Arxiu "Mas", Barcelona)	
18 DRINKING GLASSES	27
Detail from miniature in a manuscript on natural history. Late fourteenth century. <i>Granada, University Library</i> . (Photo. Arxiu "Mas", Barcelona)	
19 VASE	28
Detail of <i>The Epiphany</i> by the Saint Nicholas Master. Burgos School. Fifteenth century. <i>Madrid, Collection of Don Enrique Traumann</i> . (Photo. Moreno, Madrid)	

## ILLUSTRATIONS

xi

FIGURE	PAGE
20 GORLET . . . . .	29
Detail of <i>The Marriage at Cana</i> , Castilian School. Fifteenth century. (Courtesy of Dr. P. P. Satterwhite, New York). (Photo. French & Company, New York)	
21 WINEGLASS . . . . .	39
Sixteenth century, Cataluña. <i>Barcelona, Museu d'Art de Catalunya,</i> <i>Plandina Collection.</i> (Photo. F. Serra, Barcelona)	
22 GLASSES . . . . .	39
Sixteenth and seventeenth centuries, Cataluña. (Photo. Arxiu "Mas", Barcelona)	
23 DECANTER . . . . .	39
Detail of <i>The Last Supper</i> by Juan de Juanes, Valencian School. Six- teenth century, <i>Madrid, Museo del Prado.</i> (Photo. Braun et Cie., Paris)	
24 DECANTER . . . . .	39
Sixteenth century, Cataluña. <i>Barcelona, Museu d'Art de Catalunya,</i> <i>Cabot Collection.</i> (Photo. Arxiu "Mas", Barcelona)	
25 BOTTLE . . . . .	40
Seventeenth century, Cataluña. <i>Barcelona, Museu d'Art de Catalunya,</i> <i>Cabot Collection.</i> (Photo. Arxiu "Mas", Barcelona)	
26 EWER . . . . .	40
Sixteenth century, Cataluña. <i>Sitges, Museu del Cau Ferrat.</i> (Photo. Arxiu "Mas", Barcelona)	
27 EWER . . . . .	40
Seventeenth century, <i>Paris, Musée de Cluny.</i> (Photo. Archives Photo- graphiques d'Art et d'Histoire, Paris)	
28 ECCLESIASTICAL EWERS . . . . .	40
Detail of <i>Saint Peter Pascual Celebrating Mass</i> by Jerónimo Jacinto Espinosa. Seventeenth century, <i>Valencia, Museo Provincial de Bellas</i> <i>Artes.</i> (Photo. Francisco Sanchis Muñoz, Valencia)	
29 LAMP . . . . .	47
Sixteenth century, Cataluña. <i>Vich, Museu Episcopal.</i> (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
30 ALMORRATXA . . . . .	47
Late sixteenth or early seventeenth century. (Courtesy of the Victoria and Albert Museum, London)	
31 GLASS LION . . . . .	47
Sixteenth century, Cataluña. <i>Sèvres, Musée Céramique, Davillier</i> <i>Collection.</i> (Photo. Direction des Musées Nationaux, Paris)	

FIGURE	PAGE
32 TUMBLER . . . . .	47
Seventeenth century. Cataluña. <i>Barcelona. Museu d'Art de Catalunya. Plandina Collection.</i> (Photo. F. Serra, Barcelona)	
33 WATER JAR . . . . .	48
Seventeenth century. Cataluña. (Courtesy of the Victoria and Albert Museum, London)	
34 VASE . . . . .	48
Seventeenth century. Cataluña. <i>Paris. Musée de Cluny.</i> (Photo. Archives Photographiques d'Art et d'Histoire, Paris)	
35 WINEGLASS . . . . .	48
Seventeenth century. Cataluña. <i>Vich. Museu Episcopal.</i> (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
36 WINEGLASS . . . . .	48
Sixteenth century. Cataluña. <i>Barcelona. Private Collection.</i> (Photo. Arxiu "Mas", Barcelona)	
37 EWER . . . . .	53
Seventeenth century. Probably Cataluña. (Courtesy of the Victoria and Albert Museum, London)	
38 JAR . . . . .	53
Sixteenth century. Cataluña. <i>Paris. Musée de Cluny.</i> (Photo. Archives Photographiques d'Art et d'Histoire, Paris)	
39 EWER . . . . .	53
Sixteenth century. Cataluña. <i>Paris. Musée de Cluny.</i> (Photo. Archives Photographiques d'Art et d'Histoire, Paris)	
40 DECANTER . . . . .	53
Sixteenth century. Cataluña. <i>Sèvres. Musée Céramique. Davillier Collection.</i> (Photo. Direction des Musées Nationaux, Paris)	
41 FRUIT DISH . . . . .	54
Sixteenth century. Cataluña. (Courtesy of the <i>Musée des Arts Décoratifs</i> , Paris)	
42 AMPULLA . . . . .	54
Sixteenth century. Cataluña. (Courtesy of the Victoria and Albert Museum, London)	
43 AMPULLA . . . . .	54
Sixteenth century. Cataluña. <i>Venice. Museo Civico Correr.</i> (Photo. Cav. P. Fiorentini, Venice)	
44 FRUIT DISH . . . . .	54
Sixteenth century. Cataluña. <i>Sèvres. Musée Céramique. Davillier Collection.</i> (Photo. Direction des Musées Nationaux, Paris)	

## ILLUSTRATIONS

xiii

FIGURE	PAGE
45 VASE . . . . .	58
Late sixteenth or early seventeenth century. Spanish. (Courtesy of the <i>Rijksmuseum</i> , Amsterdam)	
46 WINEGLASS . . . . .	58
Late sixteenth or early seventeenth century. Spanish. (Courtesy of the Victoria and Albert Museum, London)	
47 GORLET . . . . .	58
Late sixteenth or early seventeenth century. Spanish. (Courtesy of the <i>Musée des Arts Décoratifs</i> , Paris)	
48 VASE AND GORLET . . . . .	58
Late sixteenth or early seventeenth century. Spanish. (Courtesy of the British Museum, London)	
49 VASE . . . . .	62
<i>Barcelona. Museu d'Art de Catalunya. Cabot Collection. (Photo, Arxiu "Mas", Barcelona)</i>	
50 COVERED DISH . . . . .	62
Eighteenth century. <i>Barcelona. Collection of Don Alfonso Macaya. (Photo. Arxiu "Mas", Barcelona)</i>	
51 BOTTLE (T437) . . . . .	62
Eighteenth century. <i>New York. The Hispanic Society of America</i>	
52 BOTTLE (T442) . . . . .	62
Eighteenth century. <i>New York. The Hispanic Society of America</i>	
53 ALMORRATXA . . . . .	66
Eighteenth century. <i>Cataluña. (Courtesy of the Victoria and Albert Museum, London)</i>	
54 PORRÓ . . . . .	66
Eighteenth century. <i>Cataluña. Sévres. Musée Céramique. Davillier Collection. (Photo, Direction des Musées Nationaux, Paris)</i>	
55 CRUET . . . . .	66
Eighteenth century. <i>Cataluña. Glasgow. Kelvingrove Art Gallery. (By permission of Glasgow Corporation Art Galleries and Museums)</i>	
56 MIRROR . . . . .	66
Eighteenth century. <i>Vich. Museu Episcopal. (Photo. Arxiu d'Arqueologia Catalana, Barcelona)</i>	
57 THE GLASS BLOWER . . . . .	68
Eighteenth-century tile. <i>Cataluña. New York. The Hispanic Society of America (E1207)</i>	

FIGURE		PAGE
58	WINE FLASK . . . . . Detail of <i>Old Woman Frying Eggs</i> by Diego Rodríguez de Silva y Velázquez. Seventeenth century. <i>Richmond, Cook Collection</i> . (Photo. Braun et Cie., Paris)	72
59	GORLET . . . . . Detail of <i>The Water Carrier of Sevilla</i> by Diego Rodríguez de Silva y Velázquez. Seventeenth century. <i>London, Collection of the Duke of Wellington</i> . (Photo. Braun et Cie., Paris)	72
60	VASE . . . . . Detail of <i>The Young Christ with the Crown of Thorns</i> by Francisco de Zurbarán. Seventeenth century. <i>Sevilla, Collection of Don Manuel Sánchez Ramos</i> . (Photo. Rafael de Salas, Sevilla)	72
61	CHALICE . . . . . Detail of <i>Saint James of the Marches</i> by Francisco de Zurbarán. Seventeenth century. <i>Madrid, Church of San Francisco el Grande</i> . (Photo. J. Ruiz Vernacci, Madrid)	73
62	VASE . . . . . Detail of <i>Saint Anthony and the Christ Child</i> by Bartolomé Esteban Murillo. Seventeenth century. <i>Sevilla, Cathedral</i> . (Photo. D. Anderson, Rome)	73
63	VASE . . . . . Seventeenth century. Almería or Granada province. <i>Glasgow, Kelvingrove Art Gallery</i> . (By permission of Glasgow Corporation Art Galleries and Museums)	77
64	VASE . . . . . Seventeenth century. Almería or Granada province. (Courtesy of the British Museum, London)	77
65	VASE . . . . . Seventeenth century. Spanish. Courtesy of the Victoria and Albert Museum, London)	77
66	JUG . . . . . Seventeenth century. Probably Almería province. (Courtesy of the Victoria and Albert Museum, London)	77
67	CANTARO . . . . . Seventeenth century. Possibly Almería or Granada province. (Courtesy of the Victoria and Albert Museum, London)	78
68	LAMP . . . . . Seventeenth or eighteenth century. Almería. (Courtesy of the Victoria and Albert Museum, London)	78

## ILLUSTRATIONS

XV

FIGURE	PAGE
69 LAMP . . . . .	78
Seventeenth century. Cartagena. (Courtesy of the Victoria and Albert Museum, London)	
70 VASE AND EWER . . . . .	78
Seventeenth century. Castril de la Peña, Granada. <i>Barcelona, Collection of Don Alfonso Macaya</i> . (Photo. Arxiu "Mas", Barcelona)	
71 DECANTER AND VASE . . . . .	85
Detail of <i>Jesus in the House of Simon</i> attributed to Jorge Manuel Theotocópuli. Early seventeenth century. <i>New York, The Hispanic Society of America</i> (A75)	
72 VASE . . . . .	85
Detail of <i>Saint Mary Magdalene</i> by Doménico Theotocópuli, known as El Greco. Late sixteenth century. (Courtesy of the Worcester Art Museum, Worcester, Massachusetts)	
73 VASE . . . . .	86
Detail of <i>Still Life</i> by Juan Bautista de Espinosa. Dated 1624. <i>London, Private Collection</i> . (Courtesy of Miss Enriqueta Harris, London)	
74 GOBLET . . . . .	86
Sixteenth century. (Courtesy of the Victoria and Albert Museum, London)	
75 LAMP . . . . .	86
Seventeenth century. Castilla. <i>Glasgow, Kelvingrove Art Gallery</i> . (By permission of Glasgow Corporation Art Galleries and Museums)	
76 VASE . . . . .	86
Seventeenth century. Castilla. <i>Barcelona, Collection of Don Alfonso Macaya</i> . (Photo. Arxiu "Mas", Barcelona)	
77 GOBLET . . . . .	93
Seventeenth century. Castilla. <i>Barcelona, Private Collection</i> . (Photo. Arxiu "Mas", Barcelona)	
78 VASE . . . . .	93
Seventeenth century. Castilla. <i>Barcelona, Collection of Don Alfonso Macaya</i> . (Photo. Arxiu "Mas", Barcelona)	
79 GOBLET . . . . .	93
Seventeenth century. Castilla. <i>Barcelona, Museu d'Art de Catalunya, Cabot Collection</i> . (Photo. Arxiu "Mas", Barcelona)	
80 INKWELL . . . . .	93
Late seventeenth century. Castilla. (Courtesy of the Victoria and Albert Museum, London)	

FIGURE	PAGE
81 BOWL . . . . .	94
Late seventeenth century, Castilla. (Courtesy of the Victoria and Albert Museum, London)	
82 BOWL . . . . .	94
Eighteenth century, Spanish. <i>Vich. Museu Episcopal</i> . (Photo. Arxiu d'Arqueologia Catalana, Barcelona)	
83 BOWL . . . . .	94
Eighteenth century, Spanish. (Courtesy of the Victoria and Albert Museum, London)	
84 VASE . . . . .	94
Seventeenth century, Recuenco, <i>Barcelona, Collection of Don Alfonso Macaya</i> . (Photo, Arxiu "Mas", Barcelona)	
85 MIRRORS AND CHANDELIERS IN THE ROYAL PALACE, MADRID . . . . .	105
<i>Throne Room of the Royal Palace, Madrid</i> by William B. E. Ranken, Twentieth century. (Courtesy of the Ferargil Galleries, New York)	
86 TUMBLER . . . . .	107
Eighteenth century, La Granja de San Ildefonso, <i>Collection of Don Joaquín Ezquerro del Bayo</i> . (From Ezquerro del Bayo, Joaquín, <i>La duquesa de Alba y Goya</i> , Madrid, 1928, pl. 63)	
87 DECANTER . . . . .	107
Eighteenth century, La Granja de San Ildefonso. (Courtesy of the Victoria and Albert Museum, London)	
88 COVERED BOWL . . . . .	107
Eighteenth century, La Granja de San Ildefonso. (Courtesy of the Victoria and Albert Museum, London)	
89 COVERED JAR . . . . .	107
Eighteenth century, La Granja de San Ildefonso. (Courtesy of the Victoria and Albert Museum, London)	
90 TRAY . . . . .	111
Eighteenth century, La Granja de San Ildefonso. (Courtesy of the Victoria and Albert Museum, London)	
91 CHANDELIER . . . . .	111
Eighteenth century, La Granja de San Ildefonso. (Courtesy of the Victoria and Albert Museum, London)	
92 DECANTER . . . . .	111
Eighteenth century. (Courtesy of the British Museum, London)	
93 SALT DISH . . . . .	111
Early nineteenth century, La Granja de San Ildefonso. <i>Glasgow Kelvingrove Art Gallery</i> . (By permission of Glasgow Corporation Art Galleries and Museums)	

## ILLUSTRATIONS

XVII

FIGURE	PAGE
94 TUMBLER . . . . .	122
Eighteenth century. (Photo. Arxiu "Mas", Barcelona)	
95 GOBLET . . . . .	122
1837-1846. Vista Alegre, Portugal. Arms of Marialva. <i>Collection of Dom Pedro Lama</i> . (From [Ferreira Pinto Basto, João Theodoro] <i>A fábrica da Vista Alegre; o livro do seu centenário, 1824-1924</i> . [Lisboa? 1924] p. 91)	
96 DECANTERS . . . . .	122
1837-1846. Vista Alegre, Portugal. <i>Museu da Vista Alegre</i> . (From [Ferreira Pinto Basto, João Theodoro] <i>A fábrica da Vista Alegre; o livro do seu centenário, 1824-1924</i> . [Lisboa? 1924] pl. 2, fig. 1)	
97 TUMBLER . . . . .	122
1837-1846. Vista Alegre, Portugal. <i>Porto. Collection of Sr<sup>a</sup>. D<sup>a</sup>. Albertina Aires de Gouveia Pinto Basto</i> . (From [Ferreira Pinto Basto, João Theodoro] <i>A fábrica da Vista Alegre; o livro do seu centenário, 1824-1924</i> . [Lisboa? 1924] pl. 8, fig. 2)	
98 DECANTER . . . . .	124
Late eighteenth or early nineteenth century. Mexico. (Courtesy of The Metropolitan Museum of Art, New York)	
99 TUMBLER . . . . .	124
Late eighteenth or early nineteenth century. Mexico. (Courtesy of The Metropolitan Museum of Art, New York)	
100 PULQUE JAR AND TUMBLERS . . . . .	124
Late eighteenth or early nineteenth century. Mexico. (Courtesy of the Pennsylvania Museum of Art, Philadelphia)	

The following examples are in the collection of The Hispanic Society of America

PLATE	
I GOBLET (T352)	130
II VASE. SIDE VIEW (T351)	132
III GOBLET (T353)	134
IV CANTIR (T358)	136
V OIL LAMP (T359)	138
VI FLASK (T354)	140
SIDE VIEW (T354)	141
VII FLASK (T364)	142
VII BOTTLE (T365)	142
VIII SALTSHAKER (T361)	144
VIII ANIMAL (T363)	144
IX FLASK (T362)	146

PLATE	PAGE
X CUP (T355)	148
XI VASE (T367)	150
XII SUGAR BOWL (T426)	152
XIII MUG (T429)	154
XIV COVERED JAR (T430)	156
XV TUMBLER (T427)	158
XVI DECANTER (T428)	160
STOPPER (T428)	161
XVII COVERED JAR (T443)	162
XVIII COVERED JAR (T444)	164
XIX SUGAR BOWL (T445)	166

I

MEDIAEVAL GLASS AND GLASS MAKING  
IN SPAIN



**R**ULERS of the Christian north in Spain fought the Moslem enemy, reclaiming land for their domains and for the glory of the faith. Recurrent holy wars filled the years till Ferdinand the Third took Sevilla for his Castilian realm and Jaime the Conqueror annexed Valencia to his kingdom of Aragón. The Church, never completely suppressed under Muhammadan domination, acquired strength with every Christian victory, and a growing interest focused on the erection and adornment of ecclesiastical buildings. Under the round-arched portals of churches, the worshipers passed into the low-vaulted buildings and crowded between the sturdy columns. Beams of sunlight filtered through the unglazed slits that served for windows, and the unsteady rays from glass oil lamps shone on the earth-coloured murals of domed apses and on the gilded stucco altar frontals. A twelfth-century mural from the Church of *Santa María* at Mur will keep timeless record of such altar lamps, cup-shaped vessels swinging from chains and burning bright golden yellow beneath the figure of Christ (Fig. 1).

Urban worshipers of the Romanesque period viewed church furnishings of costly materials and talented workmanship, donations often of some grateful monarch. Their eyes turned toward bejeweled crucifixes of ivory and glittering metals, and they saw the sacramental wine upheld in golden chalices. Ivory and silver boxes, marvelously wrought, held the venerated relics of saints. Luxurious repositories such as these were not within the means of humble mountain parishes. When prelates came to consecrate the newly built rural churches, as part of the dedication, they sealed holy relics within the altars. Bishops, celebrating the rite in 1086 at the Monastery of *San Esteban* at Bañolas, placed within the high altar a piece of the true Cross. The reliquary used, although described as a crystal casket, may well have been of crystalline glass (1). Little jars of green or ruddy glass, the openings sealed with wax marked by the episcopal ring (Fig. 2), have emerged from the recesses of altars in country churches after centuries in obscurity. Only a limited number of these Romanesque reliquaries (*lep-sanotecas*) is known, some still in their original sites but all from Cataluña and other domains of the Barcelonese counts and Aragonese kings (2).

Glass was abundantly used for secular purposes through these years according to Catalan mural paintings and miniatures that illustrate a plentiful supply of table services (3). Meat and fish were served in stemmed dishes,

while beverages were held in ewers and jars. The feasting guests received wine in high-necked flasks from the servants, drained it heartily with lips over bottle mouths or sipped it from huge goblets (Fig. 3).

The earliest documented centre of glass making in Cataluña is the Monastery of Poblet, near Tarragona. In a collection of accounts pertaining to Poblet is an agreement made with the abbot and the prior, the nineteenth day of August, 1189, by the glass blower Guillem. The monastery granted Guillem the use of land covered with the herbs necessary to his trade, probably glasswort or prickly saltwort, in return for a tithe and two quintals of pane glass to be paid each year by Eastertide. Four additional hundredweights of glass, if needed, would assure the artisan of his food supply, and for two more the Order agreed to provide him with proper burial. The site of the glass furnace was near the fount of Narola, a spring not far from the monastery buildings. From this location have been excavated within recent years *scoriæ* from a glass furnace (4).

During the late eleventh or early twelfth century, a German monk known as Theophilus wrote instructions for glass manufacture, descriptive of processes employed by glassmakers universally. He explained the structure of furnaces and clay crucibles for holding molten glass and set forth in detail the making of glass panes from blown cylinders and the fashioning of jewelry. His list of glassmakers' tools includes most of those needed and used throughout the centuries: wooden shaping tools, iron blowpipe and pontil, pincers, iron shears, and ladles. The blowing process as recorded by him is the earliest written account known, yet his instructions might still be followed to the letter by a modern glass blower. The artisan was to dip his blowpipe in molten glass, gathering a sufficient quantity on the tip. He was then to put the opposite end of the hollow pipe into his mouth and blow a little at a time, taking care to remove the pipe from his lips frequently and so prevent inhalation of the fiery air. To make a vase the glass was blown to a bulb and cracked from the blowing rod with a moistened wood utensil. The workman should reheat the base and attach to it a pontil. The collar of the vase must then be heated to malleability and shaped at will, while the base was pushed up to a concave hollow. Glass-rod handles might be added and threadings of glass wound around the body. The finished vessel was then ready to be broken off the pontil and put into the annealing oven. In shaping a long-necked flask, the workman could blow and swing the pipe in circles over his head, lengthening the flask neck by this motion.

Theophilus' directions for mixing glass paste call for two parts of potash obtained from beechwood ashes and one part of well-washed sand to be fritted, that is, partially fused in the furnace before the actual melting in

crucibles. This combination formed an alkaline silicate in which lime or lead oxide must have been present either as impurities in the mixture or as intentional additions in order to render the paste tougher and more easily worked. The glassmen of Spain, as of other Mediterranean countries, derived their alkali from plants growing in salt marshes. From the ashes of *salsola*, *salicornia*, and other species was extracted the impure carbonate of soda that combined with fine quartz sand and lime to make their soda-lime glass. Considered of superior quality by foreign glassmakers, the Spanish soda ash, lixiviated and containing a small amount of lime, was exported and known to the trade for centuries as *barilla* (5).

To King Alfonso the Wise may be given credit for attempting to disseminate among his subjects a broader knowledge of glass making. In 1248 he ordered made a Castilian translation of an Arabic treatise on glass. The treatise, known thereafter as *El lapidario*, had been translated originally from an early Hebrew source by a writer named Abolais. Supplementary comments, added by the Castilian translator, made the work a complete explanation of composition and colours, engraving, the manufacture of lenses for eyeglasses, and the gilding and enameling of glass (6).

It was not Castilla that merited recognition during this era for products of the *vidriero's* art, despite the royal interest. Barcelona, capital of commercial, democratic Cataluña, stood peerless in all Spain for beautiful glass. Tradition extends the craft of glass blowing in this city back to a remote past, while the municipal archives hold its record, traced from the first quarter of the fourteenth century. In 1324, the erection of furnaces within the city was prohibited as hazardous to the neighbourhood (7). But the blowers, even at this time an influential group, protested the edict, appealing to the king who gave an artisan named Guillem the right in 1330 to operate a furnace. Thus championed by royal favour, the glassmakers, fifteen years later, freed themselves of the city council's prohibition and built their ovens. The following year the council felt compelled to disregard its previous order and gave permission to a certain Monte to construct a new furnace within the city limits (8). Perhaps seeking a more fortunate location for his trade, a Barcelonese glass blower, Guillem Barcelò, sailed away from his native city in 1347 to establish himself in Mallorca (9).

From this time date the two streets, called *de los Vidrieros* and *de la Vidrieria*, which indicate the location within Barcelona of the glass-blowers' and glass-merchants' quarters (10). The workmen often sold their wares directly to customers, as is shown by the record of Alexandre Vespi, owner of a glass oven, who was paid in 1391 for vessels made at the queen's order. Vitreous articles were also displayed in special shops, such as that run

at Vich by the Mallorcan tradesman whose death in 1385 occasioned an inventory of stock (11).

Barcelona's glass industry ranked high in importance by the fifteenth century, and towns scattered over the entire region augmented the work of the capital. Glass fairs, held yearly on January first at Barcelona, were visited by the august body of councilors. From 1430 to 1438 are recorded the pompous cavalcades of the council to see the shining products of the blowpipe ranged in stalls along the streets. Throughout the year, glass was customarily vended by hucksters or sold in shops, workrooms, or from tables placed in the city streets. The wandering glass dealers carried their wares packed by eights in wooden frames. By so doing, they hoped that, even if some pieces broke in transit, at least all would not be lost. The itinerant venders became overnumerous, threatening the business of shopkeepers, and in 1457 an edict came from the mayor prohibiting the ambulatory sale of glass. Permission had to be obtained from the guild to sell glass within the city, and a tax paid to its treasury for the privilege (12).

Joining forces with the weavers of esparto-grass mats, the glass blowers formed in 1455 a guild and brotherhood under the protection of Saint Bernardino. Each year on the Saint's day, the guild members were to elect their officers, half of whom were to be glass blowers, the other half esparto weavers. The eve of Saint Bernardino's Day, the craftsmen spent in feasting, then going to vespers at the Monastery of the Minorites. The following day was devoted to hearing Mass in the same church, to dining and the important business of electing officers. An ordinance dated November 29th, 1456, regulating the privileges and duties of the guild members, enumerates in detail their activities (13). By 1470 the guild had changed its place of worship from the Minorites' church to the Chapel of the Guardian Angel and Saint Bernardino in Barcelona Cathedral (14).

So prominent had the industry become that, fulfilling a new regulation of Alfonso the Fifth, Pere Gallart was elected in 1455 to a place in the Barcelona city council, the first glass blower on this board of five citizens. It is probable that in 1462 an ordinance was passed compelling glass blowers and esparto weavers to act on the council, because statutes of 1480 refer to the preëxisting law. The compulsory duties of these two artisan representatives were clearly defined in 1495 by further ordinances (15).

The recorded activities of Barcelonese glass blowers are scattered through the municipal archives for the fifteenth century. There is too little continuity to form the complete history of any one workman, but the accounts picture the industry as a whole. At times, the artisans' names alone are the sole items of interest, as in a 1417 lawsuit brought by Jaume Oliver, glass



Fig. 1. LAMPS  
Twelfth century



Fig. 2. LIPSANOTECAS  
Eleventh century

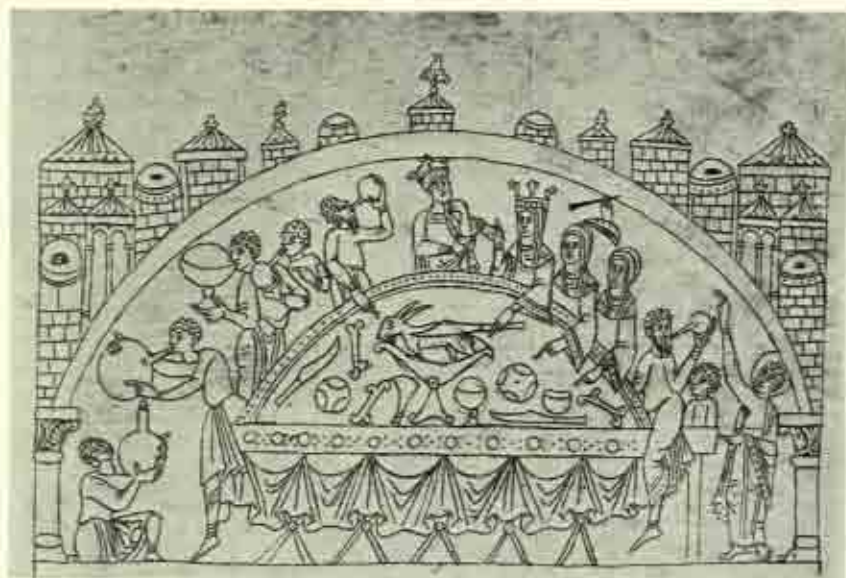


Fig. 3. GOBLETS AND FLASKS  
Eleventh century



Fig. 4. EWERS AND GOBLETS  
Early fourteenth century

blower of Barcelona, against Asbert Llorens and Joan de Mallorca of the same trade (16).

Working in Barcelona province but a few miles from the capital, a family named Sala had their furnaces at Vallromanas from the time when Antoni erected his in 1417. Francesch in 1461 was in charge of a glass oven there, and he may have been the same "Francesch Sala, glass blower of Barcelona", whose few belongings were inventoried in 1485. Vicenç Sala paid rent for a furnace at Vallromanas in 1487, and two years afterwards he and his sons established another at Moncada, after having bombarded the city officials with cheerful assurances of the honour and reputation that the town would derive from their beautiful products. The petition for a furnace ended with a reference to the impossibility, for divers reasons, of pursuing their trade in Barcelona city, clear proof that the capital still had restrictions against glass ovens within city limits. Close to Barcelona, Moncada was a favoured location for glassmakers. Antoni Sadurní, an embroiderer and member of a family illustrious in the trade, asked for the privilege of erecting a glass furnace there in 1486, promising to pay a yearly rental. His ambition was to assemble at his fabric master blowers gathered from distant places. The council of Barcelona agreed to his demands, noting that the industry would be profitable and creditable to the city. A Pere Mate was mentioned in 1498 as having operated a glass furnace at Moncada, although at that time he was working at Vich (17).

Farther from Barcelona than Moncada, Mataró is thought to have been a centre of glass manufacture during the fifteenth century, although no documents have given proof of the theory. Granollers del Vallés, town of Barcelona province, had a glass furnace owned in 1491 by Damià Granada. This artisan contracted with another glass blower, Jaume Savertés, to lease his oven together with supplies of glass paste, ready for use. Savertés, who may have been a Gascon, was evidently without furnace and materials of his own but wished to make a quantity of glass. Connected in 1418 with the castle of Cruïlles in Gerona province is the name of Pere Xatart, glass blower (18).

Tarragona, another city of Catalunya, has a street named *Carrer del Vidre* and so would seem to have been a headquarters for the glass industry. Two fourteenth-century glassmen were busy with the manufacture of the Cathedral windows, and in the next century, 1409, a company was formed between Jaume Roger, glass blower from Tortosa, and Pere Salvat, a writer of Tarragona, who put up the capital for the venture. Business prospered for three years, but then, without balancing the accounts or dividing the profits with his partner, Roger fled to Flix where he set up a

new glass fabric. Salvat sought in vain to force the errant craftsman to return, suing him for stolen capital and earnings. Thus, the little company was dissolved and heard of no more (19).

Turning from glassmen to glassware, one finds contemporary writers extravagant in its praise. Describing Barcelona's finest products to a friend, Jeroni Pau wrote in 1491 that Barcelona glass, esteemed even at the Court of Rome, rivaled that of Venice (20). Lucius Marineus, the Sicilian, related his travels through Spain while it was ruled by his patrons, Ferdinand and Isabel, and said, "The best glass in all Spain is that made in Barcelona" (21).

What was the appearance of the ware which so enchanted these authors and all other beauty lovers of their day? Some conception is gained from the impressive number of shapes recorded in documents of the Gothic period. Here are inventoried the *almorratxes* characteristic of the region, pedestaled containers with vertical spouts for sprinkling rose water in folk dances and for perfuming the home. Amphoræ, *ampolles*, and the diminutive *ampolletes* were two-handled vases, mentioned frequently from the beginning of the fourteenth century as containing floral waters and oils and as accompanied by wooden or metallic supports. Large casks (*barrals*) and those of smaller size (*barralets*) were used for storing wine, vinegar, and rose water; often they were kept in cellars, protected now and then by coverings of woven straw or palm (22). There appear also the usual bowls and serving dishes, drinking vessels and decanters called *brocals*. Houses were lighted by glass lanterns and also, in the fifteenth century, by candelabra of the same material, and hanging lamps with brass or iron mountings illuminated either home or shrine (23). Ecclesiastical ewers (*canadelles*) to hold wine and water during the celebration of the Mass (Fig. 4) are noted in an account book of purchases made from June 1395 to May 1396, now in the Mallorca Cathedral archives (24). An inventory of a church at Zaragoza lists in 1390 two covered glass jars containing relics, evidently *lipsanotecas* (25). Each day's passing was measured by the sands in hour-glasses, instruments owned by clergy and laity in the Gothic period (26). Merchants of glassware and physicians kept themselves supplied with little papboats (*pipas*), through the long spouts of which the sick could be fed broth and other nourishing liquids. An apothecary of the mid-fifteenth century boasted a supply of forty-six spouted jars, glass vessels used in compounding his remedies (27), and woodcuts of the period (Fig. 5) illustrate the large flasks in which pharmacists stored liquid medicines. Undoubtedly with reference to their shapes, bottles were called "gourds", "chestnuts", and "pine cones" and were occasionally protected by wicker,



Fig. 5. PHARMACY FLASKS  
1495



Fig. 6. JUG AND DECANTER  
Late fourteenth century



Fig. 7. DECANTERS  
About 1445

palm, or straw cloth (28). Sweets and preserves, such as rose honey, were served from vessels (*confiters* or *pots*) in the form of deep cups with lids; saltcellars, dominating the table setting, were elaborately mounted in silver or unusually shaped, like the Moor's head listed in 1449 (29). Vases called *pitxers* or *pitxells* were for the decorative purpose of holding flowers. Cataluña's bailiff in 1430 supplied his pet parrot with two drinking vessels (*abeuradors*) made of glass (30).

Representations of Gothic glass, supplementing these written accounts, are found in panels by the artists Ferrer Bassa, Jaume and Pere Serra and their school, Lluís Borrassà and his followers, who depicted dishes for viands and fruit displayed on long trestle tables spread with check-bordered cloths. Decanters and jugs set the tables in scenes of *The Last Supper* (Fig. 6), painted by a follower of the Serras, and of Herod's feast in a *Retablo of Saint John the Baptist and Saint Stephen*. Below the hand of Judas in the Last Supper panel may be seen a sharply defined glass decanter, its fragilely thin neck rising from a rotund body.

Artists of the following century painted with more minute and truer details a wide variety of glass. *The Marriage at Cana* from a *Retablo of the Transfiguration*, completed about 1445 (Fig. 7), offered an opportunity for representing a table with all the utensils customarily used during the period. A large service dish holds the meat, but none of the guests has an individual plate, cutlery, or drinking glass. The goblet shown in the painting is being passed from one guest to his neighbour. Two knives laid on the table indicate that each person carved what he wished from the central serving dish, perhaps placing it on a slice of bread before him. The diners carried food to their mouths with the fingers, and so the lavers circulated after the feast were a necessity. Frequently these *aguamaniles* were ewers made of glass, from which scented waters were poured into a basin. On the cloth among scattered rolls of bread stand four high-necked decanters, excellently rendered to show a glassy quality, each with an apple neatly closing the mouth. Through two bottles of pale transparent glass may be seen the level of the liquid across the necks and the cone-shaped impressions in the bases where the bodies are joined by hollow pedestals. This kind of indentation, known to glass blowers as a "kick", is pressed into the convex wall of the glass bubble, while still soft on the blowpipe, to form a secure base for the finished product. The technicality interested Gothic painters, and they have reproduced it many times, generally with exaggerated height.

Fifteenth-century paintings reveal lamps of numerous shapes hanging before sanctuaries, like the pair in *The Presentation* from a *retablo* (A5) by Pere Espalargues in the Hispanic Society's collection (Fig. 8). The oil

containers with bright flames shining through the clear glass rest in metallic rings suspended above the altar by ropes. Candles within a frame of glass and metal, carried on long poles, were the lanterns lighting the path of pedestrians (Fig. 9).

Pedro de Córdoba, native of the Andalusian city implied by his name, painted his *Annunciation* with a Flemish carefulness for detail. Amid a confusion of wood and metal objects, a glass *canadella* (Fig. 10) and a cup stand on the tiled floor near a large tray of fruit. Although Pedro lived far from Cataluña, he represented in this panel two glass vessels which were probably importations from that region, the shape of the ewer, similar to a fourteenth-century specimen excavated at San Benito de Bages, being distinctively Catalan (Fig. 13).

Besides the blown forms of hollow vessels, glass assumed numerous aspects in fourteenth-century Cataluña. It was shaped into beads for rosaries, necklaces, and trimming for ladies' robes. Gems of deep-coloured glass were frankly listed as embellishments incrusting in jewelry, silver plate, and sculptured wood figures. Mirrors, some designated especially as shaving mirrors, were cut from flat panes of glass, polished, and framed (31).

An odd fashion made its way, probably from France, to Cataluña about the first quarter of the fourteenth century. Sheets of blue glass were fixed in arcadings behind bas-relief sculptures of alabaster. The custom lasted only until the end of the century, after which the sculptors returned to their former method of painting backgrounds. Peter the Ceremonious ordered the royal tombs to be installed at Poblet Monastery for himself and his family, and for his predecessors, Alfonso the Second and James the Conqueror. The sarcophagi had around them little figures of mourners against blue glass backgrounds (32).

Panes of glass were a luxury afforded only by royalty and rich nobles to close the windows of their palaces; folding wooden shutters or iron grilles were protection for windows in less affluent homes. King Peter, in a mighty rage at negligence that caused the destruction of glass windows in Perpignan castle, ordered his procurator of the Roussillon to have them replaced immediately at the caretaker's expense. Threatening his agent with instant dismissal if his commands were not carried out, the King described exactly the way in which he wished to have the windows glazed (33).

The small panes used during this era were, as a rule, crown glass, unlike the large sheets common in modern windows. Crown glass was made by blowing a sphere at the end of the blowpipe, then opening the globe at a point opposite the pipe, and finally spinning the glass to expand it to a flat disk. The disk, after annealing, could be cut into small pieces or left whole.



A5

Fig. 8. HANGING LAMP  
1490



Fig. 9. LANTERNS  
Early fifteenth century



Fig. 10. DECANTER  
Fifteenth century



A17

Fig. 11. WINDOW GLAZED WITH CROWN GLASS  
Fifteenth century

When uncut, crown glass showed at its centre the lump where the original sphere was fastened to the blowpipe. Panes of crown glass became known as "bulls' eyes" because of these lumps or bullions. A window glazed with crown glass was painted by a fifteenth-century Aragonese artist in the central panel of his *retablo* of *The Visitation* (A17) now in the Hispanic Society's possession (Fig. 11). Clearly seen behind the heads of the Virgin and Saint Elizabeth are the circular bullions of greenish brown glass.

Rectangular panes were constructed through the Middle Ages by blowing elongated vesicles, then cutting off the bases and down the entire length of the sides, and flattening the cylinders. This form is known as sheet, or "muff", glass. Glass panes long continued to be rarities in Spain, where travelers, even in the early nineteenth century, seldom failed to mention their presence or absence (34).

Preserved in archives throughout Spain have been found contracts made by ecclesiastical dignitaries with artisans who designed and composed the stained glass windows for cathedrals and churches. These workmen, of whom there are numerous records from the thirteenth through the sixteenth century, were generally foreigners from France or Flanders, although as time went on, local native schools developed. The glaziers would set up a shop within or near the edifice for which they were making the windows and work exclusively on their task until it was accomplished. Their industry seems to have been entirely separate from the manufacture of glass hollow ware; they made none themselves, nor did they usually ally themselves with any local glass blowers whose business was the production of objects for table service (35).

Of the utmost rarity are the Catalan Gothic glasses which have survived in well-preserved condition. Those fourteenth-century objects, disinterred from sepulchres in two monasteries of Cataluña, Santas Creus and San Benito de Bages, are a conical goblet (Fig. 12), a ewer, and a *canadella* (Fig. 13) with tall collar entwined by glass threading. From the ciborium wall at Poblet Monastery came a fourteenth-century reliquary shaped like a hanging lamp, and unearthed from the silty bed of a pool that was built during the mid century, came a cruet of white glass. The cruet, designated by the term *cetrill* in inventories, is almost identical with the modern *porró* or wine container. A fluted, bell-shaped cup, not too badly damaged, was found at the same monastery, while another fifteenth-century cup of similar shape (Fig. 14) was removed from within a house wall at Barcelona (36).

These few remains of Gothic glassware demonstrate a growing complexity of shape and ornamentation that was to continue as time went on.

Although the spherical, conical, and pear-shaped forms of the Romanesque era still predominated, the application of handles, spouts, and decorations became more common. On fourteenth-century objects few purely ornamental adjuncts are to be found, but introduced at this period were simple glass cords twisted about the collars of decanters and ewers. During the next hundred years there was more frequent use of these threadings and of applied adornments pinched from glass paste.

The craftsmen have shown in their products a high technical skill not far surpassed by their successors of the Renaissance. They knew how to employ manganese dioxide, "glass soap", to remove the green colouration of iron salts. Pieces for the table were thinly blown, of transparent glass that had a faint yellowish tinge and a multitude of tiny bubbles. Thick-walled vessels for the storage of provisions were blown from glass paste in which the makers had not troubled to correct the green colouring. These men were skilled, however, in the tinting of glass paste to be blown into fine objects. They mixed with the molten paste the oxides of cobalt, iron, manganese, tin, copper, and other metals, alone or in combination, to create a rainbow of colour. Deep cobalt blue was favoured above other shades. Mention of it occurs again and again in inventories, and dating from the Gothic era, actual fragments with white-enameled decorations appeared amid the ruins of the Castle of *Sentfores*, Vich. Glass of purple hue evidently pleased the royal fancy, since Queen Margaret of Prades listed among her husband's effects in 1410 a little jar of white glass trimmed with violet (37). A certain Barcelonese citizen of the late fifteenth century might well have shown pride in his glassware, for besides an enameled plate, he owned a ewer "the colour of ashes", a glass bowl that resembled porcelain, and two pieces of divers colours. Other tints for glass were *leonada* or tawny, and *mongil*, a dark colouring (38).

Flourishing as was the glass industry within Cataluña itself, yet there were frequent instances of foreign importations, some of which were to leave their imprint on Catalan glass designs for centuries. In Cataluña's history as a maritime power, this was the period of greatest expansion and vitality. Her ships linked Barcelona with every Mediterranean port and even ventured beyond the Pillars of Hercules to the shadowy, dread Atlantic, braving attacks by English corsairs to sail to the ports of Flanders. Had it not been for intrepid navigators, King Martin the Humane might not have procured his roundel of German or Flemish glass in 1397. He wrote from Zaragoza to Barcelonese merchants ordering a beautiful piece that was to be as large as a dinner plate and clear ruby in colour. The glass



Fig. 12. GOBLET



Fig. 13. CANADELLA

Fourteenth century



Fig. 14. CUP  
 Fifteenth century

was to be sent him by post or reliable courier and packed so well that it would not break in transit (39).

Catalans trafficking in countries of the eastern Mediterranean brought back with them objects from renowned centres of the glass industry—Damascus, Beirut, and Alexandria. Fragile as these shipments must have been, the merchants knew how greatly their patrons prized the exotic pieces. Near-Eastern glasses were handed on as heirlooms or were reckoned important enough to be inventoried among the owners' valued possessions. An apothecary of Cervera had a decanter (*brocal*) of Damascus glass until his death in 1373, when the entire contents of his shop were sold at auction to benefit his little son. The decanter, apparently listed in the knowledge of its salability, brought five *suelos* and one *dinero* (40).

Damascene glasses found their way into palace, mansion, or simple home, admired by all from king to seaman. The knight commandery of Gardeny (Lérida province) in 1373 owned two ecclesiastical ewers, and years later a wealthy burgher of Barcelona died, leaving a glass lantern framed with brass (41). Pere de Queralt, powerful lord of Santa Coloma until 1408, was particularly fond of glass from Damascus, having owned seven pieces in all (42). King Martin the First included with his household goods a handsome serving dish of Damascus glass with silver mountings that had been chased, gilded, and enameled, while a vase, suitable for holding lilies, a bowl, and a set of drinking glasses completed the number of his pieces of Syrian origin (43). In a luxuriously furnished room overlooking his flower garden, Pere Beçet, the bailiff of Cataluña, kept a serving dish of Damascus glass (44). Sailors, who voyaged to Near-Eastern ports, fancied such curiosities and purchased them for their own enjoyment. An inventory of 1427 lists Damascene *almorratxes*, and a somewhat later record tells of a sailor's having seven glass dishes, products of Beirut (45). Alexandrine glass of this period is more rarely noted, but there was mentioned in 1414 an *almorratxa* and in 1475 a service dish from the Egyptian city (46).

Often, Damascene glasses were carefully described in documents as "painted" or "enameled". Thus we may assume that, even when the mediaeval writers failed to add either adjective to the words "*vidre de Damas*", they still meant the enameled glass for which Syria of the thirteenth and fourteenth centuries has ever been extolled. Their references were to those objects of which there remain at the present day, squat mosque lamps, narrow-necked flasks, pedestaled cups, and a few of the more usual domestic shapes. Blown from pale green, light amber, and sometimes deep blue glass, the vessels are covered profusely with brilliant enamels enriched by gilding.

The craftsmen of Cataluña were not slow in their attempts to copy Eastern glass with its enameled designs. The earliest and most complete proof is an order which the council of Tortosa gave in 1387 to Domingo Valls, a painter, for a glass lamp imitating Damascene work, and an entry of 1396 records a blue *almorratxa* made to resemble Damascus glass (47). Until the mid-fifteenth century, the quantity of enameled glass from the Near East ranked about equally with Catalan reproductions, but as the century progressed, the imported glass became superseded by the domestic. The reason may be attributed to the decline of Syrian glass blowing and enameling, occasioned by Tamerlane's capture of Damascus in 1400 and the enslavement of all artisans.

With the disappearance of Syrian glass from Catalan records, enameled glass is no longer mentioned as imitation Damascus ware (*contrafet de Damas*) but simply as "painted" or "enameled", and so it would seem that reference to a domestic product was intended. A glass serving dish "painted in Moorish style" is an interesting item in the 1472 inventory of Antoni Roviola, abbot of Santa Maria de l'Estany (48). Also very surely the work of a Barcelonense fabric was the blue glass goblet with gold and white decorations owned in 1470 by two Sevilian ladies (49). Shapes of enameled glass were identical to those of glass unadorned by any painted designs, but there are several pieces worthy of especial notice: a cooler (*refredador*), that is, a deep basin for chilling wine or fruit, plates for carrying gifts, rosary beads (*paternostres*), and a plate ornamented with divers pictures (50).

To the southwest of Cataluña lies the old kingdom of Aragón, which in 1164 became united to the important county of Cataluña through the inheritance of Alfonso the Second. Little has been learned about the glass-makers' craft in Aragón during the Middle Ages except that the city of Caspe in the fifteenth century was recognized for the high quality of glass which it produced plentifully. Remains of furnaces found within the boundaries of the city are tangible proof that here was a glass-making centre (51).

The Roussillon, a small territory in the eastern Pyrenees, belonged to the crown of Aragón from the twelfth through the first half of the seventeenth century, save for thirty years in the second half of the fifteenth century. Glass making in this section is first recorded with the name of Berenguer Xatart who was styled, in 1334, master of the glass furnace at Palau. Members of the same family continued to be the glass manufacturers there, several of them plying their trade at the same time. In 1425, mention is made of a Martí Xatart, glass blower, and thirteen years later another Martí was elected town bailiff. The town became known as Palau del Vidre, "of the glass", by 1442 and remained a centre for the industry until

the sixteenth century. A contract of 1470 for windows in the Church of *Sant Mateu*, Perpignan, speaks of the clear glass of Elne and Palau (52).

The earliest knowledge we have of glass making in Mallorca under Aragonese rule is the account of Guillem Barceló's arrival on the island. King Peter the Fourth granted him permission on November 30th, 1347, to set up a glass furnace at Palma. This royal decree countermanded an ancient law prohibiting such establishments. Because Guillem's new type of furnace used only four loads of firewood a day, and these were to be brought from outside the island, the King consented to rescind the old ordinance which was intended to prevent an excess consumption of fuel. Whether or not Guillem ever erected his workshop is unknown, because the jurors tried by subterfuge to deter him, and no record has been found of the final decision in the resulting trial (53). The account of Guillem's venture is significant in the history of Mallorcan glass making, for it refers to an ordinance against glass furnaces considered ancient even in 1347, thus proving the existence of the craft long prior to this date.

Over fifty years later, 1398, Nicholau Coloma was more fortunate in his petitions to the general council of Mallorca; he was granted the exclusive privilege of making and selling glass there. A proclamation to this effect was given out in the streets of Palma, and prospective purchasers were informed that Nicholau would sell decanters, flasks, goblets, and bottles of various shapes at bargain prices, provided these glasses were bought for individual use and not for reselling or transportation from the island (54). There is a possibility that the glassmaker is the same as the Nicolau who was mentioned in the account books of the Cathedral for 1392 (55). At present, but a single fifteenth-century glass blower of the island is known; the name, Joan de Mallorca, indicates that he was a resident there. In 1417 he became involved in a lawsuit against a fellow craftsman of Barcelona (56).

To overcome certain abuses and excess charges made by the glass merchants of Mallorca, the council in 1453 drew up a price list for the observance of all who sold glass. The amounts set for the sale of glass vessels ranged from two to twelve *dineros*, and a fine was to be imposed on everyone failing to comply with the ordinance. The list is of interest for the shapes and the kinds of glass given, the names of the forms being identical with those found in Catalan documents. Certain of the vases were described as made from common glass which had a yellowish tint; the most expensive goblets had high pedestals. Decanters that brought top prices were shaped "like those of Barcelona" and were made of glass paste manufactured from the ashes of prickly saltwort (*ciricorn*). Goblets blown from

this same material and raised on glass-rod pedestals commanded an equal price (57). Because there is no indication that these glasses were imported and because certain decanters were described as of workmanship and design identical to Barcelonese products, it may be surmised that the articles were of native Mallorcan make.

Unfortunately, there have been found no examples of mediaeval glass which may be attributed positively to island manufacture (58). For any further knowledge of the ware we must turn to inventories listing the possessions of wealthy Mallorcans and the contents of church treasuries. Scant information can be gleaned from them, and always there remains some doubt as to whether or not the glass vessels had been brought from the mainland. None is definitely described as Mallorcan, yet because there is no reference to source, the glass probably had not traveled from afar. Mentioned frequently are the large casks or *barrals*, sometimes protected by a covering of esparto-grass (59). The parochial church at Lluch in 1478 had several necklaces of glass beads, probably to bedeck the image of the Virgin, and "a glass jar full of saints' relics" (60). A serving dish, a fruit bowl, and two *almorratxes* are among the pieces of glass itemized in 1493 as having belonged to the noted Mallorcan bibliophile, Miquel Abeyar (61).

The most important references in these inventories are to painted glass. Since the source of its manufacture was often unmentioned, the glass may have been from the fabrics of Barcelona, yet there is also the possibility of its having been the handiwork of Mallorcans skilled in the same technique. Glass from the East was so luxurious a treasure that the scribes were more careful to indicate its provenience. The goods of a rich fourteenth-century merchant residing in Mallorca included "one lamp of Damascus glass", and those of Miquel Abeyar a mirror, "work of Venetians" (62).

If Valencia, another region included in the kingdom of Aragón, is not recognized now as a source of glass making during the fourteenth and fifteenth centuries, the reason may lie in the universal acknowledgment of her mastery in another trade, that of pottery making. Throughout this period she excelled in the manufacture of gold-lustred ware, but not to the complete exclusion of glass blowing. Valencia's "superb glasses" caught the attention of a German traveling through the kingdom in 1494, and scattered fifteenth-century reports of regional blowers have emerged from city archives (63). In 1418 Bernat Camporelles, a glassmaker of Murviedro, is mentioned (64), and the acts of the Elche town council record glass manufacture there. During August 1452, the council ordered several buildings erected on the property of a Señor Sent Jordi; one house was to contain a glass furnace. Nadal Torres leased the workshops, to hold as long as he

filled the position of town glass blower, paying the rent and constructing his own glass furnace. The council ordered a loan of thirty florins—presumably to finance the work—which he must repay as soon as he removed to Elche. Later in August, complying with a request of the townspeople, the council decided not to erect the houses on Señor Sent Jordi's property, since it was a considerable distance away. They agreed instead to buy two lots on the street where, years previously, there had been a glass furnace. This document, then, offers positive proof that glass making at Elche was a trade established long before the mid-fifteenth century.

The following year, 1453, the town records note another glass blower, Gil, whose surname is not given. A merchant complained to the council that his mule carried a load of glass made by Gil to Murcia, where it was confiscated by the magistrate because Gil engaged in a scuffle with a few citizens. Elche's furnace again changed hands when the council leased it in 1458 to Francesch Castell (65).

Apart from these documents recording glass blowers in Valencia, may be found the comments of the eighteenth-century author, Antonio Cavanilles. He stated that the glass furnaces of Busot, where glasswort and good sand abounded, were of Moorish origin as were those of Ollería. The workshops of Salinas possibly dated back to Roman domination (66).

Exceptional finds of glass at Paterna prove that the town was a glass-blowing as well as a pottery-making centre and comprise the sole remaining specimens of mediaeval Valencian glass. From a number of fragments was reconstructed a goblet, biconical like that from Santas Creus. The vessel was blown from yellowish glass, gadroons in relief extending halfway up the sides of the bowl (Fig. 15). Other fragments found at this site indicate that the original shapes were footed goblets, cylindrical bottles, and cruets with curved spouts. A close kinship exists between the Valencian forms and those of fourteenth-century Cataluña.

Further manifestation that Valencian glass was imitative of the Catalan lies in paintings of the period. Of their number is *The Last Supper*, central panel from a fourteenth-century *retablo* painted by a man under strong influence of the Catalan Serras. Upon the checkered tablecloth with bread sticks and rosette-shaped rolls stand glass decanters and ewers for wine. Painted by a follower of Jacomart, a panel in Valencia Cathedral depicts Saint Anthony of Padua holding a glass bowl (Fig. 16). Beautifully rendered is the transparency of the glass through which may be seen the saint's finger tips and the grapevine sprig bearing a cluster of fruit. The bowl, touched with shining high lights, is a simple half sphere on a low foot; the lapped edges around brim and foot, a common means of reinforcement in



Fig. 15. GOBLET  
Fourteenth century



Fig. 16. BOWL  
Early fifteenth century

glass making, are brought out by fine brush lines of lighter pigment. A rotund vase with handles edged by spines of pinched decoration holds the spray of lilies in an Annunciation painted by Rodrigo de Osona.

South and west of Valencia lay the kingdoms of Murcia and Granada, strongholds of Muhammadan culture for centuries after their fall to the Christians. An Arab writer of the thirteenth century praised Murcia and the Granadine cities, Almería and Málaga, extolling their beautiful products of glass (67). A full century later Hieronymus Muenzer was making his tour of Spain. At Almería, as he inspected a mosque, then transformed into a Christian church, his attention was attracted to "two lamps of great size, made of coloured glasses brought from Mecca, where is the tomb of Muhammad" (68).

He described at some length the manufacture of glass at Alhama, a town in Murcia, which he visited on October 14th, 1494. To make glass paste, he said, two parts of glasswort ashes were mixed with one of the whitest sand, finely pulverized. This mixture was ground on an enormous mill-stone, the resulting powder shaped into masses like large bread loaves and then put into an oven. In this manner was formed a substance from which could be made the glass objects, both crystal and coloured, that were exported to foreign lands. To obtain clear crystal glass a larger quantity of the sand was added to the mixture. These blocks of glass paste were not

only for local consumption but for trade with various communities. Muenzer continued his account by describing the glasswort grown at Alhama and by stating that the herbs grown in Cataluña and Valencia were superior (69).

The nearest approach to a documented site of early glass making in Granada is the manufactory which continued to function until the nineteenth century at Castril de la Peña. The building where the industry was housed bore the escutcheon of a secretary to Queen Isabel, Hernando de Zafra, who probably purchased it about 1492. A mile-long underground gallery extending from the building to the outskirts of town indicates the vast quantity of sand extracted for glass manufacture there and the centuries that the fabric must have been in operation (70).

One can but surmise about the appearance of mediaeval glass from these regions (Figs. 17 and 18) that were not completely recaptured from the Moors until the crowns of Aragón and Castilla were united. Probably they were not very different from certain Granadine products of the seventeenth and eighteenth centuries—forms in Muhammadan style, blown usually from green glass and decorated with pinched ribbings of glass paste (71).

Little is known about the glass made in mediaeval Castilla, and no actual specimens are to be found, but there is good reason for the belief that glass furnaces existed during the fifteenth century in Castilian towns. Cadalso de los Vidrios was by far the most renowned, even at this early date. Lucius Marineus, who lauded the glass of Barcelona, said, "It is made also in many Castilian towns, among which Cadalso is supreme, purveying the kingdom" (72). That Cadalso's fabrics had long been in operation may be inferred from his statement that they had reached so high a level of importance. Another authenticated centre of glass making during the late fifteenth century is Guisando, province of Avila. The archives of the Monastery of *San Jerónimo* prove the presence of two glass furnaces that from 1478 to 1480 paid a yearly rental to the monastery. One workshop was under the protection of the Catholic Kings who exempted the men from paying excise duties (73).

A meagre knowledge of the appearance of Castilian glass comes from contemporary miniatures and paintings. Thirteenth-century glasses depicted in the *Cantigas de Santa María* suggest by their appearance that the original models may have been blown by converted Moors, who worked peacefully and unmolested within the kingdom. It is also possible that such glass as the Castilians used during the thirteenth and fourteenth centuries was transported from the fairs of Murcia and from Moslem Granada, then in vassalage to Castilla.



Fig. 17. MIRROR  
Late fourteenth century



Fig. 18. DRINKING GLASSES  
Late fourteenth century



Fig. 19. VASE.  
Fifteenth century

Paintings of the next hundred years reveal glasses of different design. There seems little doubt that the panels portray the wares of Cadalso or copies from smaller furnaces of the region. An *Epiphany* by an artist of the Burgos School (Fig. 19) shows a glass vase with flowers, the form of which is almost identical to seventeenth-century Castilian vases still in existence. A fifteenth-century *Last Supper* from Valladolid depicts a youth clasping the sturdy pedestal of a transparent goblet (Fig. 20) that may have originated in a local fabric or at Cadalso.

From evidence furnished by such paintings, one might conclude that Castilian glass blowers were emulating the notoriously beautiful work of Venetian craftsmen, wares that could have come directly to them, due to Castilla's maritime trade with Italy. There is the possibility also that the influence filtered through the Pyrenees by way of France or Flanders, as Italian glassmen were already migrating to these countries. An additional inspiration may have been Barcelonese glass fashioned in the Venetian manner. Mediaeval Castilian glass, unlike that of Cataluña, had no wide-spread distribution, the demand for it having been confined to the united realms of Castilla and León.

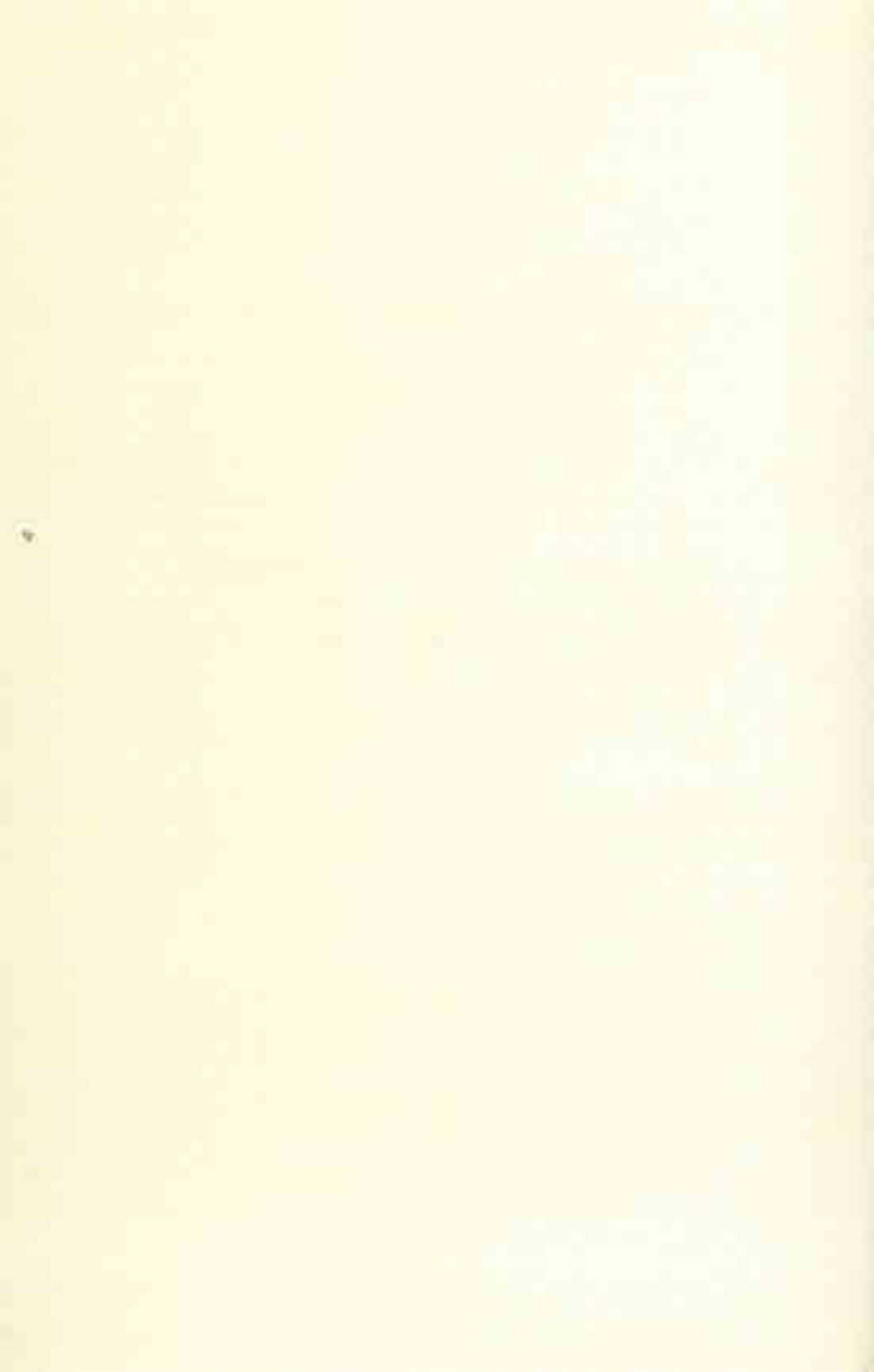


Fig. 20. GOBLET  
Fifteenth century



## II

### GLASS MAKING IN EASTERN SPAIN FROM THE RENAISSANCE TO THE TWENTIETH CENTURY



## II

**G**LOWING with deep tones or sparkling clear, the glass of Cataluña had reached the crest of its beauty as the sixteenth century began. The elegance of form, the vibrant colours, the delicate ornamentation rewarded with artistic distinction all craftsmen who created the ware and obtained for the pieces themselves the admiration of the Catholic Kings.

From Barcelona in 1503, Ferdinand sent to the Queen a handsome collection of crystalline and tinted glasses, richly gilded and enameled (74). So numerous were the objects, so colourful and intricately fashioned that it is little wonder they caught the eye of a Venetian. *Andr a Navagero*, ambassador from Venice at the court of Charles the Fifth, commented especially upon this glass which he saw after it had become the property of Granada Cathedral (75). Some months before Queen Isabel received the King's gift, their son-in-law the Archduke Philip visited the Barcelona glass manufactories. He and his wife Joanna had come to Spain the previous year that they might be proclaimed heirs to the thrones of Arag n and Castilla, and it was on Philip's return to Burgundy that he passed through Barcelona. There he went to the outskirts of the city to see beautiful crystalline glasses being blown (76).

The protection of Spanish industry was of considerable interest to Ferdinand and Isabel, and they gave it not only their personal support but forbade officially the importation of foreign goods. Entirely at variance with their policy was that of the Emperor Charles whose encouragement of foreign imports and severe taxation of commerce and manufacture wrought economic injury to Spain. The disastrous results were especially felt by the industries of Castilla, a region which he held firmly within his power. Arag n and Catalu a, claiming the privileges of their autonomous charters, refused to open their coffers unreservedly for the aggrandizement of empire. It is to this independent stand that the industries of both provinces owed the prosperity that remained to them alone in all Spain. The democratic councils, men from every social rank including glass blowers and other craftsmen (77), rebuffed the succeeding monarchs until 1640 when Philip the Fourth needed money and troops for his Italian campaign. Besides the firm action of the Cortes, the powerful guilds of Catalu a and the workmen's devotion to their trades rescued industry in that region from the general depression.

The important glass-making establishments, reprieved from destruction along with other Catalan manufactories, continued to thrive for more than a hundred years. In their written impressions of Cataluña, numerous travelers of the period commended the glassware (78). Among the gainful occupations of Barcelona's people must be noted that afforded by the glass industry, wrote Henry Cock, Dutch historian and archer to King Philip the Second, whom he followed in 1585 on a trip to Zaragoza, Barcelona, and Valencia (79). Philip, thoroughly familiar with the superiority of Catalan glass, was the owner of many pieces, some of which were housed at El Pardo Palace in 1564. Anna of Austria, his queen, later bought a plentiful supply of Barcelonese glasses for her household (80). The Cardinal-Infante Don Fernando of Austria sailed the four leagues from Barcelona to Mataró purposely to observe the manufacture of glass which the city exported abundantly to the provinces (81). Even as late as 1678 when industrial ruin engulfed Spain under Charles the Second, an historian mentioned the glass of Barcelona as being coveted everywhere (82).

Each New Year's Day at Barcelona saw a glass fair to which the city councilors paraded on horseback, accompanied by humble citizens and wealthy cavaliers, to the sound of reed instruments, trumpets, and drums. Pleading with the magistrates in 1564 to end the traditional exhibition, the glass blowers gave as the reason for their appeal the extensive breakage of their wares. But the magistrates, displeased, issued a writ against the artisans, and the latter, forced to submit to the judiciary body, held their customary fair the following January (83).

If an unusual celebration took place, the glass fair was sometimes repeated as when on January 5th, 1587, the Duke of Osuna returning from Naples disembarked at Barcelona. A grave occasion, such as national mourning for the death of Philip the Second, was cause for the cancellation of the fair (84). Although repeated attempts were made on the part of the glass blowers to suppress the New Year's fair, it was continued during the best part of the seventeenth century. The councilors, insistent on keeping the tradition alive, threatened the glassmakers in an edict of 1610 with severe penalties unless the exhibition took place as usual. Again, thirty-six years later, the glass blowers offered their petition to the council, seeking exoneration from the heavy burden of expense and destruction that the fair occasioned (85).

That the guild of glass blowers and esparto weavers, after serious deliberation, separated finally into two brotherhoods is recorded in the Barcelona city ordinances of 1594 (86). The glass blowers placed themselves under the protection of the archangel Saint Michael with an altar in

Barcelona Cathedral and drew up several new regulations under the supervision of their officers, Joan Alies and Joan Verdagner. Besides the usual requirements concerning acts of devotion and charity, the term of apprenticeship was fixed at four years, and no unexamined person was permitted to make any kind of glass article. Hucksters carrying glass in baskets to sell through the streets were compelled to ask the guild officers for licences and pay twenty-five *sous* if they were not guild members, while a reduction to one insignificant *diner* was made for a similar licence to a member.

In describing the festivals which took place at Barcelona to celebrate the canonization of San Ramón de Peñafort in 1601, Jaime Rebullosa made no mention of the glass blowers as participants in the procession. The omission of such important artisans would seem curious except that the author may have considered the glassmakers as belonging to the guild of esparto-grass weavers, or that the glass-blowers' guild may have been temporarily suppressed. Various festivities marked the days between May and September of that year, even the children imitating the elders in their celebrations. They came with offerings in groups from each street of Barcelona, those from the Street of Glass Blowers brought glass flower vases to adorn the altar of San Ramón. The citizens of Mataró in 1614 rejoiced with similar pomp at the beatification of the Holy Mother Teresa de Jesús. The high altar in Saint Joseph's Church held a "paradise" of carnations in rich and curious vases of the town's brightly coloured glassware (87).

The refusal of the guild officers in 1610 to examine a youth at San Vicente dels Horts enraged the councilors of Barcelona so greatly that they themselves, aided by two local glass blowers, gave the examination to the applicant. As punishment to the guild, they suspended its operations indefinitely. That the suspension was still in effect in 1625 may be assumed, since the council gave authority in that year for an individual to open up a shop of glassware, a permission ordinarily granted by the guild.

Two years later the glassmakers again clashed with the council. They would not examine an applicant, Felip Amiguët, who wished to build and operate a furnace at Barcelona for the manufacture of ordinary, as well as crystalline and coloured glass, like that made at Venice, and to sell these products in his shop. Though not a blower himself by trade, Amiguët had married the daughter and heiress of a Barcelonese glassmaker, and he claimed that through his associations with the business since his marriage he was capable of directing master glassmen whom he planned to hire for the work. He requested also that he might claim the title of master craftsman after having his furnace and shop for four years. Months passed, and still the guild officials had not made the required examination. Tired of their

disobedience, the council granted permission in October 1627 to Amiguet to choose the site for his furnace and have it ready for operation the following June. He seized the opportunity to put all in readiness only to have the guild fine and warn him against opening his doors. The councilors admonished the glass blowers that their action, if pursued, would cause the arrest of not only officials but all guild members, and the controversy ended once more in a two-year's suspension of the guild (88).

Few names of glassmakers have appeared on documents. The tradition of the Xatart family, renowned since the fourteenth century at Palau del Vidre in the Roussillon, was extended through 1538 by Joan, who is first noted in November 1501. Early in the century, a glass blower bearing the same family name worked at Prats de Molló in Cataluña. There is a record in 1528 that Miquel Rossoli, son of a native resident in Narbonne bishopric, was married at Vich, and another blower whose father was from France, Joan Scuder, is disclosed in the town records for 1564 (89). Perhaps these Frenchmen had been influenced by the knowledge of royal encouragement when they came to Spain as glassmakers. The struggle of Felip Amiguet to establish himself as a manufacturer and purveyor of glass caused the registry of his own name and also that of his father-in-law, Montserrat Vergonyós. Besides these men, there was Josep Agut, who was condemned to the galleys in 1636 for political reasons (90).

Within the province of Cataluña were many other towns where glass manufacturers were busy with their trade. At Guardia de Montserrat is a site known still as the "Glass Furnace", where Jaume Guindo and Pau Rosselló contracted in 1606 to teach an apprentice for two years (91). A furnace at San Vicente dels Horts becomes known through the action taken by the Barcelona council when forced by the negligence of the glass-blowers' guild in 1610 to examine Benet Calcina (92). At Corbera de Llobregat was a large house where excavations have shown that once a glass manufactory existed. Fragments dating from the sixteenth through the nineteenth century were found, indicating a long and prosperous business (93).

Concerning glass manufacture at Vallbona, there is a contract dated 1546 between a Frenchman, then residing in Cataluña, and Gabriel Badorc, blower of Vallbona, who agreed to teach the Frenchman's son to make glass in the Barcelonese manner (94). The inventory of a Vallbona workshop and furnace was compiled in 1664 at the death of its owner, Antoni Gralla, and nine years later the manager's name was Pau Flor. A house in this town has become recognized traditionally as an ancient furnace, for preserved on its façade is a stone engraved with the date 1671 and a representation of a glass cruet (95).

Venice imprinted its mark on the glass of Cataluña from the late fifteenth century, and during the succeeding two hundred years especially, Barcelonese designs showed Italian influence. Keen rivalry arose as the Catalan workers strove to capture supremacy from the Venetians, and if we may believe contemporary accounts, they proved successful in their attempts. That they won acclaim from a world captivated by the styles set forth by Venice meant that their work followed effectively the Italian mode.

The classicist, Cristóbal de Villalón, in 1539 wrote a dialogue in which he compared the wonders of the past with those of his time, commenting on the increased dexterity of glass manufacturers at Genoa, Venice, Barcelona, and Cadalso (96). Although Venetian glass was excellent, Father Pere Gil wrote in 1600, it was surpassed in many respects by that of Barcelona and other parts of Cataluña. He ends his lengthy description of the industry by saying "thus is Cataluña praised and esteemed for its glass, and shipments of this glass are sent to Castilla, India, France, Italy, and other places" (97). Even an author writing at Antwerp, a glass-blowing centre of Flanders, said, "So skillfully constructed are the blown glasses [of Barcelona] that they are scarcely inferior to the Venetian" (98).

The Barcelona workmen had two sources of inspiration for their products, the Venetian glasses imported to Spain and the Italian glassmen themselves, who risked their own government's disfavour in traveling and carrying with them the carefully guarded, secret methods of manufacture. Not only Venetians and Muranese but other Italians, working in the Venetian manner, from Altare, Brescia, and other towns, crossed the Alps to Vienna and to France, some as early as the fifteenth century (99). Possibly a few migrated to Spain at this period, but certainly by the sixteenth century, as the Venetian archives and the registers of Altare prove, they had established themselves in the Iberian Peninsula (100).

At the turn of the century Mallorca welcomed a Muranese nobleman to the capital. The city archives contained a petition, dated 1605, of Domingo Barrouier, glass blower, who informed the city council that he had brought the art of making Venetian crystal to the island and had taught it to the native workmen. So useful had his instructions proved that it was no longer necessary to import glass from Venice or elsewhere. Because he had been thus employed, Barrouier declared that he and all members of his family with him would be exiled from Venice. For such was the fate of Venetian glassmen who left their native land to divulge trade secrets in other countries. If they were caught or returned to Venice, the penalty was possible death, banishment, or a lifetime in the galleys. Domingo referred to his ex-

treme poverty and begged the council to authorize him a sum of money as recompense for his services (101).

Like Domingo Barrouier, there were many Venetians who disobeyed the orders of the Council of Ten, risking their lives or freedom to spread the knowledge of making crystal glass. Sixteenth and seventeenth-century documents are crowded with the names of those who sought in Flanders and France, England, Holland and Germany to reap profits more attractive than those offered at home. Altarists were shown more leniency than the Venetians by their government. As long as they revealed their methods to no outlander and employed only fellow citizens to work for them, they could travel from their native town for as great a time or distance as they desired. But the authorities at Venice overlooked their rigid edicts against the artisans when it suited their convenience to do so. During the reigns of Charles the Fifth and Philip the Second, the Council of Ten considered it wiser to ignore the disobedience of glass blowers in the Low Countries.

Both kings favoured the development of Venetian-style glass manufacture in the Spanish Netherlands. The industry grew to such perfection, especially at Antwerp under control of the Muranists and at Liège under the Altarists, that glasses made in Flanders could scarcely be distinguished, even by contemporary experts, from those made at Murano. The monarchs were fond of Venetian glass, judging from the inventory of El Pardo Palace. Listed there, are over three hundred pieces, but perhaps some of these goblets, carafes, and flasks may actually have been glasses of Venetian style made in Flanders (102).

Spain was the goal of Italian blowers during the seventeenth century, and the names of several have been reported, but without any reference to the locale in which they settled. In 1650 Serena, a Muranese, was blowing glass in Spain; in 1688 Giovanni Battista Pisano and Prospero Bertolucci made payment to the consuls at Altare in Spanish gold, thus indicating that they had worked in Spain; other Italian glassmen there that year were Secondino Zanettino, Varaldo, and Giuseppe Perotto (103). The glassware of Venice continued in the seventeenth century to be a popular import to Cataluña. From the accounts of Joaquín de Larroldé it is known that, while traveling through Italy in 1626, he purchased Venetian glass for the Duke of Cardona (104).

Glasses in the Venetian style most widely imitated in Cataluña were the fanciful goblets, the *cañas* for wine, with high conical bowls, and those with scallop-shell brims (Fig. 21), presumably corresponding to the documentary *bernegales*. Diamond-point etching, stripes of milk glass, and frosted surfaces often embellish the bowls which were held high above their flat



Figs. 21-22. GLASSES



Figs. 23-24. DECANTERS  
Sixteenth and seventeenth centuries



Fig. 25. BOTTLE  
Seventeenth century



Fig. 26. EWER  
Sixteenth century



Fig. 27. EWER



Fig. 28. ECCLESIASTICAL EWERS  
Seventeenth century

bases on pedestals ornate with balusters of writhen or moulded glass, with twisted colourful rods, and with wing-like projections (Fig. 22). A close copy of Venetian work is an enameled and gilded goblet of deep cobalt blue (T352) in the Hispanic Society's collection (Plate 1). The artisan who blew it was inspired by goblets originating in Italy about 1490 and continuing in favour there until the middle of the following century, the later examples having been blown from the newly popular crystalline glass, as well as from cobalt and emerald. The form, distinctly like mediaeval silver vessels (105), was reproduced in many lands outside Italy as the sixteenth century advanced.

An increased number of pieces for the table and a wide variety of shapes wrought a change in the table settings of the Renaissance. No longer was the goblet passed from one diner to his neighbour, because table equipment included individual drinking glasses in forms that differed for every wine or other beverage. *Tazas* were the usual goblets, customarily bought in sets of a dozen. In 1556, the Commander of the Order of Saint John of Jerusalem at Espluga de Francolí owned twelve "very good" goblets of Barcelona glass. Two years later he paid for an additional set packed in a basket (106).

Reminiscent of fourteenth-century Syrian bottles, the wine decanters changed very slightly from those used during the Middle Ages. A flask of traditional shape (Fig. 23) may be seen on the table of *The Last Supper* painted by the Valencian Juan de Juanes. Variations of the decanter, the two-handled ampullæ with flattened circular bodies raised on pedestals were decorated with enameled designs, as is the Hispanic Society's example (T351; frontispiece). Scores of them are registered in sixteenth-century inventories without a statement that they were ornamented with enamels (107). Small flasks (*brocalets*) belonging to Hugo de Berard y de Palou, royal procurator of Mallorca, were valued in 1594 at one Mallorcan *suelto* apiece, while of greater worth were those of a larger size holding rose water, white wine, and vinegar (108). Pedestaled decanters with mould-blown bodies follow Italian models (Fig. 24), their ovoid bodies encircled by rings of classic, dancing figures. Mould-blown also are flasks of pinecone shape, descendants of the mediaeval *pinya*, that is known now only through documentary reference. Written records continued during the sixteenth century to mention calabashes and chestnut-shaped bottles (*castanyes*, *castanyetes*), but among actual pieces it is uncertain which were so designated. That their purpose was the same as decanters of ordinary shape is learned from Hugo de Berard's inventory, which lists "four covered glass *castanes*, two containing rum, one rose water" (109).

For storage in cellar, pantry, or dining room, wine and other spirituous liquors were poured into glass barrels, the sides of which were sometimes protected by wicker or straw (110). Philip the Second had two dozen such barrels, products of Barcelona, at El Pardo Palace (111). From their description, they were not so handsomely adorned as the gilt and enameled casks of brown, violet, and blue glass owned by his great-grandmother (112).

A cruet for oil was the *cetrill*, a vessel that challenged the glass blowers to invent many forms. A strange container (Fig. 25) in the Barcelona Museum may have been intended as an oil cruet. It has a neck in the top for filling purposes and a spout for pouring drawn from the side. In addition to this theory for its use, one may hazard also that it was an elaborately fashioned papboat (*pipa*) for feeding infants or invalids. More usual *pipas* were cups with one or two pouring spouts like those of a jug, or with a tube emerging from one side (113).

Following the Venetian mode are little cruets or ewers of hourglass shape with curved spouts and handles of twisted and pinched glass (Fig. 26). Certain other spouted vessels (Fig. 27) resembling Venetian prototypes are said to have been made in seventeenth-century Cataluña, but it is more probable that they came from workshops of the Roussillon. As ewers, cruets, and jugs of all sizes and shapes were necessities in the home, lists of household equipment during this period enroll an abundant supply. Two shaped like silver jugs are described as blown from glass that imitated chalcedony (114).

Apart from domestic duties ewers had an ecclesiastical function—to hold the wine and water for the Mass. Two liturgical cruets, termed *canadelles*, came from excavations made behind the church of Poblet Monastery. Evidently they had been discarded for others of finer material and style, and this theory the Monastery account book of 1589 to 1592 seems to confirm, for in it is entered the purchase of new *canadelles* (115).

The artist, Jerónimo Jacinto Espinosa, illustrated in actual use two pretty latticino-striped cruets (Fig. 28) in his painting *Saint Peter Pascual Celebrating Mass*. The pair of glasses rests on a glazed pottery plate held by the Christ Child who performs the rôle of acolyte. Perhaps Espinosa's models for these seventeenth-century cruets were fashioned in his native Valencia. If such be true, they testify to a confusing similarity to contemporary Barcelonese work, so completely identical are they with the products of Catalan glass blowers. Merchants stocked their shops with *canadelles* (116), and there is at least one instance of their mention among the furnishings of a private chapel. Within the walls of the Castell de Folgons

stood the Chapel of *Sant Antoni*, the repository in 1523 of two glass cruets and a lamp (117). It is possible that the lamp resembled those which have survived until the present, nearly all of them adorned with enamel designs (Fig. 29).

Of lighting fixtures in a home, one may obtain some idea from Hugo de Berard's furniture. He had a branched sconce with a glass lamp fastened to the drawing-room wall (118). Among quantities of lamps of all sizes and makes, King Philip numbered six glass "hurricane" globes for candlesticks, "*vidrios altos grandes para cubrir las velas quando hace ayre*" (119). Glass candlestick holders continued to furnish light for homes of the period, as they had during previous centuries, and they supported altar candles as well. An early sixteenth-century candlestick of purple glass flecked with gold dust (120) must have been charming as it sparkled on a lighted altar.

Another custom connected with the Church survived from the Middle Ages, that is, the placing of holy relics within a glass vessel. Restorations within the Church of *Santa Maria* at Tarrasa revealed a reliquary of greenish glass dating from the early seventeenth century. Like a confectionary jar, it had cylindrical walls and a peaked cover with a gilded knob (121).

Used to spray and sweeten the air, the rose-water sprinkler (*almorratxa*) is primarily Catalan, yet such vessels were also made at Venice and exported to Spain. "Four flasks of *almorratxa* shape with their covers" are listed among the Venetian glasses belonging in El Pardo Palace (122), and in 1560 "a plain, Venetian glass rose-water sprinkler of small size" was owned by Beltrán de la Cueva, duke of Albuquerque (123). An *almorratxa* (Fig. 30) in the Victoria and Albert Museum, although showing close similarity in shape and decorative details to Catalan pieces in the Miquel Mateu and the Chopitea Collections, is labeled as having been made in Italy for the Spanish market. During this period rose-water sprinklers were included in the stock of Catalan glass merchants and among the household equipment of private citizens (124).

Other glasses for use in the home consisted of the usual plates, flower vases, bowls, and saltcellars. Stemmed fruit dishes or service plates were popular, above all, those decorated in coloured enamels. The dish section of these vessels was flat or gently curved, and the hollow, mould-blown pedestals were of the baluster or knop variety, resting on circular bases. Later specimens were sometimes flat with upturned rims, and the supports were mould-blown lion heads or hollow, truncated cones.

Jars for confections, conserves, and fragrant waters were referred to in contemporary documents as *confiteri* or *poti*. Shaped like deep cups, they had covers and often pedestals of medium height. Most of the *confiteri*, as

we know them, are ornamented with enameling, like a jar (Fig. 38) owned by the Cluny Museum. In 1594 a Mallorcan lady had in her bedroom several of the glasses holding lemon and other preserves, and sugar of roses (125).

References to bowls of caldron or bucket shape are frequent, but actual examples are few and usually later in date by at least a century (126). So rare is the sixteenth-century enameled caldron in the Cabot Collection that it may be considered unique. It has squat, curving sides and a grooved bail handle. Glass washbasins were used in affluent homes to rinse the hands before and after dining. The royal basins (*almofias*) in 1503 were splendidly fashioned of blue glass, painted with gold and white, and of crystalline glass, gilded and enameled in green, white, and blue (127). The demand for trinkets, great at this time, caused the production of little glass trumpets, hats, shoes, and baskets of fruit. Shaped from transparent paste were spoons with handles enameled in colours (128). Fanciful animals started in the sixteenth century with the mould-blown glass lions (Fig. 31), of which the Sèvres Museum has a specimen. They were drinking vessels, the liquid contained in the lion's hollow body having been imbibed through the long curved tail, in reality a tube. From the beginning of the seventeenth century, grotesque animals faintly resembling mice, deer, and elephants increased in popularity (129). An ornamental chanticleer in the Chopitea Collection, Barcelona, by far the best among these birds and beasts, is of latticinio-striped glass, the edges of comb, wings, and feathers being coloured paste pinched in serrations. Animals were not the only strange creations of the glassmaker's imaginative brain. To certain objects he added decorative forms that were abstruse and apparently purposeless. Necklaces and rosaries continued to be made of glass, and mirrors played an important part in house furnishings. While some were of local manufacture, the mirrors most admired and greatly in demand were importations from Venice, France, and Germany.

Sixteenth-century Catalan glasses show a delicacy of outline that was lacking in the solid forms of the previous century. The bodies of vessels are large, airy masses with smooth surfaces, poised on slender stems and light, hollow pedestals. The mould was sparingly used except for the knops on stems of drinking glasses and service plates. These spherical or baluster ornaments were mould-blown to the shapes of lion heads (Fig. 22), masks, rosettes, and flutings. Bosses of coloured paste impressed with the same patterns were favourite adornments. Good examples of bosses, or prunts as they are popularly called, are to be seen in the oddly shaped bottle (Fig.

25) at Barcelona and the *almorratxa* (Fig. 30) in the Victoria and Albert Museum.

The edges of brims and supports on sixteenth-century glasses were simply finished and cut off, and the sharp edges fused in the furnace. Usually there was no reinforcement by under or overlapping of edges, although this technique appeared at the end of the century. Handles were ear-shaped loops of smooth, simply curved rods or of flat ribbons pinched thin and waving. On glasses strongly influenced by Venice, there was a discreet use of fine threadings wound around brims, of glass cords pinched into projections, and of chains fused to the surface. A little ewer (Fig. 26) in the *Gau Ferrat* Museum, Sitges, demonstrates these applied ornaments. Written accounts of sixteenth-century glass suggest that even more elaborate forms were customary for handles, pedestals, and finials. Gilded and enameled serpent heads composed the handle of a purple jar, and a reptile head supported a blue pitcher striped in gold and dotted with white; for handles, a gilt bird perched on a blue cover, and a crystal and blue jug had a human hand (130).

Little difference can be detected between the glassware of the late sixteenth century and that of the next fifty years, but by the middle of the seventeenth century the glass industry of Cataluña became commercialized. Although the artisans retained their skill, they were forced to produce more quickly and cheaply. The objects which they had once fashioned so cleverly soon revealed a carelessness in formation and in the composition of pastes. To speed their production the glassmen resorted more frequently to the mould than had their predecessors, and thus sprang up great numbers of vessels, blown in a pattern mould and expanded by further blowing. Simple all-over designs were employed, such as lozenges (Fig. 32), points, or ridges. The traditional lion heads and rosettes for hollow-blown knops still persisted, but they became imperfect and heavy, losing all sprightliness. Shapes grew more solid and sturdy, and in the same effort to avoid too refined delicacy, the blowers left thicker walls and strengthened edges by folding. While not so daintily capricious, objects of this period were more varied and extravagant in form and decoration. Stems appeared larger and weightier, although strangulated to lessen their massive effect, and the amount of pinched crestings for ornamentation increased.

The production of glass paste that should be clear, colourless, and brilliant seems to have been the chief aim of glassmen who were stimulated by Italians and others working in the Venetian manner. The yellowish tint of Gothic glass which had been treated to remove the green of iron oxides was remedied during the sixteenth century by improved methods for colour

correction. Bubbles and slight imperfections, however, continued to mar the texture. This high standard paste lasted until the mid-seventeenth century, when gradually the workmen took less care in removing discolouration and flaws.

Some conception of the tools with which the blowers worked may be obtained from an inventory, dated 1664, giving the contents of a glass furnace at Vallbona. Listed are iron implements for stirring, pincers for cutting, pontils, blowpipes, moulds, and crucibles, utensils little different from those used throughout the centuries (131).

Father Pere Gil, describing the process of making glass paste in the late sixteenth century distinguished between three kinds of glass, the first being a coarse, common variety of white stone (*pedra albanesa*) mixed with soda ash from the Catalan *iosa*, an herb picked at Tortosa and the Llobregat plain. A much better, clearer paste, he said, was that containing barilla from the kingdom of Valencia or *salicorn* picked in France. Valencian barilla, principally from Alicante, was early recognized as of superior quality, and was recorded throughout the sixteenth and seventeenth centuries as having been sold in Flanders, England, and France to glass blowers working in the Italian manner (132). The paste made with this soda-lime ash contained also the *pedra albanesa* and a very small quantity of stone called *sanguinea*. This served to clarify the glass and correct the greenish tint, a different method of obtaining crystalline glass from that employed in Murcia in the late fifteenth century. The best glass, Father Gil stated, was made from the ashes of tartar, the sediment in wine bottles. The tartar ash mixed with pulverized white stone and crude crystal was placed in the furnace and to it was added a small quantity of ground *pedra sanguinea*, imported from Genoa. This paste made the clearest, purest, indeed perfect, glass. To colour glass, the artisans added different materials to the pot: tin and lead compounds for opaque white; *zafre*, an oxide of cobalt mixed with silica, for blue; a kind of black rock for black; and for red, filings from copper kettles.

Besides this information, Father Gil gave details for fashioning "lamp" glass. The workman had a supply of hollow glass tubes, crystalline or coloured, and an oil lamp, precisely the equipment pictured in an eighteenth-century Catalan tile (Fig. 57) portraying a glass blower at his worktable. One end of a rod the artisan placed in the flame, the other in his mouth and by blowing, twisting, bending, and welding, he could make gems and jewelry, holy images, tiny animals and insects, miniature cages holding partridges and parrots, small scale gardens and plates of fruit. These fine conceits and also ornaments to be affixed to blown glass objects were made



Fig. 29. LAMP  
Sixteenth century



Fig. 30. ALAIORRATXA  
Late 16th or early 17th century



Fig. 31. GLASS LION  
Sixteenth century



Fig. 32. TUMBLER  
Seventeenth century



Fig. 33. WATER JAR



Fig. 34. VASE

Seventeenth century



Fig. 35. WINEGLASS

Seventeenth century



Fig. 36. WINEGLASS

Sixteenth century

with the lamp's aid. The author concludes by saying that Catalan glass and crystal are very good for eyeglasses, being not so fragile as the Italian (133).

From objects described in inventories, one learns that the glass colours of the Gothic period continued in use for the following two centuries. Again, blue and purple are found to have been popular hues, then green, tawny yellow, and milk white. Red glass scarcely ever appears, and in the few instances when it is specified, the suspicion arises that it may have been a German import. The Duchess of Medinaceli owned a piece of glass called *roxado*, which was probably ruddy (134), and the Duke of Alburquerque was the possessor of a jug of elaborately worked red glass with a gilded spout (135). Frequently, several shades were combined to form pleasant colour schemes or were mingled to imitate chalcedony, which displays an assortment of colours and variegations known as carnelian, chrysoprase, agate, and onyx (136).

Milk glass gained increasing favour in Cataluña, used generally as decoration on crystal or transparent, coloured glasses. It took the forms of threading, pinched serrations, bird and flower ornaments, and fine cords fused to the vessel yet projecting in slight relief. Such is the chief decoration of an early seventeenth-century water jar of smoky tinge (Fig. 33) in the Victoria and Albert Museum.

Another method of decorating with milk glass was to apply threads of it in stripes to the surface of a partially blown vesicle of crystalline or clear coloured glass. The stripes could be drawn into scallops or palm fronds, such as the pattern on a seventeenth-century vase of yellowish glass (Fig. 34) in the Cluny Museum. The soft glass bubble was then further expanded by blowing, thus fusing the latticinio into the very walls of the transparent glass. Copied from Venetian examples, the Catalan specimens of latticinio-striped glass are simpler in design. The true lace glass, *vetro di trina* as it was called in Italy, showed extreme intricacy and precision in its delicate patterns. It was made by arranging glass rods perpendicularly side by side to form a hollow cylinder. Into this cylinder was inserted a vesicle of clear molten glass to which the rods adhered. The mass was then blown to the desired shape and thickness. The variety of patterns depended on the rods which had previously been made of opaque or clear glass, or a combination of both, drawn out into threads, twisted, crossed, and combined with others until substantially thick. Of such finely patterned objects Gudiol says: "Foremost among magnificent examples of glass, the kind decorated with threads of latticinio forming filigrees and very fine lace patterns can not be considered as of Catalan manufacture. Despite its abun-

dance in collections of Catalan glass, I believe that vessels of such complicated technique were imported from Murano" (137).

Documentary references to latticinio-striped glasses are meagre. A purple flask is depicted as having been enameled with white in a net pattern, and a barrel of opaque brown glass as having been enameled in yellowish white to represent fish scales. Both these descriptions may be interpreted as meaning fused latticinio designs. A more definite allusion to this type of glass has been found in an inventory of 1581, where there was catalogued a glass drinking vessel with white lines, "*ab ses vies blancas*" (138).

Even as early as the sixteenth century, the Catalan artisans imitated lace glass by painting stripes and interwoven lines in white enamel. Certain objects like the wineglass (Fig. 35) in the Vich Museum show that the latticinio was applied as a pigment by means of a brush.

As in previous centuries, valuable glasses and other vessels made in imitation of semiprecious stones and crystal were supported in ornate frameworks, a custom prevalent also in Italy. It is recorded that in 1511 Esteban de Carroç owned a ewer of crystal or crystalline glass, mounted in silver (139). Combining the arts of glass blower and metal worker, a sixteenth-century ewer in the Diocesan Museum, Barcelona, has a mounting of gilded bronze.

From the mid-sixteenth century, designs scratched with a diamond point appeared on glass objects fashioned by Barcelonese artisans. Similar work at Venice had its beginning somewhat earlier. Distinctive of this decoration was the simplicity of its Renaissance designs, executed in fine shallow lines with no chiaroscuro. Flowers, acanthus scrolls, and lineal patterns were scratched in outline and the petals and leaves filled in with delicate hatchings (Fig. 36). Diamond-scratching, the only kind of engraving suitable to the fragile glass of Venice and Cataluña, gives an effect of filmy lace. On a serving dish in the Macaya Collection such lacy brim designs have been combined with a centre of frosted glass.

After Father Pere Gil had described crystal and coloured pastes, he remarked that the Barcelonese blowers made frosted glasses (*vidres gelats*) (140). Frosted, ice, or crackle glass, as it is variously called, was predominant among the Venetian objects in El Pardo Palace, nearly eighty of the pieces being described as *eladats*, and under the head of Barcelona glass were nineteen crystal glasses with pedestals and covers, some frosted (141). To obtain a fissured surface on glass, the vessel, while still warm, is dipped quickly into cold water. The resulting cracks are smoothed by a second heating and a light blowing. Another method for procuring a frosted effect is to roll the soft vesicle, while it is still attached to the blow pipe, over glass

splinters. These are fused and blunted by reheating. Frosted glass, tinted pale greenish yellow, forms the body of a ewer (Fig. 37) in the Victoria and Albert Museum. Of superior workmanship, the ewer is now attributed to seventeenth-century Spain, and one may venture farther in suggesting Cataluña as its source.

References in sixteenth-century documents to enameled or "painted" glass are many, but since the designs embellishing these treasures are seldom named, it is particularly delightful to read the contemporary descriptions of Queen Isabel's enameled glass. On backgrounds of gilt motives, of white enamel dots, pearl-like in appearance, and powderings of white stars or flowerlets were painted the principal motives. The salutation *Ave Maria* encircled the walls of several glasses, and a tiny jar bore the words *Anima mea* on its collar. A blue glass goblet, gilded and dotted with peacock colouring, was ringed under its brim with the words, *Domine en manus tuas encomendo spiritu meo*, an appropriate prayer for one who feared a poisoned draught. Probably all these verses of religious import were lettered in gothic, for additional glasses were noted as having *letras góticas* without giving the readings of the inscriptions.

Often, figures of men, women, and little children appeared as ornamentation. A woman sheltered by leafy green and brown branches decorated a gilded, blue *bernegal*, and on a ewer's violet pedestal stood a boy holding a scroll. Little children ringed a crystalline glass, and boys disporting themselves among green branches with bright coloured birds ornamented a purple goblet (142). Shields emblazoned with devices and coats of arms were further motives, notably the castles of Castilla within gold-bordered circles that embellished a large blue box and a purple, gold-flecked vase. Other designs were a hunting scene, a bird with human visage, purple vine leaves garlanding a goblet's brim, and the sun gleaming white on blue and violet.

Remaining pieces of Catalan enameled glass bespeak a faint relation to Near-Eastern vessels, while the manner of Venice may be more clearly detected in the Renaissance shapes and in the colours of glass paste. As the sixteenth century advanced, Venice abandoned for *cristallo* the emerald and cobalt glass, which she had first enameled in imitation of Damascene work. Catalan fabrics followed the same course, and most of the surviving glasses are of clear paste with a faint smoky tinge.

Among the enamel colours, tender green predominates, and featured extensively are white and canary yellow. Less glowing hues are found in ruddy brown, pale cerulean, and violet. The pigments were probably a combination of lead silicate with tin and other metallic oxides, each of which gave its own peculiar tint. Mixed with water, these enamels were

applied free-hand to the exterior of the glass, from the surface of which the colours stand in low relief, catching light with jeweled radiance. When an object had been painted and gilded, it was placed in a muffle. As this additional journey to the furnace was necessary to fix the pigments firmly to the surface, it was imperative to use enamels which melted at a lower temperature than the glass. The outer surface of the glass itself must soften enough to fuse with the applied colours and yet not completely lose its contour.

Gilding embellishes handles and other appendages and adds bright touches to designs painted in colour. Entirely gold decoration was once considered very desirable, and many cherished glass objects are described in inventories as ornamented solely in gilt (143). Beltrán de la Cueva owned much of this glass, two pieces of which were indicated definitely as Barcelonese, a large serving dish powdered with gold and a fruit dish (144). At El Pardo Palace, the Catalan glass was principally of the gilded variety, three dozen pieces having been reported as so ornamented (145). But surviving vessels decorated with gold have lost their gleam and sparkle. The painter-decorators followed the precepts set down by Antonio Neri, the Florentine, in mixing and applying gilt to glass. An oil or varnish combined with a drying agent was painted on or spread over the glass surface, and against the sticky substance gold leaf was pressed. The glass was dried with artificial heat but not fired, and the gilding sometimes was burnished with a wolf's tooth. This method has proved impermanent, for the metal has rubbed off, leaving only worn and faded traces.

The enameled glasses of Cataluña display a kinship of motives, patterns, and style of decoration. Designs were painted in a tangle of greenery that obscured much of the glass, and in a direct manner without superimposing one colour upon another or attempting chiaroscuro. Sometimes sepia or black accented, but never completely outlined, the motive. Fine lines and other details were scratched in the enamel with sharp instruments, permitting the glass to show through.

As for the kinds of design, those most frequently encountered are birds and foliage, used either as chief or secondary motives. Besides the goblet bowl (T353; plate III) in the Hispanic Museum, with white stems scrolled around green oak leaves, there are numerous examples on which flowers, leaves, and birds were painted as sole decoration. The Cluny Museum has a sweetmeat jar (Fig. 38), ornamented with white birds perched amid bluebells and foliage delicate as maidenhair fern. A ewer of Italian shape (Fig. 39) in the same collection is encircled by horizontal bands of green leaves on a powdering of yellow pin dots. A plate in the British Museum is



Fig. 37. EWER  
Seventeenth century



Fig. 38. JAR  
Sixteenth century.



Fig. 39. EWER  
Sixteenth century



Fig. 40. DECANTER  
Sixteenth century



Fig. 41. FRUIT DISH  
Sixteenth century



Fig. 42. AMPULLA  
Sixteenth century



Fig. 43. AMPULLA



Fig. 44. FRUIT DISH  
Sixteenth century

painted with birds pecking at green and golden yellow foliage, and a more intricate pattern augmented by lavender and yellow rosettes is to be seen on a fruit dish belonging to the same museum. A slender-necked decanter (Fig. 40) decorated with white birds and pale leaves belongs to the Sèvres Museum, and the Victoria and Albert Museum has a fruit dish with stalks of oak radiating from a human mask. The plant forms, conventionalized as was the custom, show characteristics of cypresses, palm branches, lavender wild asters, and tiny lemon or orange trees with golden fruit. Oak, briony, and trilobate leaves on undulating stems encircle a bowl in the Hamburg Museum, but not so easy to classify botanically are the serrated leaves, both round and oval, repeated endlessly on these sixteenth-century Catalan products. The birds, painted white, yellow, red, or pale blue, were probably intended to represent doves, herons, and swans.

Hunting scenes are rendered more or less naturalistically, an ampulla found in the Monastery at Pedralbes being a splendid example. A broad band around the body shows the chase, depicted in realistic fashion; through a forest, hounds race closely at the heels of antlered stags, while large birds, startled, fly up from the trees (146). The hounds and their quarry furnish a lively decoration around the rim of a fruit dish in the *Musée des Arts Décoratifs*, Paris (Fig. 41).

Marking many pieces of Catalan enameled glass are coats of arms of monastic orders and religious monograms, indicating that some were originally intended for churches or the refectory tables of convents and monasteries. The ampulla (Fig. 42) in the Victoria and Albert Museum bears a cross potent with stars between the arms, surrounded by a lacy, scalloped frame. The letters "IHS" in a broken band are repeated around a flask further embellished with red and white birds among green leaves, property of the *Museo Civico Correr*, Venice (Fig. 43). Fruit dishes, similar to one (Fig. 44) in the Sèvres Museum, are decorated with Maltese crosses, showing perhaps that their original owners were Knights of Malta, a military religious order. The monogram of Christ appears on the pedestaled dishes (Fig. 41) at Sèvres and Paris (*Musée des Arts Décoratifs*), and in the *Instituto de Valencia de Don Juan*, Madrid. On the Paris dish the monogram, thrice repeated, is painted yellow within a mandorla of radiating flames; a cross rising above the "H" and three nails below the letters mark it as the Jesuit insignia. The same symbols decorate three altar lamps, one (Fig. 29) in the Vich Museum, another from the Plandūra Collection with the *Ave Maria* monogram on the opposite side, and that from the Amatller Collection displaying in addition the arms of Montserrat Monastery.

Only two known pieces of Catalan enameled glass are dated, a vase (Barcelona Museum), around the collar of which is an anagram deciphered as 1592, and a sanctuary lamp bearing the date 1638 within the Franciscan symbol of a flaming heart pierced by two arrows. Further insignia of the order, two crossed hands and a crosier between them, together with an inscription proclaim the lamp as the property of Father Batomeu [*sic*] Amat. Aside from these objects there is uncertainty in dating enameled glass. Style of drawing and types of patterns give only a rough chronological arrangement and can not be trusted implicitly, but the costume worn by human figures on a few pieces is of substantial aid. The *Instituto* at Madrid has a vase on which is represented the head and shoulders of a man. His small ruff and cap are of the kind introduced to Spain shortly after 1500. The apparel of a girl musician and a boy, who seems to dance to her lute, dates a dish from the Plandiura Collection as of the mid-sixteenth century. Her dress has a long skirt, open down the front to show an underskirt; her companion wears a doublet and a green sash around his waist, slashed yellow trunks, and long hose. A fruit dish (Barcelona Museum) shows men and women whose dress, coloured deep yellow, green, and white, indicates that the vessel was made during the last quarter of the century. The Hispanic Society's vase (T351; frontispiece) dates from about 1580, according to the attire of the figures that ornament its sides.

Even though inconclusive, it is interesting to compare designs on five fruit dishes and a sweetmeat jar (147) with those on the 1592 vase. Bird medallions, hunting scenes, fruit trees and thistles, or garlands of blossoms and leaves link all these vessels together, and a Renaissance design of rigid acanthus stalks ties a fruit dish in the Barcelona Museum to the vase, thus completing the elements that bind the seven glasses in a closely related group.

Resembling the 1638 lamp is another, also from the Cabot Collection. On its cylindrical walls are the arms of the Marimón family of Mallorca placed opposite a medallion containing a pierced and flaming heart that bears the letters "A I". Below the flaring rim may be read an inscription announcing that it belonged to Father F. Marimón. Possibly the owner was the prelate Felipe Marimón who, born at Cervera in Cataluña, advanced to the rank of Bishop of Ampurias before his death in 1613.

Two pieces of sixteenth-century enameled glass, a ewer in the Macaya Collection and a fruit dish purchased by the Barcelona Museum from the Gaspar Homar Collection, came from the island of Mallorca. The sturdy ewer is pear-shaped with a tall collar topped by a domed cover. A thin, tubular spout curves up from the side opposite a ribbon-like handle. Enam-

eled leaves cover the entire surface in a thicket, painted green, yellow, and reddish brown and enlivened by white birds and touches of gilding. Decorating the fruit dish is a ring of nude children, clasping hands in a game or blowing toy trumpets. From a green and yellow medallion there radiate leafy stalks with tips drooping under the weight of white birds. Brightening the general tonality are accents of turquoise blue, golden yellow, and purplish brown. The ewer was found in the Convent of *Santa Catalina* at Palma and is traditionally believed to have come from the Cathedral, while the fruit dish was discovered hanging on the wall of a Mallorcan manor house. Whether or not these pieces and others from the island were made there can not be ascertained by colour and quality of the glass, the tints of enamel, or the designs. That workshops abounded during the sixteenth and seventeenth centuries on the Balearic Islands is known from documents, but attempts to distinguish accurately between the insular products and those of the Catalan mainland have given rise to a problem still unsolved.

Indecision prevails as to whether another group of enameled glasses is Catalan or Italian. They are closely allied to one another in their designs and forms, resembling in certain motives and in colour the enameled glasses undisputedly Catalan, yet differing in shapes and style of decoration. It may not be beside the point to note that none of the objects is now in a Spanish collection, although the former Espina Collection at Barcelona once contained a small jar of the series (148). Primarily, it is their decoration that is the bond uniting these glasses. The surfaces are filled with an all-over pattern of spiral stems and round, dentate leaves of the apple green associated with the Catalan enamelers. Perched amid the foliage are song birds naturalistically painted. Although their plumage colours occasionally vary, the species most often depicted has a brick red head and feet, brown back and wings, and a white breast. Border patterns are delicate engravings in red, blue, and white.

That this group of enameled glasses has decorative motives linking it with Catalan glasses can not be denied. The resemblance is very strongly detected in an ampulla in the former Cabot Collection, on the sides of which are to be found the circular dentate leaves and birds of many colours. The birds on the ampulla at Venice (Fig. 43), also, show a similarity to the songsters on the group in question.

In viewing the pieces, one feels distinctly a Venetian influence in their forms. The British Museum's covered goblet (Fig. 48) and the Amsterdam vase (Fig. 45) are illustrative of a shape considered Venetian but favoured enough for repeated reproductions in Spain and the Tyrol (149). Details like the stamped rosettes of glass paste are quite usual, as has been



Fig. 45. VASE



Fig. 46. WINEGLASS

Late 16th or early 17th century



Fig. 47. GOBLET



Fig. 48. VASE AND GOBLET

Late 16th or early 17th century

noted, on sixteenth-century Catalan vessels that are unenameled. Stems of mould-blown lion heads support the conical wineglass (Fig. 46) and the bell-shaped goblet (Fig. 47). This type of pedestal and the fluted knop of the Amsterdam vase, Venetian though they may have been, are found also as late as the mid-seventeenth century on Cataluña's most beautiful products. Shaped with Italianate elegance is the vase in the Prague Museum, an ovoid body rising to a narrow bottle neck and a trilobate mouth. The edges of the round bases on all the vessels are finished by lapping under, a technicality that became increasingly common in Spain as the sixteenth century drew to a close and the seventeenth began.

Certain mannerisms in painting and an individuality in ornamentation set one enameled vase (Fig. 49) in the Barcelona Museum apart from those already described. Around the collar runs a Moorish inscription, and large quatrefoils decorate the squat, ridged body. It is transparent, enameled predominately in white, with some blue, green, and yellow, and the two ear-shaped handles are of milk white glass. The motives are meticulously outlined in black. Because the vessel was found in Valencia and because of its Muhammadan traits, it is believed to have been of Valencian manufacture (150). Not unlike the so-called Valencian vase in style of drawing is a wine cask of clear yellowish glass in the former Amatller Collection. The barrel, found in a convent in Badajoz province, has been judged a product of Andalusian workmanship (151), but this is problematic.

Little is known of glass blowing in Valencia at this period. There can be no doubt that it flourished, because, in addition to being well documented in the fifteenth century, it ranked as a highly developed industry in the eighteenth century. Among its scanty records is an inventory, dated 1528, in which are listed the articles that the Count of Feria bequeathed to his heirs. Under the heading Venetian and Valencian glass, one reads of ewers worth one-half ducat each, flasks, little wineglasses with gilded handles, fruit dishes of blue, gilded, or frosted glass, and goblets decorated with the arms of Portugal (152). Unfortunately, the items are lumped together so that the reader has no means of knowing which objects were made at Venice and which in Valencia.

Pharmacy jars of Valencian glass gained a certain reputation outside their own region. A glass merchant of Sevilla in 1502 sold Valencian bottles (*redornas*) to a Cordovan apothecary. Part of them were gallon-sized, tinted light green, and the remainder, of half that capacity, were blown from colourless glass (153).

The municipal archives of Valencia have guarded since 1653 a public auction record that enumerates the belongings of Frances Moliner, a mer-

chant. In it appear also the names of purchasers at the sale and the amounts they paid for the goods. Domingo Cobos, perfume maker, bought forty glass scent bottles, some of them full of orange blossom water. To the same buyer went nineteen empty glasses, spherical bottles and flasks, and two large glass jugs (*bornies*), each holding five pounds of ointment and pomade (154). As all these vessels were for trade purposes and the prices modest, one may surmise that the glass, undoubtedly ordinary, was blown somewhere in the vicinity. The furnishings of a home at Alcora in 1696 included some glassware. Stored in the entrance hall within a pine box, there were found, mixed with figs and other dried fruits, two chests holding glass barrels and flasks (155). The modest equipment of the house shows that the owner belonged to the labouring class, and so it is likely that the barrels and bottles were of provincial make. A Valencian lady inherited from her brother in 1653 two glass ampullæ and four barrels (156). These pieces may or may not have been locally manufactured, for Victorino Bonilla, an influential lawyer and official of Valencia, would have had both means and opportunity to purchase fine domestic or imported products.

Aragón's glass factories are unknown, except for Caspe which was a centre for the industry from mediaeval times. Excavations made at a site near the town a few years ago revealed glass furnaces and fragments of vessels decorated with latticinio and coloured-glass ornamentations (157).

By the eighteenth century, Spain was crowded with foreigners who had gradually usurped from the Spaniards the lucrative commerce between America and the mother country. Gold and silver flowed prodigally into Spain, but as quickly left the country to enrich foreign merchants. These tradespeople exported the products of their homelands for use in Spain and her colonies.

German glass peddlers, at first carrying their wares on their backs from one town to another, began to hawk them from wagons in 1691 and, about 1730, opened permanent trading centres. These establishments, consisting of storerooms, salesrooms, and living quarters for the employees, were located near the sea coasts. From Bilbao, Santander, San Sebastián, La Coruña, and Ferrol in the north, Cádiz and Sevilla in the south, Cartagena and Alicante in the east, the employees of the trading companies worked their way inland as far as Madrid.

The period of greatest prosperity for these German glass traders was the last quarter of the eighteenth century, when bulk and value of stock in their stores were great and their profits were satisfactorily large. At this time several German or Bohemian companies had shops in one city, the total number of these stores in Spain having been computed as about one hundred

and fifty. Cádiz and Sevilla were the most important trading centres, because from their wharves sailed boats to the New World (158).

The trading establishments flourished well into the nineteenth century. The Sevillian salesrooms caught the attention of an Englishman in 1809. "The shops at which glass, knives, forks, spoons, and other German articles are sold, are mostly kept by native Germans, or their descendants, who are distinguished by the name of Bohemians. They . . . are by far the most civil shopkeepers of Spain, in every part of which I am told they are to be found" (159). In 1837 a German traveler boastfully remarked that the Bohemian glass dealers in Spain had the handsomest quarters (160).

Besides the influx of foreign goods, there came German and Bohemian artisans to work in the glass centres of Cataluña and other Spanish regions. The German modes for cut, engraved, and enamel decorations were accepted whole-heartedly by the Spaniards, who learned to work in imitation of the northern competitors.

A group of glass decorators traveled from Holland in the mid-eighteenth century and settled in the coastal towns of Valencia and Alicante. They erected glass furnaces and made quantities of blue, crystalline, and milk-glass objects painted with coloured enamels (161). Most popular of the glasses so characteristic of northern and central Europe were the square or octagonal bottles with short, narrow necks which were threaded for screw tops or flanged for stoppers. Some of them were large enough to be used as liquor bottles on sideboards or in traveling cases as part of the kits of sea captains. Smaller vessels of about the same shape as the liquor bottles were probably containers for perfume. It has been conjectured that, since the number found in Spain was great, some were importations that brought toilet water from Cologne (162). Drinking glasses were legion, shaped for the consumption of a wide choice of beverages. There were tumblers for water, wineglasses of every size and form, covered mugs for ale, and capacious glasses for posset, a drink made from warm milk curdled with ale.

The enameled designs in bright red, blue, yellow, and white were executed in a bold, sweeping manner with scant detail. They seem to have been quickly done and bear little resemblance to the fine enamel-painting on sixteenth-century German glass. Flowers with birds among the leaves and songsters perched on twin hearts or on a single heart, cleft by a jagged break, were favourite ornamentations. There appeared repeatedly little figures of men and women quite foreign to Spain in their costuming. Coats of arms of Spain and Portugal were plentiful, represented incorrectly, more often than not, and combined with misspelled versions of the motto: *Viva el rey de España*. Others bore *vivas* for the Spanish kings, Charles the Third



Fig. 49. VASE



Fig. 50. COVERED DISH  
Eighteenth century



T437



T442

Figs. 51-52. BOTTLES  
Eighteenth century

and Charles the Fourth. Rare examples saluted the Archduke of Austria, pretender to the Spanish throne, and so it is thought that they may have been the work either of Catalans or of foreigners who laboured in Cataluña. A tumbler, formerly the property of the Countess of El Valle de Canet, displays within a floral wreath Saint Anthony holding the Christ Child. The inscription on this glass reads *S. Antoni de Lisboa*. The Macaya Collection contained numerous enameled pieces, said to have been made along the eastern coast of Spain, among them a covered dish (Fig. 50) which reveals both Germanic and Spanish traits.

Valencian workshops also produced at this period wheel-engraved glass, similar in shapes and decorative motives to the enameled pieces. Bottles and drinking glasses with wheel-engraved and gilded designs were likewise imported from Germany and Holland. A young American traveling to Spain in 1826 concluded dinner at a Catalan inn with brandy "swallowed . . . from small Dutch cordial glasses curiously ornamented and gilded, which, from the manner in which they were produced from an antique chest that stood in the corner, were evidently in high estimation at Amposta" (163).

The Hispanic Society has in its collection a dozen engraved octagonal bottles (T437, T442; figs. 51 and 52) that came from southern Spain. Fitted in a traveling case, eleven of them belonged to a single set, the twelfth (Fig. 52) being of slightly different design. Conventionalized tulips growing from urn-shaped flowerpots form the main patterns; the engraving is shallow, roughly executed, and unpolished. The shape of the bottles, the engraved motives, and the appearance of the paste are identical with glass produced in Germany and Holland.

The town of Ollería in Valencia had long been a glass-making centre. Cavanilles said in 1797 that a few of the town's inhabitants worked as glass blowers. He went on to explain the ingredients of the glass—barilla from Alicante and fine sand, either pink or whitish, from local pits (164). Busot, near Alicante, with its plentiful supply of barilla and sand, had a manufactory that, in the late eighteenth century, turned out each year about eight thousand pieces (165). Salinas, where glass making was supposed to have been an industry long before Arab domination, was flooded in 1751, the waters destroying the old glass factories. Five years later they were rebuilt. *Porrones*, lamps, and pharmacy bottles of colourless, pressed glass were the products of these furnaces, as well as blown glass and windowpanes when the market so demanded (166). The provincial capital itself made dark green bottles and other objects of an ordinary kind as late as the nineteenth century. Along the banks of the Almanzora River in Murcia, until the mid-

nineteenth century, there was a string of glass furnaces which had from an early date supplied household objects for local use (167).

The barilla of Alicante maintained its supremacy in the glass-making industry. Old records mention especially its use by foreign as well as local workmen. In 1722 there were exported from Alicante alone 44,692 hundredweights of barilla and 8,380 of *sosa* (168). Sébastien Zoude, a Flemish artisan who was established at Namur from the year 1753, imported Alicantine soda ash to combine with other ingredients in his glass pots (169). Writing in 1760, Bosc d'Antic, being a patriotic Frenchman, said, "Our glass manufactories are more useful to Spain than to France. They consume annually more than two millions worth of soda ash from Alicante and Cartagena" (170). Norman glass blowers continued their custom of purchasing Spanish barilla, and as late as 1801 a Norman craftsman made "crystal" and crystalline glass from this product of Alicante (171).

The petition of an Aragonese blower who wished to establish his workshop at Palma in 1719 throws but a flicker of light on Mallorcan glass manufacture at this period. Blas Rigal applied to the local authorities to erect a furnace at Palma where he was then residing. The *Ayuntamiento*, upon careful investigation of the site, recommended that Rigal be allowed to build, saying that another furnace added to the number in operation would prove helpful in supplying more readily the demand for glass. Were this privilege granted to Rigal, the city officials asked that he be instructed to make an underground furnace and so avoid the dangers of fire (172). No further incidents about the Mallorcan glass industry during this century are known; perhaps the craft gradually dwindled to insignificance.

From a few references we are assured that Aragón must have had its manufactories of glass. There were fabrics at Peñalba and Jaulín where a dark glass was made. Mediocre glass was manufactured at Utrillas, and Vistabella had been the source of crystal glass since the previous century (173). Near the village of Crivillén was a site where furnaces were operated in 1779 to make crystal and other kinds of glass (174), but none of these factories could compete with Cataluña in producing beautiful pieces (175). The former Amatller Collection contained several jars of bubbly green glass, the source of which was supposed to have been Aragón. Their lobulated mouths, clumsy bodies, and utilitarian ring bases do not distinguish them as coming from any particular locality in the Peninsula, for similar shapes fashioned from greenish glass were native also to Castilla and Andalucía.

A few glass-blowing centres continued to prosper throughout the eighteenth century in Cataluña. Mataró, most prominent of all, had two fur-

naces that upheld old traditions of the industry in producing "curious glasses" (176) of fine quality and good workmanship, some of which were distributed within the Peninsula as well as abroad. Artisans from Mataró traveled to important fabrics in other provinces, as did Pere Frontvila who left Mataró for the royal glass factory at San Ildefonso (177). The Catalan town still retained one of its old glass factories in the mid-nineteenth century. In it, thirty workmen blew glass of all sorts—goblets, bottles, and flasks—and made window glass besides (178). The late years of the eighteenth century saw the rise of artisans at Villafranca del Panadés where holy-water stoups, *porrones*, and *cántirs* were blown from colourless glass with latticinio stripes (179).

Barcelona city still produced high grade glasses in the Venetian manner (180), and Almatret rose to superiority for its vitreous products. The factory, a league from the city, must have employed many workmen since it was necessary to build an oratory that they might hear Mass on feast days (181). Tortosa, abounding in refractory clays, fire wood, and barilla, was a fortunate location for glass blowers, and besides these advantages, it lay on the river Ebro, a means of transporting both natural products and glass (182). Local glass works and those of other regions were supplied with refractory clay for their furnaces and crucibles by Tortosa and also by Benet, a site near Horta (183).

The eighteenth century witnessed a steady decline in Catalan glass making. The delightful and original creations of the Renaissance were things of a brilliant past. Artisans had from the mid-seventeenth century turned their skill and energy toward increased production, to the detriment of the vessels they produced. Added to the strong German, Bohemian, and Dutch influences, the Andalusian style cast its reflection on the glass of Cataluña. Flamboyant crestings, dripping festoons, and bristling spines of glass paste clung and projected from every imaginable surface, and glass with the natural green or greenish tints uncorrected returned to favour.

Applied decorations, such as twisted cords, rosettes, and bird or animal finials often contrasted in colour with the main body of the vessel. Shades most frequently employed were blue, milk white, crystalline, and yellow. Latticinio in stripes and simple braid patterns decorated a goodly number of objects. Glass intended for crystal had a smoky gray or purplish tint, the result of too much manganese oxide in clearing the colour.

Workmen did not resort freely to moulds until the closing years of the century, but many pieces display twisted or criss-cross ridges, indicating pressure of the vesicle in a pattern mould and subsequent expansion with the blowpipe. Characteristic of the century were the spouted *porró* or wine



Fig. 53. *ALMORRATXA*  
Eighteenth century



Fig. 54. *PORRO*  
Eighteenth century



Fig. 55. *CRUET*

Eighteenth century



Fig. 56. *MIRROR*

container, the *almorratxa* or rose-water sprinkler, and the *càntir*, a jar for water or wine. The *porró*, like that (Fig. 54) in the Sèvres Museum, generally has a bulbous body from which rises a bottle neck ending in a trefoil or a circular flange. An attenuated drinking tube slants up from the lower part of the body. The ancient *cestrill* or cruet had evolved to this shape by the late seventeenth century and with some variation has so remained. The bodies of *càntirs* are diversified in shape, being ovoid, spherical, or pyriform, but they all have two spouts, one for filling and the other for drinking. Surmounting the bodies are ring handles that were bent from plain or grooved rods, or rods threaded with coloured twists, and topped by elaborate rooster or flower finials. The Hispanic Society has a *càntir* (T358; plate IV) representative of this eighteenth-century shape. *Almorratxes* became transformed into slender, pear-shaped vases tapering to columnar stems that ended in knobs or supporting bases. Each vessel had a bottle neck and four upright spouts emerging from the top of the body. Such is a vessel (Fig. 53) belonging to the Victoria and Albert Museum.

Saltcellars were either small open cups on high pedestals, or covered with tall, cone-shaped tops. Double cruets with curved spouts, sometimes pedestaled like the Glasgow Museum piece (Fig. 55), were important items of table service that included also stemmed fruit dishes, tumblers, goblets, and wineglasses. In certain of these drinking glasses may be detected a suggestion of Castilian and, more remotely, English forms. Balustered candlestick holders and oil lamps of several shapes were the usual lighting equipment in homes. Of the lamps, the Hispanic Society owns a ring lamp (T359; plate V) with a tube projecting from the base for the wick. Mirrors, made principally at Mataró, were necessary as well as decorative household furniture. They backed sconces to reflect the candlelight or hung on walls in their baroque scrolled frames of gilded wood (Fig. 56). Aside from the Catalan mirrors, Venetian and French glasses and the small German products still found a good market within the province.

Holy-water stoups, fastened to the walls of homes, were small cups upheld by a network of glass strands or by twisted and knotted ropes of glass, and liturgical ewers continued to be made. Visitors to the principal Catalan factories during the eighteenth century witnessed exhibitions of glass blowing and modeling staged particularly for their benefit (184). The artisans gave free scope to their fancies, fashioning quantities of gaudy *càntirs*, as well as animals—lizards, mice, and birds—and minute articles of wearing apparel. Only pharmacy jars and bottles, lacking extraneous ornamentation, retained the strict simplicity of form customary in the Middle Ages and early Renaissance.

The early nineteenth century brought a knowledge of perfected ingredients for the pot and better methods of furnace construction. The glass industry became almost entirely commercial, except for the few workers who fashioned small objects from coloured-glass rods—crucifixes and saints' figures, little boats and fancy heads for pins that were given to Catalan lace makers as prizes. The first years of the present century witnessed an awakened interest in glass blowing as the continuance of a splendid tradition. A group of artist-craftsmen, familiar with the best glass formerly made in their native province, attempted to follow the ancient forms and decoration, meanwhile imparting to their work an individuality of its own.



E1207

Fig. 57. THE GLASS BLOWER.  
Eighteenth-century tile

### III

#### ANDALUSIAN GLASS



### III

WHEN Morisco uprisings prompted King Philip's removal to Córdoba with his court, Sevilla was eager to show loyalty to the sovereign and requested that he visit the city. The following year, 1570, King and courtiers progressed through the outskirts of Sevilla to Bellalfor, where lavish preparations had been made for his comfort and entertainment. Displayed on the banquet tables were the beautiful glasses and pottery of Flanders and Venice, much esteemed because they were imported. Another table held carafes, *pomos*, and *almorratxes* of fragrant waters and glass vessels of rose vinegar. When the fêted monarch made a triumphal entry into Sevilla, he passed by walls painted with allegorical figures that were personified representations of towns and villages in the province. Cala was among their number, depicted as a girl holding a glass vase with others at her feet. A Latin verse begged His Majesty to examine the glasses made in her furnaces. Sevilla, too, is mentioned in the same account of Philip's journey as having a glass furnace (185).

The industry had been active within the Andalusian capital from the latter part of the fifteenth century. Documentary records in the city archives give the names of several glassmen who worked there during these years, but they were very probably the makers of stained-glass windows. Throughout the next century, the glass artisans and venders congregated in the vicinity of the Street of *El Vidrio*, many of them specializing in stained glass for cathedral and church windows. There were, also, a few craftsmen who blew glass vessels of all kinds, as Alonso de Ribera and Diego López de Porras (186).

Because Juan Rodríguez wished to maintain his own furnace, instead of working at one belonging to his friend, Diego López, he had three glass-makers and a vender of their products testify to his integrity and capabilities. Rodríguez was described by them as being a master craftsman in the art of glass manufacture. Besides ordinary wares, he knew how to make crystal and green pastes, latticino-striped glass (*lo rayado*) in the Venetian manner, and the fine quality favoured at Sevilla, Cadalso, and Alcalá la Real. Though Rodríguez was a native of Cadalso, he had then resided at Sevilla for more than twenty years and had learned his art at Venice and Barcelona, so it was said (187).



Fig. 58. WINE FLASK



Fig. 59. COBLET

Seventeenth century



Fig. 60. VASE

Seventeenth century



Fig. 61. CHALICE



Fig. 62. VASE

Seventeenth century

The glass-blowing industry continued to flourish at Sevilla until the late eighteenth century, when many factories were in operation (188). About this time, Cabra, a town in Córdoba province, made glass of inferior grade (189). Cádiz probably supported a glass fabric during the seventeenth century, for the city was then the refuge of Muranese fugitives (190).

It is to be regretted that no undebatable pieces of Sevilla's glass are known. Doubtless they exist, only they have become confused with the products of other furnaces. The painters of Sevilla have pictured on their canvases many glass vessels, some of which may have been locally blown, although there is always the likelihood of their models having come from other centres in the Peninsula, from Flanders, or Italy. While still a young man at Sevilla, Velázquez painted *The Old Woman Frying Eggs*. As the cook in this painting sits with spoon poised over the frying eggs, a boy approaches her, a melon hugged in his arm and a wine flask (Fig. 58) held firmly in the other hand. The artist completed *The Water Carrier of Sevilla* before he traveled from his native city to become court painter. He has depicted the vender of water, surrounded by his earthenware jars, handing a sparkling goblet (Fig. 59) to a youth. Painted by Francisco Zurbarán, a youthful Christ sits beside a table on which rests a delicate vase holding flowers (Fig. 60), and among the saintly figures portrayed by the same artist is that of Saint James of the Marches, holding high his attribute, a chalice. The cup is represented as a crystalline goblet (Fig. 61) on a tall knopped stem. In a painting of Saint Anthony's vision, Murillo has included

on the Saint's study table an urn-shaped vase (Fig. 62) supporting a sheaf of lilies. If it could be said positively that these are representations of Sevillian glass, we might conclude unhesitatingly that the products of Andalucía's capital showed skillful craftsmanship and beauty and followed closely the Venetian mode.

Archives in a few villages of Granada, Jaén, and Almería have furnished the sole information obtainable on their glass-making industry (191). Near Puebla de Don Fadrique is a site named Pinar de la Vidriera, where excavated furnaces and glass fragments prove the existence of a manufactory. Town documents confirm that the furnaces were working in 1620. The Castril de la Peña factory, of great antiquity, continued in operation during this period, its furnaces lighted with wood from the Sierra Segura. A very good glass furnace at Valdepeñas, Jaén province, owed its existence in 1628 to an abundance of fuel from the wooded sierra. Until the past century, there was a glass fabric at Arroyo de los Molinos, and at Bailén and Hinojares, in the same province, green glass was manufactured as late as the mid-nineteenth century (192). María, Almería province, had several glass-making establishments, the oldest having been located about two miles from town at a spot known from years past as María del Campo. The town itself supported three workshops. Vicente Botia was the proprietor of one from about 1750 to 1790, and Juan Martínez founded at this time another manufactory which lasted until 1854.

Murcia and the former kingdom of Granada continued until the eighteenth century to be two of the main sources of barilla and soda ash in Spain, and their ports were busy shipping these products to foreign lands (193). Glass vessels from the region of Granada have some common traits of colour and plastic ornamentation, whether they were made in the provinces of Almería, Jaén, or in Granada proper. Here the crystal glass of Venice was not imitated, as the glass blowers carried on the manufacture of domestic glass in the Moorish tradition for local consumption. Humble objects they were, on the whole, made for taverns and the homes of simple, unmoneyed people. The green paste was tinted by iron oxides in the silica, the shades ranging from pale leaf green through sombre olive, from aquamarine to deep emerald. Additional colours, combined especially with the greens, were black, actually a dark mulberry or brown paste, and purple, sapphire, and amber. Several objects illustrative of colour combinations are in the Victoria and Albert Museum. One vase has a tall blue-green collar and black threading and handles, the body and base having been dipped into black glass that formed an outer coating. A similar process was used in designing a tiny coffee or liqueur mug, the blue-green body of which was

partially submerged in mulberry glass. A yellow-green bottle, plunged to the neck in deep purple, looks as though it were full of wine. An olive green vase is threaded with blue, and the handle decorated with sapphire crestings. Crestings, serrations, and shell forms recur endlessly as decorations. Rims of bottle-necked flasks were cut off and encircled by thick glass-paste bands of the same or a contrasting colour (as on Flasks T362 and T364; plates IX and VII). Bases were fashioned in various ways: by indenting the bottom of the glass vesicle with a kick, by attaching a ring of glass paste, fluted like the edge of a pie crust, or by affixing a separately blown vesicle and flattening it to make a double disk.

The shapes of Granadine glasses are developments from the Muhammadan forms made by Moorish craftsmen of Almería, who were praised during the Middle Ages for their skill in glass blowing. Writing to Baron Davillier in November 1871, the artist Fortuny described a little glass vase which he had purchased at Granada, ". . . the form is purely Hispano-Arabic; the glass is greenish and thick" (194). Perhaps this vase was shaped like so many from the district about María; their small, nearly spherical bodies resting on ring bases of pinched glass, tall collars of inverted cone shape, and numerous vertical handles (Fig. 63) remotely suggest Syria's enameled mosque lamps as their models. Threads and chains of glass fused to the surface encircle the collars and bodies of these vases, while toothed ribbings and crestings extend down the outer sides of the handles. The Victoria and Albert Museum has an example with as many as eight handles, and in the Cabot Collection (Barcelona Museum) is an even more elaborate composition; alternating with its handles are four bulbous spouts emerging erectly from the body of the vase. Glass rings hang as pendants from handles and the high, pointed cover of a similar jar in the Kelvingrove Art Museum, Glasgow. The vase form dates back at least to the sixteenth century, and during the next hundred years it became very prevalent. Later developments tended to be simpler and less decorated; the number of handles diminished, and there was a less definite angle in the outline between body and collar. For use as vases or else as decanters, there are vessels with spheroid bodies and high collars flaring at the rims. The British Museum example (Fig. 64) has threading around the collar and vertical ridges of pinched glass paste around the body. Granadine vases of the preceding types influenced glass blowers throughout the entire Peninsula, and like echoes there appeared wing-handled vases (Fig. 65) with bodies small in comparison to their high, flaring collars. Others developing from the same source, no doubt, had undulating rims. As a rule, they were blown from amber and green glass.

From Almería province, probably María, came Flask T354 (Plate vi) in the Society's collection. Its thick-walled olive green body is simply wound with threads and triangular links of glass. The sturdy shape and the flanged neck recall Muhammadan flasks and decanters of the Middle Ages. The sobriety of ornamentation may be distinctive of the workshop where it was made, but it also seems to indicate that the piece dates somewhat earlier than those with more garish decoration. Flasks and bottles, like T364 and T365 (Plate vii) in the Hispanic Museum, must have been in great demand, for many have survived to the present day. They have flattened pear-shaped walls, tapering to cylindrical necks, and small ring handles in vertical position. At times, their ornaments incline to exuberance in spidery projections, drawn out to great limits with pincers, and in long handle-extensions pinched and pulled into twists and loops. Perhaps a forerunner of these receptacles is a tubular flask of fifteenth or sixteenth-century Granadine manufacture in the Macaya Collection.

A fine jug (Fig. 66) of dark green, bubbly glass from the Buckley Collection (Victoria and Albert Museum) was probably blown by an Almerian glass worker. The shape is Muhammadan with its bulbous forms and strangulation at the middle. The threading is carefully wound about the entire body, and two spots of glass paste are stamped near the brim. A flat wing of pinched-glass cresting edges the tubular handle. The precision and restraint shown in design and ornamentation make this piece an outstanding product of Granadine manufacture.

Aside from these vases, flasks, and bottles, there were other objects, less influenced by Moorish patterns, blown in the glass houses of Granada. Open salts were ornate little baskets with handles arching over the tops; a salt container of different form, a shaker (T361; plate viii) belongs to the Hispanic Society. Larger baskets with decorated bail handles had lacy tops made by building up zigzag rows of molten glass around the rims until a broad section of network was formed. The Kelvingrove Museum at Glasgow has a basket of clear green and violet, and the Victoria and Albert Museum has two, combining bluish with yellow-green paste and green with milk white. Milk glass seems not to have been commonly used in the Granadine workshops, a reason for attributing this piece to Castilla rather than Granada.

Possibly from Almería or Granada is a *cántaro* (Fig. 67) of pale yellow-green. The bail handle is placed crosswise between the two spouts, unlike the arrangement on Catalan *cántars*. From glass were blown and modeled the oil lamps that lighted modest homes in the southern provinces. Two oddly shaped standing lamps were made in Almería (195). One (Fig. 68)



*Figs. 63-64. VASES  
Seventeenth century*



*Fig. 65. VASE*



*Fig. 66. JUG*

*Seventeenth century*



Fig. 67. CANTARO  
Seventeenth century



Fig. 68. LAMP  
17th or 18th century



Fig. 69. LAMP



Fig. 70. VASE AND EWER  
Seventeenth century

is deep blue-green, the other pale amber with green-rimmed spout. Another type of lamp imitated those fashioned from brass. The spherical or pear-shaped oil wells were held aloft on moulded stems; two or three curved spouts for holding wicks emerged from the well (196). An example (Fig. 69) believed to have come from Cartagena is made of smoky, greenish yellow glass. Grotesque animals and birds were shaped from mulberry, amber, and green glass; the monster (T363; plate viii) in the Society's possession, as well as those in other collections, probably had no other purpose than to serve as ornament or toy.

Of drinking glasses a plentiful supply remains, indicative of the vast quantities in which they were made. Some, blown of olive green glass, are supposed to date from the late fifteenth century. They are formed as cylindrical and elliptical tumblers and are decorated with fused thread and chain patterns like the ornamentation on the Society's flask (T354; plate vi) from Almería. Supposedly from Castril is a crude little wineglass (197), greenish amber in tone and awkwardly shaped; its bowl is raised on a thick rod encircled by undulating cords of glass. A series of mugs blown from clear amber or green glass may have originated in the fabrics of Granada or Almería, but the characteristics displayed in their utilitarian shapes are not definite enough to ascribe them unquestionably to Andalusian workshops. The same doubts prevail concerning small vases, probably of eighteenth-century date; their ovoid bodies, usually decorated with expanded fluting, were blown from amber or smoky yellow glass, and the handles are of self-colour or green.

To pronounce objects of Granadine glass as the products of a special town or factory is usually imprudent, but enough is known of the wares of Castril de la Peña to venture an identification of its products. At the manufactories there, an effort was made to rectify the green colouration in the glass by adding carbon to the paste and by blowing the walls of the vesicle very thin. A resulting greenish amber tone, seen in the Society's Flask T362 (Plate ix) marks the glass. Besides making such pieces, typical of provincial work, Castril was reputedly the source of more artistic wares. Several vases in the Macaya Collection are said to have been the handiwork of seventeenth-century glass blowers at Castril. Some pieces are apple shaped, while others are ovoid, standing on high pedestals (Fig. 70); they have one or two handles, frequently terminating in serrated ribs. Their shapes and the simplicity of their adornment make them strongly resemble the output of seventeenth-century Castilian workshops.

While the small Granadine establishments continued an earlier tradition, glass making in other sections of Andalucía became industrialized in the

early nineteenth century. Master workmen from France ran a crystal-glass factory about two and a half leagues from Cádiz, at San Fernando (Isla de León). They were successful until 1845, when excessive cost of fuel transportation forced the factory to close (198). In 1829, a furnace was erected at Murcia for making inexpensive glass of good quality. Previously all glass had been imported there from towns in Valencia or from Maria (199). An industrialist named Valarino built a spacious glass-making plant at Cartagena during the early part of the century. In its furnaces and workrooms producing hollow ware and plate glass were manufactured pieces that could compare in perfection with the best foreign work. More than sixty employees, principally Frenchmen, were occupied constantly in making the clear, high-quality crystal and in blowing, casting, and cutting it. So excellent was the output of the Valarino factory that pieces shown at a Madrid exposition in 1842 won the Cross of Charles the Third (200).

IV

CASTILIAN GLASS OF THE SIXTEENTH  
TO NINETEENTH CENTURIES



#### IV

LIKE gypsy campfires, the furnaces of the glass blowers burned among the Guadarrama and Cuenca mountains. Spanning the breadth of both Castillas to León, fires blazed steadily for centuries or, flickering briefly, died while others flared. Castilian workmen wandered from one glass furnace to another, Catalans joined them, and Flemings and Italians migrated from Flanders to make Venetian-type crystal. Owners of the fabrics, usually master blowers themselves, toiled to perfect their products and find lucrative markets. Driven by dwindling supplies of firewood, sand, and other raw materials, they had often to hunt new locations for their establishments. At times, they were trailed by misfortune; trusted employees disappointed them with technically defective glass and poorly constructed shapes; costly experiments ended in failure; or the nation's industrial decline of the seventeenth century forced them to discontinue operations. Other managers were more fortunate in having the sponsorship of noble or king to create for their wares a fashionable demand.

Lavish protector and patron of glass blowers was Philip the Second. He showed no partiality in distributing his favours, for he encouraged Italian workmen to labour in the Low Countries and in Spain, purchased vast supplies of Venetian and Catalan glass for his palace table services, and then considered the manufactories closer to his capital. He must have felt pride in the richly decorative glasses of Venice and Barcelona, flashing gilt and crystal on the royal dinner table, but he also acknowledged the excellence of Castilian products when he included in the furnishings for El Pardo Palace seventeen lamps and a half-dozen globular flasks made at Cadalso de los Vidrios (201). True, they were utilitarian objects, devoid of handsome adornment, but in quality of materials and workmanship they undoubtedly ranked high.

A closer connection between Philip and the Castilian glass industry came in 1565 as he searched for able craftsmen to supply the Escorial. Having heard of Francisco Espinosa's dexterity in glass blowing, the King sent him and his brother Hernando to superintend a factory at Quejigal, not far from the huge architectural scheme. Royal decrees directed supplies and money to bolster the efforts of the brothers, and so as the result of their labours they could boast of countless windowpanes, candelabra, flasks, and drinking glasses for the monastery. Hernando died in 1570, and Francisco

turned for aid to a Catalan master worker, Galcerán by name. The Quejigal establishment produced busily, till the death of its royal benefactor damped the furnace fires forever (202).

Philip's long reign had just begun when his emperor-father's valorous noble, Beltrán de la Cueva, third duke of Alburquerque, died at his Cuéllar estate. Weary of battlefields, he had retired to private life soon after Charles honoured him with the Golden Fleece, and amid the costly furnishings of his castle he lived until 1559, waiting piously for the end. An inventory of household goods, clothing, jewelry, and plate portrays him as a man of discernment, wealthy enough to indulge his extravagance. He drew upon foreign as well as domestic sources for his treasures, his glassware exemplifying his cosmopolitan taste. Grouped with Venetian, German, and Barcelonese imports are the glasses from Cadalso de los Vidrios and possibly other Castilian towns. The Duke regarded Cadalso glass highly and would have agreed with a contemporary that its beauty was comparable to the glass of Genoa, Venice, and Barcelona (203). Two pieces of Don Beltrán's prettiest tableware originated at Cadalso, a blue carafe with white handles and a wide-mouthed vessel with a blue handle; augmenting their number were lavers, a long-spouted vessel and drinking tubes for the bedridden, wine casks and a decanter especially for grape verjuice.

Because the Duke was a Castilian landowner, the chances are that he encouraged the glass manufactories of his region. In purchasing freely of their wares, he would have gained the approval of government officials, for they stated in 1548 that foreign importations decreased the sale of Cadalso's well-made glasses (204). Perhaps Castilian workshops, if not those of Cadalso itself, supplied the nobleman with globular flasks (*redomas*) for scented waters or fruit juices, a little bowl and spoon, cupping glasses (*ventosas*) and sealed, wicker-covered carafes. All these vessels were described without indication of source, as were some fanciful shapes, a jug formed like a slipper, a bird or a castle topping bowl covers, and lizards for the handles of a goblet (205). Oddities of this sort could be expected from Venice or Barcelona but, while uncommon for Castilla, may be conceded as Castilian imitations.

Fortunately, because no actual pieces survive, such careful word pictures as the Duke's inventory have preserved the appearance of glass blown in Central Spain while three Philips succeeded one another to the throne. Further knowledge may come from the paintings by El Greco, his son Jorge Manuel, and his pupil Francisco Preboste. One can not say definitely that their regional pride prompted them to use only Castilian glass as models for such details as the spherical decanter of red wine, and the globular oint-



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Fig. 71. DECANTER AND VASE  
Early seventeenth century.



Fig. 72. VASE  
Late sixteenth century.



Fig. 73. VASE  
1624



Fig. 74. GOBLET  
Sixteenth century



Fig. 75. LAMP



Fig. 76. VASE

Seventeenth century

ment vase (Fig. 71), and Saint Mary Magdalene's glass vase (Fig. 72). The possibility that the artists were representing glass of Castilla is strong, as they worked in Toledo, where glass was manufactured to a limited extent, and near enough Cadalso to be completely familiar with its notable wares (206). Juan Bautista de Espinosa, a little-known artist of the seventeenth century, showed his interest in ornate silverwork and Castilian glassware (Fig. 73) in a signed and dated still-life painting.

For five years King Philip the Third left Madrid to hold his Court at Valladolid. While this city of ancient León harboured Spain's grandees and all their following, there lived among them, until 1605, Thomé Pinheiro da Veiga, Portuguese scholar and writer. His observations on manners and customs were the result of careful scrutiny. Particularly did he relish recounting the luxuries of food and drink consumed by the gentry and the shops where sweets and confections could be purchased. The glassware delighted him, ". . . let us speak . . . of the glasses of Valladolid, that are truly most beautiful and that one should go to see for one's own pleasure.

"Glasses of the greatest size, like *cántaros*, of all shapes and colours, and others, 'narrow-mouthed' (*penuados*) like water coolers . . . retorts of a thousand designs that here [at Lisboa] we never see and that are not excessively dear [at Valladolid]" (207).

Two shops sold the ware, and city water carriers, walking to and fro on the streets, vended their "water of Argales" from handsome glasses. What fabric produced these vessels? Perhaps Medina del Campo with its important furnaces. It was the nearest centre of the industry, and the great bi-annual fairs had long distributed its vitreous articles to Valladolid, both city and province (208). The customary method of transportation was to carry the glasses within straw-filled panniers on pack animals, as rode Cervantes' Licenciante of Glass. This student of Salamanca University imagined himself made of glass, and the only way in which his friend could persuade him to visit a prince at the Court of Valladolid was by packing him as a veritable piece of glass (209).

Mirrors and glasses furnishing the homes of the Duke of Lerma may also have originated at Medina del Campo, although it is quite possible that other workshops were represented. Chief minister to Philip the Third, Lerma led his sovereign into ruinous prodigality while privately amassing a fortune for himself. An intrigue caused his downfall, and he retired in 1618 to rich domains in Lerma and Valladolid. Four years later his rents and goods were inventoried, preliminary to paying the huge indemnity ordered by Philip the Fourth as penalty for despoiling the nation. Sufficiently valuable to be taxed for over nine thousand *reales* were eight mirrors framed

in ebony, small bits of glass and jewelry, and crystalline vases, bowls, and flasks (210).

While Philip the Fourth ruled, the trend in fashions was towards luxury, and even glassware of the period reflected splendour. That of Cadalso de los Vidrios was no exception, for its fine glass rivaled the Venetian in beautiful colours and graceful shapes. So persistent were the buyers in their demands that to fill orders necessitated the operation of three furnaces, all of which were owned by the Marquis of Villena who had a Renaissance palace and Italian gardens near the town (211).

Prosperity was doomed after a few years when the Cadalso glass manufactories lay bankrupt and idle, victims, as were all industries in Spain, of economic decline. But the desire for glass objects did not perish, and the more affluent subjects of Charles the Second continued to purchase mirrors, eyeglasses, and windows for carriage or home despite their rarity and cost. Trade in paste diamonds and beads was brisk, for modish ladies must bear a heavy load of jewels, be they real or false. The massive gems caused a visiting French gentlewoman to exclaim, "The women . . . have glass necklaces which hang twisted about their necks like ropes of onions" (212).

The day of the foreign artisan was at hand, since liberal privileges attracted him to Spain and encouraged his establishment there. Madrid in the early seventeenth century had already welcomed a Fleming from Liège. The glass blower Hardy prospered and then gratefully presented the city with a hospital (213). To the Court of Charles the Second came a Venetian glassworker in 1678, accompanied by two Flemish craftsmen who planned to make crystal and other high-grade glass. Apparently his fluent tongue won for the Venetian, Antonio Pellizari, a furnace and workshop in the palace itself. There he started to produce mirrors for royal use. Within five months his glibness proved his misfortune, and caught in some deceit, he fled the Court for Lisboa (214).

Protégés of the Duke of Villahermosa, Spanish governor in Flanders, were Dieudonné Lambotte and his family who left their native Namur and emigrated to Madrid. Lambotte soon abandoned the capital city, choosing in 1680 the town of San Martín de Valdeiglesias, near Cadalso, as more suitable for his manufactory of crystal glass. With him he had brought Flemish equipment and his own workers, faithful ever in this alien land. Shortly, the company began production of very creditable Venetian-style glass, but Lambotte lived only three years in his adopted country—not long enough to see his enterprise flourish. An Italian, Santiago Bantoletto, replaced him as manager and master worker. While skilled in constructing furnaces and mixing pastes, Bantoletto lacked his predecessor's ability in

blowing and shaping vessels, and imperfect glasses resulted. The manufactory's shop on the *Calle Mayor*, Madrid, could not sell enough goblets, water bottles, and wine coolers to interrupt approaching failure (215).

The rise of alien glassworkers stirred the Castilians, it would almost seem, to desperate manifestations of their ability. Besides competition with foreign factories in their land, these men had to contend also with imported articles and the work of other Spanish centres. They could not hope for the personal interest of their feeble king, the "bewitched" Charles, and his government proffered no help to industrials. Then, too, all manufacturers bore a crushing burden of taxes because of wars to hold Spain's empire. Prospects were not cheerful for the glass blowers, yet with admirable tenacity and diligence a few of them pulled to success.

Juan Danis and his companion, Francisco Herranz, from Segovia have been accredited with the revival of furnaces at Valdemaqueda, near the Escorial. In the sixteenth century, a fabric had operated there, producing hollow ware and small windowpanes. The idle factory was acquired by the two glassmen about 1676 principally as a workshop for composing the transept and chancel windows for Segovia Cathedral. Busied with this commission, Danis found time enough to write a treatise on glass. The work describes the processes of manufacture and indicates that, during Danis's directorship, the products included vessels of blown glass as well as the stained-glass windows. Basing his writings on the work of Antonio Neri, a Florentine, the Spaniard added his original experiments with local barillas, refractory clays, and siliciferous gravel. His crystal glass was a preparation of gravel and barilla, previously mixed, which he compounded with saltpetre and white or red-lead powder, then turned into the pots for melting (216). To all appearances the crystal was admirable, but the craftsman himself had to admit its impermanency; it deteriorated when filled with vinegar or left in a damp atmosphere (217).

Valdemaqueda's glassware achieved so much distinction under Danis and Herranz that it became nationally recognized as an expensive commodity. An ordinance of 1680 regulated the prices of articles sold at Segovia and stipulated that one and a half *reales* should be charged for each piece (218). Another decree links Valdemaqueda glasses with those of Barcelona and Villafranca as to price and calls them replicas of the Venetian (219).

Not so gratifying were the results at Torre de Estevan Hambroz (220). Fine glass fashioned by Guillermo Torcada, a master blower, proved too fragile, and that produced by his successor, a Catalan, did not tempt the Madrilenians to buy. The factory's owner, having sacrificed much capital

to the business, was engulfed in 1692 by financial ruin (221). The fate of a glass industry flourishing at Cebreros in 1690 remains untold (222).

Passive for several years, the glass fabrics at Cadalso during the interim could not feed the treasury of the Villenas. A renewed activity unexpectedly enlivened the workshops under the director, Don Antonio de Ovando, who tried at the same time, but in vain, to rehabilitate the furnace at San Martín de Valdeiglesias. By 1692 Cadalso had climbed again to the peak of its former production standards for hollow ware and windowpanes, sold principally at Madrid and the province of Toledo (223).

Backed by histories that are often detailed, lauded by enthusiastic contemporaries, and acquired by the highest personages in the land, the surviving glasses from the Guadarrama region fail to uphold the glorious tradition. They are disappointing in comparison to Catalan glasses. There is little to distinguish the work of one Castilian fabric from that of another, and pieces have been assigned to Cadalso only on the tenuous theory that they were found abundantly in the neighbourhood. Cadalso had the most famous workshops, fashioned Venetian and Catalan-type glasses, and was productive over a long span of time. Consequently, it is natural that the finest examples of Castilian wares in modern collections have been attributed to this town.

The appearance of its sixteenth-century glass remains unknown, for there is no piece that may be judged definitively as of that origin. Because the supposition is hardly convincing that all Cadalso glass of the period has perished, one is led to believe that truly the blowers imitated the Barcelonese and Venetians so expertly that even now their products are mistaken for those of other centres of the industry. Illustrative of such reasoning, perhaps, is a goblet (Fig. 74) found in a convent near this Castilian town. The bowl is spotted with the amber, blue, and red of cane ends fused into crystalline glass, and the pineapple stem is gilded. Obstinate doubts as to its Castilian origin persist because of its dissimilarity to all Spanish glass and because of its affinity in form and *millefiori* technique to the products of Venetian blowers.

By the seventeenth century, craftsmen had branched far enough away from foreign models to produce objects that can be declared more positively as native to the region. The crystalline paste is lightly tinged with green or smoky yellow, minute bubbles and unfused impurities often giving the glass a dusty look. Later, uneven streaks of violet sometimes marred the crystalline paste, the colouration due to excess manganese used in clearing the glass (224).

Castilians maintained the strictest simplicity in ornamenting their vessels.

Spiraled threadings of blue, latticinio, or purple glass and fused cords in chains or undulating bands sufficed to decorate collars, bases, and bodies. Entire pieces were blown of "marbleized" glass—that is, milk glass splashed irregularly with colours and blue glass flecked with white. The early years of the seventeenth century saw the creation of such "marble" glass vessels as a standing oil lamp (Fig. 75) and a covered jug in the Victoria and Albert Museum (no. 334-1873), both of which may have had Cadalso as their source.

With the progression of years, Castilian glasses no longer emulated the airy bubbles of Venice. The vessels, of which primarily goblets and flower vases still exist, became heavy and clumsy with coarse decorations, suitable for common household use. They are "glasses that, instead of being displayed on magnificent sideboards, were kept, because of their humble state, on cupboard shelves behind latticed doors" (225). Cumbersome form is exemplified in a vase (Fig. 76) of clear greenish glass encircled by a running scroll of purple and milk-white pastes fused to the surface. The ear-shaped handles are edged with blue glass pinched into spines. Ponderous too is a bell-shaped goblet (Fig. 77) decorated with thick waving cords of latticinio and with ring handles curiously attached to the stem.

Certain tall flower vases (Fig. 78) have more grace. Their egg-shaped bodies are raised aloft on pedestals and their flaring collars are threaded in milk white or palest blue. The walls of some have fine diagonal ridges, an indication that while soft on the blowpipe the vessel was lightly twisted. Each flower holder has two lateral handles substantially made of circular glass rods and ornamented with crestings, or formed from gatherings of glass paste flattened and stretched to angularity.

The introduction of the latticinio-stripe technique has been ascribed to Antonio Ovando (226), but more probably the glassmen of Cadalso had learned it previously through importations of Catalan products, combined with available written accounts of technical methods and the advent of Catalan workers to Castilla. The manner in which the Castilians fused milky stripes into transparent glass was coarse, bold, and irregular. Two pieces from the Cabot Collection bear out the statement. Widely spaced vertical bands surround the body of the vase which has ring handles of hollow tubing. The pale green goblet (Fig. 79) is diagonally and unevenly lined with white stripes. The pinched cords binding bowl to pedestal and the vertical handles, extending like butterfly wings, are blue.

Strong as the Catalan and Venetian influences had been on Cadalso's glass blowers, by the second half of the seventeenth century, Andalusian glass designs claimed the workers' attention. Pieces like a blue-green inkwell

(Fig. 80) with lavish ornamentation are considered products of Cadalso, but they closely duplicate the workmanship of Almería's factories. The slender flower vases (Figs. 78 and 70) of Cadalso and Castril de la Peña reveal an exchange of ideas between Castilian and Granadine craftsmen.

Characteristics both Andalusian and Catalan mark a decorative bowl (Fig. 81) of faint greenish yellow, its central knob tinted a watery blue-green. Resembling it stylistically are a sturdy goblet in the Archaeological Museum at Madrid and the Cup T355 (Plate x) belonging to the Hispanic Society. A close relationship is evident in the brilliant clarity of glass, their fused chain patterns and doubled ring bases. They are so different from earlier Castilian pieces that one is tempted to consider them as the results of Antonio Ovando's regimen of innovations.

Castilla has been pronounced the source of low bowls (Fig. 82) of clear or "marble" glass with lobulated walls, fruit bowls (Fig. 83) on pedestals, drinking glasses of dark amber, purple, and cobalt. But as a rule they can not be classified unerringly, for nearly identical eighteenth-century objects abound throughout all Spain.

Clustered together in the Cuenca mountains of New Castilla lie a few small towns and villages that had long been centres of the glass-blowing industry. In 1599, glasses from the Cuenca region, as well as Venetian and Catalan pieces, belonged to Diego Fernández de Córdoba, knight commander of Calatrava. His inventory, composed at Madrid, recorded also the amazing number of two hundred pairs of eyeglasses (227). Local traditions affirmed in the eighteenth century that even then the furnaces of Recuenco, Armallones, and Vindel were ancient. They lay inactive while Spain suffered economically under Philip the Fourth and Charles the Second, and scattered references dating from the reigns of these two kings allude but briefly to Cuenca glass. There is the account of an artist designing windows in 1628 for Burgos Cathedral. He was requested by church authorities to order glass from Cuenca that he might colour and cut it for his compositions (228). The prices for Cuenca glass sold at Segovia in 1680 were reasonable when compared with charges permissible for French mirrors decorated with gilt figures and for the glasses of Valdequeda. The products of the Cuenca fabrics consisted then of goblets and carafes, tavern cups and water jugs, besides the windowpanes (229). A decree regulating the sale of glasses at Madrid late in the seventeenth century tells much the same story (230). The carafes, decanters, and mugs made at Recuenco and Beteta could be bought inexpensively, for they lacked the fine designs and ornamentation of other wares, and their destination was intended to be the inn, the kitchen, or the home of simple folk.

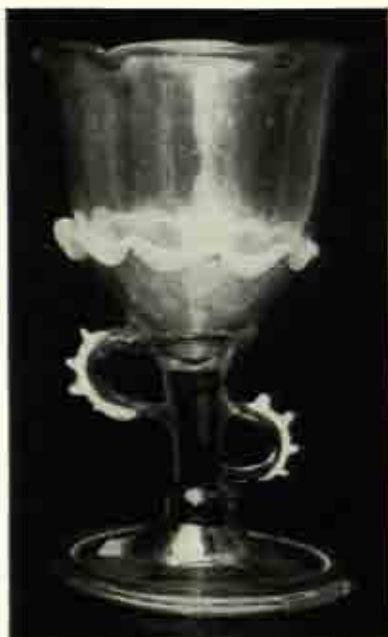


Fig. 77. GOBLET

Seventeenth century



Fig. 78. VASE



Fig. 79. GOBLET  
Seventeenth century



Fig. 80. INK WELL  
Late seventeenth century



Figs. 81-82. BOWLS  
Seventeenth and eighteenth centuries



Fig. 83. BOWL  
Eighteenth century



Fig. 84. VASE  
Seventeenth century

Lack of regard accorded to commonplace vessels by the owners helps to explain their scarcity in present-day collections. Of a fragility too delicate to withstand hard use, the seventeenth-century glass of Cuenca must have suffered constant and heavy breakage. Instability of the paste composition may also account for the loss of numerous objects. Little remains as a basis for identifying the work of factories in the region—only a number of flower vases that have been rather hesitatingly attributed to the artisans of Recuenco.

Scant adornment and variety of form mark the vessels. Like one in the Macaya Collection (Fig. 84), they have rotund or bell-shaped bodies resting on low bases. The flaring collars are so large that they give an impression of overbalance, and the upper portions of the vessels, in particular, show a diagonal rippling of the thin walls. Rims were usually bent to octagonal form and spiraled, as were the bases, with threads of self-colour, milk-white, or clear blue paste. The only other decorations were two slender handles affixed opposite and vertically, the pale yellow-green vase in the former Buckley Collection being an exception with its four handles arranged tandem fashion, two on a side. The Vase T367 (Plate XI) in the Hispanic Museum has a more graceful outline; only the ring handles placed low on the body break the gentle curve of its belled walls.

It has been said that the workers at Recuenco used only the best materials for their glass paste, their chief concern being with quality, not decorations. The paste, as it is known to-day, is full of bubbles, pale green or faint amber streaked with blue. One can but surmise on the experimentations that busied these artisans. The results have proved not always satisfactory, because elements in the paste at times remained unstable. Alkali, present in too large a proportion, has united with the air's moisture to form crystals and dampness on the surfaces. As a consequence the glass is "crizzled", that is, pitted with minute erosions clouding its former brilliancy. On two vases, belonging formerly to the Countess of El Valle de Canet, there is visible evidence of this particular difficulty that bothered also Juan Danis of Valdemqueda.

Attempting to imitate a limpid crystal, the artisans at Recuenco blew their vessels until the walls were eggshell thin. A lightening of both weight and colour was effected, but true crystalline glass was not to be produced at Recuenco until another hundred years had passed.

When Fernando López de Aragón built a glass furnace at Recuenco in 1722, there were already three others in operation. Twelve years later Diego Dorado purchased this fabric, and until the end of the century he and members of his family were leaders of the town's glass-making industry. Conforming to the economic policies of the Bourbon king, Philip the

Fifth, Dorado sought royal protection as his manufactory began operations (231). He appealed for exemption from taxes, duties, and transportation charges on supplies necessary to the industry; he pleaded that his workmen might be freed from military duty and their food be untaxed, also that his factory might display the royal arms as a safeguard against attack. Since he was to supply the King with water and wine jars and gallipots for the pharmacy, Dorado asked to cut as much firewood as he needed from the crown's oak and pine groves and to collect sand where he chose. To prove the authenticity of the glasses, the director promised that all venders selling his products would carry with them official testimonials, for the delicacy of the vessels made marking them impossible.

Although the good quality of Recuenco glass had won it a place in the Royal Palace and the homes of nobility, the King denied Dorado's petition. Perhaps Queen Isabel Farnese checked any generosity on her husband's part by reminding him of a glass blower, Ventura Sir, who had organized a fabric near their favourite palace of San Ildefonso and whom she deemed worthier of consideration. In 1739 King Philip gave Dorado permission to operate a salesroom at Madrid. Because the city's guild of glass merchants had complete power to sell at retail, the grant which was soon enlarged to include the other Recuenco workshops was an extraordinary favour. When this franchise terminated in 1751, further attempts were made by the combined three factories to extract from a new monarch, Ferdinand the Sixth, the same rights Dorado had previously requested. Ferdinand showed small leniency, and the only permission given was a five-year concession to maintain a Madrid exchange for selling glass by wholesale (232).

About this period Vindel, a league distant from Recuenco, advanced to moderate recognition as a glass centre. Its manufactory flourished under the directorship of Antonio Fernández Hermosilla, producing ordinary glass that was perfect in quality. Some time after 1763, the Vindel artisans drifted to Recuenco factories, seeking employment. Loss of workmen and the impossibility of competing in the market with its neighbour caused the eventual failure of the Vindel establishment (233).

If, under Philip the Fifth and his peace-loving successor, efforts had been made to improve industry, Charles the Third was even more concerned with placing factories on a steady financial basis, offering the State's guardianship in return for the right to supervise actively the technicalities of manufacture. The grants conceded to Recuenco glass fabrics are typical of the aid offered to all in a constructive endeavour to overcome economic evils.

The favours that Philip the Fifth withheld from Diego Dorado were extended to his descendants, Diego and Joaquín, by King Charles. They presented their case in 1787, requesting the King's protection in return for supplying the palace wine cellar with glasses. Continued operation of the factory meant life itself to the town, for the mountainous, wooded region could not be cultivated as farm land. They proudly called attention to the improved condition of their factory with its enlarged buildings, to glasses that displayed careful craftsmanship. Their fine glass, supplied to the Court in the form of bottles and the increasingly important windowpanes, found ready market in both Castillas, Andalucía, Extremadura, Galicia, and Portugal (234). King Charles, made aware of the factory's importance to the community and of the ultimate benefits to the State, chose to be gracious.

Emboldened by the King's willingness to aid them, the Dorados strove to be even more useful to their country. The next year they planned operating a factory for crystalline glass, perhaps with the furtive hope that their products would compete more than favourably with those from the royal La Granja factory. Fashion decided their choice of German artisans, because at this period Germans were reputed masters of the crystal-glass technique. As foreign intervention had spread widely under the Bourbon kings, the brothers but followed many Spanish manufacturers who imported workmen, teachers, and equipment in order that industry might thrive (235).

The Germans at Recuenco worked feverishly to construct furnaces and crucibles. They experimented with local materials, using tools and machines brought from their homeland, and soon started to manufacture pieces that demonstrated by their perfection the workers' competence. Specimens of their achievement—vases, wine cruets, saltcellars, and the like—were presented by the factory directors to King Charles. The Dorados watched their resources ebb away and, unable to finance the experimentation longer than a half year, they sought again their King's help. They hoped to keep the skillful Germans employed in making their excellent crystal and teaching the process to young Spanish apprentices. The King willingly granted all the petitions but cannily withheld the sum of money they requested, possibly because the glass manufactory at San Ildefonso and other royally endowed industries were draining his purse. Capital, of course, was the most urgent need, and denial of it forced the Recuenco project to a halt (236).

The bright career of Castilian glass manufacture dimmed as the nineteenth century brought a substitution of cheap objects for original and artistic creations. A plentiful supply of inexpensive wares hurriedly produced was the aim of all commercial houses. Cadalso tried to uphold her former superiority in "two handsome and useful glass fabrics in which are manu-

factured all sorts of vessels that compete with the best in the kingdom" (237). Armallones, Arbeteta, and Vindel in the Cuenca district supplied the two Castillas with bottles and *porrones* and crystal windowpanes that venders hawked about the countryside (238). Still meritorious for accomplishments in glass blowing, Recuenco's two remaining factories made sheetglass and hollow ware until the mid-century. An observer of Spain's industries about 1809 compared these products to the merchandise of Aragón and Cataluña and declared that Recuenco glass was the most beautiful, clear, and diaphanous (239).

V

THE ROYAL GLASS MANUFACTORY  
AT THE PALACE OF LA GRANJA,  
SAN ILDEFONSO



## V

**P**ROTESTING voices joined clashing swords while Spain, Bourbon ruled, fought for her right to commercial expansion and economic liberty. Manufacturers offered their domestic produce to compete with foreign merchandise and lay claim to colonial markets. In checking the onrush of linen and woollens from the British Isles and silk from France their efforts were valiant, but too often futile, as they tried to rival in quality and cost the goods sold by alien merchants. For the maintenance of factories, personal fortunes were sacrificed by industrialists who, as bankruptcy threatened, relied on the old system of royal protection.

Yearly, gold flowed out of Spain in payment for crates of cut crystal from Bohemia and Germany. To hold the ebbing wealth confined within his native land, the influential Juan de Goyeneche sought to erect a factory for crystal glass. He chose in 1720 a site near Alcalá de Henares, naming it Nuevo Baztán for his native town in mountainous Navarra. He gathered together about twenty families of foreign glass blowers previously employed by two promoters whose ventures in crystal manufacture had already failed (240). For these destitute aliens, for the Catalans and Navarrese who joined them, Goyeneche built furnaces and ample workrooms. He supplied all the necessary materials and tools and supported the craftsmen at his own expense. Their living quarters as well as his own handsome palace he ordered designed by no less prominent an architect than Churriguera.

Soon Philip the Fifth, appreciative of the effort to revive industry, granted the Nuevo Baztán factory his royal protection, generous favours, and liberal tax exemption (241). He firmly prohibited the importation of foreign crystals to the kingdom and permitted in Goyeneche's fabric only a limited proportion of alien workers who were to instruct their Spanish comrades in crystal manufacture. The art of cutting and wheel-engraving on glass was a new accomplishment for the Spaniards, and it was principally in this phase of the industry that they turned for help to their foreign companions (242).

So eager were the workmen to start their duties that they fired the glass furnace before it had thoroughly dried. Although built from the costly clay of Tortosa, resistant to high temperatures, the furnace crumbled. An attempt to fire crucibles and another newly made furnace resulted in the same destruction. The director remained undismayed by accident and the per-

suasion of friends and strangers to abandon his enterprise. His determination to resist obstacles brought him success at last when crystal of high quality was produced at his factory.

Goyeneche sold his cut crystals to Madrid and other parts of Spain and exported to distant America, using his own home on the *Calle de Alcalá*, Madrid, as a shop to promote the trade. For some years he supplied Queen Isabel Farnese's household. Surviving until now is a mould-blown tumbler from a dinner service made at Nuevo Baztán for the Queen (243). On it are lightly engraved the arms of Philip the Fifth, the royal crown and the Golden Fleece; a band of *fleurs-de-lis*, moulded in relief, encircles the base. Certain defects mark the glass as the product of a factory still beset by trials, a needle-like crystallization throughout the entire mass having been caused by improper annealing.

Philip's decree against the importation of crystals had not been enforced, so that foreign glass continued in the Spanish market. Aware of Nuevo Baztán's growing importance, the traders of foreign goods conspired against the factory's welfare. They lowered their prices to one-third the usual amounts, forcing the manufacturer to store his glass or sell at a loss. This pressure and the decreasing supply of firewood occasioned the decline of his venture.

About this time, an Englishman arrived at Nuevo Baztán and proposed a plan for manufacturing English crystal drinking glasses. He offered generous profits to Goyeneche who accepted unhesitatingly, in the patriotic hope that the project would be advantageous to the State. The English artisan financed the building of a special furnace and made many experiments. Unfortunately, the project came to nothing as he was unable to compound a clear paste with the desired sparkle.

Still endeavouring to stabilize a foundering industry, Goyeneche moved his factory to Villanueva de Alcorón in the Cuenca mountains. Firewood was more abundant, but the mountain atmosphere or the quality of the native raw materials affected the paste, and the former crystal degenerated into ordinary glass for which Recuenco was then the major source. Herein lay Goyeneche's ultimate misfortune. The factory was deserted by the glass blowers who left the country or scattered to other parts of Spain (244).

Some of the workmen followed their Catalan associate, Ventura Sit, to San Ildefonso near Segovia, site of the King's favourite palace of La Granja. Shrewdly reflecting that the nearer he was to the Court the better were his chances for regal favours, Ventura Sit built there in 1728 a glass furnace. Eight years passed while he laboured quietly, constructing mirrors and

windowpanes worthy of the King's notice. That he succeeded in attracting the monarch's attention was due to Queen Isabel's interest in his ability and her belief that he would be of service. So charmed was King Philip with the first mirrors made him by the Catalan that he built a factory on the palace grounds and promised that the royal purse would be responsible for operative costs. As chief of the crystal plate-glass manufacture, Sit worked contentedly at twenty-eight *reales* a day until his death in 1755.

While the founder was perfecting glasses that he hoped would prove superior to the long-famous mirrors of Murano, the royal factory began to employ foreign workmen and officials. No innovation to glass manufacture was this appointment of aliens. Venetians and Flemings had previously found occupation in Spain, but they were no longer so heartily welcomed. All European countries now opened their gates in hospitality to Bohemians and Germans or to those who had mastered the art of making cut crystal. The confections of Venice gave way to thick glasses, imitations of rock crystal, deeply cut in facets that glittered with prismatic fire.

In charge of making "French crystals" at the San Ildefonso factory was Dionisio Sivert who had immigrated about 1746 from France with his two sons. A Master Eder, previously the owner of a factory in Norway, sought connection with the royal Spanish industry, and the King agreed to engage him in his particular capacity of blowing large panes that needed no polishing. Eder won distinction shortly before 1759, because he was the first commissioned master of a workshop where hollow vessels were to be blown and moulded. His two sons, Joseph and Laurence, aided him in making German-style crystal decanters and drinking glasses. An additional department for the same kind of wares was established in 1771 and headed by Sigismund Brun, a native of Hannover who had come as a child to work at San Ildefonso. Two Frenchmen, Antoine Berger and Claude Seigne, the latter from Nevers, were working at San Ildefonso during the mid-century. Berger had recruited a band of French workmen to accompany him to Spain and later returned to his native country to enlist others for employment in the department producing French-style crystals. He was caught by the Revolution and imprisoned in the Bastille (245).

Flames twice damaged the mirror factory so badly that about 1771 a stone and brick construction was erected outside the village boundaries. Well-equipped, the new edifice included offices, two furnaces, workrooms for cutting and polishing, supply rooms, and the workers' homes (246). Although the mirror factory was located a considerable distance from San Ildefonso, the departments for manufacturing hollow ware remained

within the town. In 1798 there were three buildings containing furnaces, rooms for engraving and gilding, and a salesroom (247).

Never was a manufactory more favoured or better supplied than San Ildefonso. Materials for its equipment and products were of superior quality, often transported from distant Spanish regions. A special clay for furnaces and crucibles was mined from a site near Horta in Tarragona province (248), and the white sand for glass paste was carted from Bernui, three leagues distant from San Ildefonso. Murcia supplied barilla, and Aragón both antimony and manganese (249). A fine abrasive commonly called *almagro* came from Almazarrón, near Cartagena. This volcanic red earth, free from any mixture of sand, gave the final polish to plate glass (250).

Ventura Sit, during his association with the San Ildefonso fabric, concentrated his talents on producing flawless mirrors for the royal palaces. Accurate reflection he knew could result only from using a high quality of glass paste and creating a perfectly smooth surface. His first mirrors were small, made by blowing and flashing, but to increase their measurements they were later cast, rolled, and polished with a machine invented by the Catalan, Pere Frontvila. Allegedly designed by Ventura Sit during the last ten years of his life are two small plate glasses engraved with bullfight and battle scenes that are framed by strapwork, flowers, and birds in grape vines (251).

The royal factory gradually became distinguished for the beauty and size of its mirrors. Their size increased to one hundred and forty-five inches in length by eighty-five in width (252). An Italian traveler at San Ildefonso in 1755 saw the casting of such a mirror and described the process:

"An earthen receptacle containing molten crystal is drawn from the great furnace: it is spread over a large brass table heated red-hot; and having been lifted by a machine to which it is held by four iron chains, as far as the table edge, the crucible is adroitly overturned and all the crystal which is of thin consistency immediately spreads and begins to harden. Then it is drawn into a little furnace at the end of the table and is left as long as necessary to anneal." The glass was then ready for polishing (253).

La Granja looking-glasses, claimed by Spaniards as the largest in the world, ultimately reached the size of one hundred and sixty-two inches in height by ninety-three in width. John Dowling, Irish engineer, invented an hydraulic machine for polishing these broad surfaces. It was intended to do the work of forty-eight men, but there seems to have been some doubt as to its capabilities, for a factory official wrote that the invention promoted no economy whatsoever (254). By 1782 the factory was equipped with three bronze tables of graduated sizes. On these the molten glass was poured, and to extend and flatten the paste a cylinder was rolled over it. There were



FIG. 85. MIRRORS AND CHANDELIERS IN THE ROYAL PALACE, MADRID

twenty furnaces, a visitor to the workshop said, "into which the glasses, still fiery, are pushed and where they remain hermetically sealed for fifteen to twenty-five days to cool slowly. All those which split or have certain defects are then cut to form mirrors, windowpanes, or carriage glasses" (255). The plates were made to the required thickness by grinding two together, one on top of the other, with a layer of water and Segovian sand between them. The upper glass was moved constantly while the lower plate remained stationary. This operation often took a workman longer than two months to complete. The glass was then polished an additional eight or ten days with emery from Toledo and, finally, the red earth called *almagro*. Glasses to be used as mirrors were sent to Madrid for quicksilvering (256).

Continual orders to supply mirrors for the royal residences occupied the workers at La Granja during many years. King Charles the Third was responsible for the installation of La Granja looking-glasses and crystal chandeliers (Fig. 85) at the Madrid and Aranjuez palaces. In 1764 he commanded eleven mirrors sent to Cartagena for transportation to his son, King Ferdinand of Sicily, along with fine vases carefully cut and engraved with the royal arms of His Sicilian Majesty. The cost of the mirrors was high, about 124,000 *reales*, which included packing, freightage, and charges for the replacement of glasses that had broken while being cut. Eighteen years later he shipped more mirrors to Naples and presented a generous number to the Sultan of Turkey with whom he had just concluded a treaty terminating the political and religious rivalry long existent between the two countries (257). King Charles made gifts of La Granja mirrors to his courtiers also, and he was probably the donor of those embellishing the otherwise "badly decorated" palace of the Duke of Medinaceli at Madrid (258).

The public sale of glassware, begun as Charles the Third ascended the throne, distributed mirrors and windowpanes from the royal factory to wealthy homes and churches outside the capital. In 1770 there were certain windows in the Church of *Nuestra Señora de las Angustias*, Granada, glazed with magnificent and costly crystals ordered from Madrid (259). To Robert Southey, in 1796, the most remarkable things in the parish church of Móstoles, southwest of Madrid, "were four mirrors, each with a figure of some heathen deity ground on it. I thought Diana and Mercury odd personages to be pictured in a Catholic chapel". Facetiously he commented on the mirrors that he saw at Talavera de la Reina, "I was curious enough to measure at what height from the ground they had hung



Fig. 86. TUMBLER



Fig. 87. DECANTER

*Eighteenth century*



Fig. 88. COVERED BOWL



Fig. 89. COVERED JAR

*Eighteenth century*

their looking glasses here: it was nine feet, and as all that I have yet seen are hung equally high, we may acquit the Spanish women of vanity" (260).

Functioning simultaneously with the division producing plate glasses at San Ildefonso was the department devoted to hollow ware. The short, peaceful reign of Ferdinand the Sixth was drawing to its close when the first director, the Scandinavian Eder, began to manufacture German-type pieces of blown crystal. Certain La Granja glasses still in existence have so Germanic an aspect that they may be attributed to the artisans who worked under Eder's direction. The group includes several thick tumblers with elaborate designs engraved and cut (261). On one is carved a man's portrait in profile emerging from a medley of war trophies; another is adorned with a romantic garden scene. Two tumblers, originally belonging to the same set, are widely parted: one remains at Madrid while its mate is now in Scotland. An impressive coat of arms with radiating banners and a surmounting crown and peacock feathers proclaim their owner as the "most powerful of Spain's noblemen" during his lifetime, the eleventh duke of Medinaceli. Beautifully engraved acanthus scrolls and a spread eagle clutching olive branches adorn the areas behind the shields. Ascribed to the San Ildefonso factory of this era are a covered goblet, a footed bowl, and a chalice (262). So close is the resemblance of their decoration and the tint of their metal to German work and its Flemish imitations that such an attribution is questionable. Of a date later in the reign of Charles the Third are globular decanters (Fig. 87) with deep cutting, that closely repeat their German prototypes.

When Sigismund Brun arose to the directorship of a department blowing hollow vessels, he continued to favour the German tradition. Shapes retained a suggestion of their origin, although the lavish design of the mid-century evolved to sparser decoration showing more delicacy and restraint. No longer did the pieces appear like carved rock crystal: they were blown thinner with the resulting need for shallower cutting. Some critics judge this technique preferable—"... what the relief decorations lose in depth, the decorative tracings and forms gain in grace and elegance" (263). But a French visitor to the San Ildefonso factory in 1777 thought differently:

"The material wrought there is very delicate. There is a workshop of engravers, that produces turned and cut glasses, for which as much as four or five *louis* are paid, more valuable for their size and the minuteness of work than for the taste prevalent in the festoons and figures with which they are ornamented. I have seen several of these costly glasses overloaded with ornaments, birds and badly drawn figures, but capable of having tried the patience of the most intrepid workman" (264).

Daintiness and simplicity of design, combined with a perfection of technique, are the qualities manifest in an engraved crystal tumbler (Fig. 86) that once belonged to the thirteenth duchess of Alba. Her name, María Teresa de Silva, in the much contracted form of M<sup>a</sup> T<sup>a</sup> DE S.<sup>a</sup> is engraved across a cartouche on one side. The drinking glass in its neat leather case the Duchess was accustomed to carry with her while traveling and on excursions to the country. She gave it to the artist Goya as a keepsake (265).

Whether or not the San Ildefonso glass of this period appeals to the individual, it must be acknowledged that it had acquired characteristics of its own. The glass blowers and engravers, by blending their own ideas with the foreign, at last created a style of glass making distinctive of themselves.

To Sigismund Brun has been attributed the discovery of firing gilt on crystal (*dorado al fuego*). But Ventura Sit may have used it first in Spain (266), and previous to Brun's association with the San Ildefonso fabric, other European glass factories were familiar with the fired-gilt process, an advance over the old oil or varnish gilt. It is markedly noticeable, however, that during Brun's administration, gilding usually enriched the engraving or ornamented the smooth, uncut surface of glass vessels (Fig. 88). To decorate objects in this manner a paste containing particles of gold was painted on the glass with a brush. The gilt paste was fixed to the surface by exposing it to the fire of a muffle. Upon its removal from the oven, the gold was burnished with a bloodstone and an agate (267). The crystal paste used in blowing objects at La Granja gradually improved in quality so that, while Brun was in charge, it acquired a commendable purity and transparency.

Light and graceful design combined with shallow gilded engraving date the San Ildefonso glass in the Hispanic Museum as from the last quarter of the century. Dainty flower and ribbon festoons, bowknots and stars, and sprigs of conventional foliage show an influence exerted by France on the Spanish engraver. But the Spaniards' unquenchable love of sweeping flourish and bold pattern is evident in large blossoms with open, crosshatched corollas and rambling foliage (Fig. 89 and T428, T445; plates XVI and XIX). The popularity in Spain of English drinking glasses and decanters is reflected in the wares of La Granja. The decanter (T428; plate XVI) in the Society's collection and wineglasses in the Boston and British Museums are illustrative of the quantities of imitations that the factory produced.

A multitude of glass objects in every conceivable form was the output of the San Ildefonso fabric while Charles the Third and his son ruled Spain. The majority of vessels were for utilitarian purposes and differed little from

the glass tableware of the present century, the most prevalent being urn-like sugar bowls and covered vases of generous size, decanters and glasses for wines, mugs for beer and ale.

Lighting appliances were fashioned from sparkling crystal or milk glass to rival Venetian chandeliers, lamps, and girandoles. To light the huge rooms of the Royal Palace at Madrid, King Charles the Third ordered the manufacture of crystal chandeliers (Fig. 85) holding twelve or sixteen tapers. The workshop at San Ildefonso, capable of making four fixtures a week, in 1764 sent a completed model "of good taste and very large" to the factory's Madrid storeroom. There it awaited installation at the palace (268). Intended for a more modest setting, a milk-glass chandelier (Fig. 91) in the Victoria and Albert Museum has but six branches; foliage and pendent blossoms, worked in latticino paste, substitute for the flashing prisms of luxurious crystal. Wall sconces that were combined mirror and candlestick holder, called cornucopias because of their shape, were often wheel engraved with mythological figures and foliage. The altars of private chapels were supplied with eucharistic goblets and cruets of La Granja's engraved and gilded glass. Another purpose for the crystal was its use as optical glass in lenses of every kind.

The similarity between enameled and coloured glasses of La Granja and contemporaneous products of Cataluña and Valencia can be attributed partially to José Busquet. Perhaps a Catalan himself, he had studied the glass of eastern Spain and could give the royal factory the formulæ for compounding coloured enamels. Milk glass, its opaque quality obtained by adding phosphorus to the paste, increased in popularity. At first reserved for painted decoration, it was later blown to form pieces in imitation of Chinese porcelain. Painted Oriental designs, bright-coloured mottlings, and spiraled threads of green, blue, and red ornamented the pseudo-porcelain objects. Of Spanish workmanship and possibly from the San Ildefonso factory is a milk-glass decanter (Fig. 92) decorated with dainty floral sprays and a ro-coco cartouche bearing the inscription *VIVA ESPAÑA CON FORTUNA*. Other glasses display the names of their owners inscribed in gilt or engraved on the surface (269). Equally fashionable as the coloured glassware in the early nineteenth century were moulded crystals like an open salt (Fig. 93) with shell compartments.

The Spanish monarchs had intended the products of the royal La Granja factory for their personal use, to furnish palaces and to present as gifts, but the upkeep of the establishment became an overwhelming burden on the kingly purse. To offset the financial drain came the decision, about 1759, making La Granja glass available to all who had the purchase price. Buyers



Fig. 90. TRAY



Fig. 91. CHANDELIER

Eighteenth century



Fig. 92. DECANTER  
Eighteenth century



Fig. 93. SALT DISH  
Early nineteenth century

discovered that the crystals were dear, their high cost due principally to the location of the manufactory which lay isolated from all supplies. Although there had been easy access to fuel during the early years of production, deep concern arose at the rapidly diminishing quantities of firewood and the necessity of obtaining fuel from the forests of Balsain, Segovia, and Riofrio (270). Other important raw materials were difficult to procure from distant regions because of internal customs duties and poor means of communication. A contemporary stated that Spanish barilla could be shipped to Paris and sold more cheaply there than at San Ildefonso to which it was borne on mule back. As for the glasses themselves, "so large a quantity of them is broken in the long journeys that the remainder is doubled in price" (271). The factory became a "devouring monster in a country where provisions are dear, fuel scarce, and carriage exceedingly expensive" (272).

The most serious handicap to La Granja glass, far more detrimental than lack of convenient supplies, was the flood of importations to Spain. Entering the country through northerly Galicia and Vizcaya, through Andalusian Cádiz and Sevilla, and the Mediterranean seaports came enormous shipments of foreign glassware for sale in the Peninsula and for reexportation to Spanish colonies (273). There were gilt-framed mirrors from France and Flanders, English crystals, and Bohemian hollow ware, and all this merchandise brought lower prices than native goods in the Spanish market.

Mindful of the need to lower prices on La Granja glass, that it might compete more favourably with imported wares, the Marquis of Squillace, Italian-born minister to Charles, ordered in 1760 a substantial reduction in the cost of crystals from His Majesty's factory (274). Since it was impossible to sell the valuable stock held in the Madrid warehouse, Bernard Ward, factory director, concluded that the products had not sufficient outlet. The Board of Commerce, meeting to attempt the betterment of a deplorable economic situation, agreed that faulty sales methods prevented the disposal of the glass and suggested sending a shipment to New Spain. The manufactory's treasurer was commissioned to sail with crystals worth one million *reales* taking complete charge of their disposal. He was to see that the consignment left Cádiz on the Indies fleet for Vera Cruz and was to pay the same port duties as private individuals exporting Spanish goods.

Always alert to the needs of Spanish industry, King Charles the Third approved the scheme. The treasurer missed the Indies fleet but hastily packed the glasses on a merchant vessel sailing for Havana. For various reasons the expedition fared badly: the port and packing charges had been too high; the factory officials had not tried to ascertain or send the quality of

crystal most popular in America nor did they follow the custom of packing an assortment in a single box (275). An inspector reported that the shipment contained mirrors with engraved frames, sconces mounted with crystal brackets and brass sockets, plain and engraved drinking vessels of every description, decanters, and vinegar cruets (276).

Had they maintained a storeroom for La Granja crystals at Cádiz rather than at Madrid, the factory officials would perhaps have been more successful with their exportation. Such, at least, was the opinion of an eighteenth-century writer who stated that the crystals could easily be transported from Cádiz to America, offering competition to the German glasses shipped from there every year by thousands of box loads (277).

A further endeavour to protect the products of the San Ildefonso factory was the royal decree of 1762, permitting La Granja crystals, exclusively, to be sold at Madrid, the royal palaces, and within a radius of twenty leagues of San Ildefonso. The crystals of all other manufactories, foreign or domestic, were outlawed in these territories until a modification of the law, somewhat previous to 1791, allowed the sale of all Spanish crystals at Madrid.

Newspapers of the period refer frequently to the sale of La Granja glass at the capital. The royal manufactory maintained storerooms there for the display and sale of glass, and in connection with them a few workrooms—in reality a Madrid branch factory—where the quicksilvering and framing of mirrors, the grinding of lenses, and such final operations were performed (278). Two engravers from San Ildefonso, José Giraldo and Blas Velilla, sought to open a shop in 1763, but the factory director opposed the plan, saying that the official stores were adequate. Grocers and druggists were permitted to sell crystalline wares and mirrors; jewelers included in their stock all kinds of crystal, small flasks, boxes, and candlestick holders, manufactured in Spain or imported from abroad (279). In 1815 a shop selling La Granja crystal was located at Madrid on the *Calle de Toledo*, opposite the Church of *San Isidro*, and another on the *Calle de Alcalá* below the Customs House (280).

The San Ildefonso factory remained under the patronage of Ferdinand the Seventh until 1829 when it became a private commercial enterprise, essentially for the manufacture of sheetglass and beer bottles. In Ferdinand's time it was a rambling group of buildings, having "an infinite number of . . . yards, spacious corridors and galleries . . . ten patios, and a large plaza within which King Ferdinand VII ordered a small ring constructed where young bulls could be fought for the recreation and diversion of the royal family" (281). There was a special room at the factory where gild-

ing on hollow ware was done, but this style of decoration slowly became outmoded. Plaster models, painted landscapes, and decorative ornaments given by the King filled the cutting room. They were for use in the art school where factory workers could study draughtsmanship and become engravers able to compose their own designs (282). Notable among the artist-engravers was Félix Ramos, who attained great perfection with his wheel engraving.

"Various private enterprises have succeeded each other since then [1829] in exploiting the factory but without obtaining pecuniary results that would serve as a stimulus to continue manufacture. For this reason it has been abandoned several times, the building having remained closed during long intervals and having deteriorated greatly, above all in the revolutionary period when the State did not care to make the slightest repairs to it" (283).

Until the middle of the nineteenth century a score or so of craftsmen continued to produce crystal, fine latticino, and coloured glasses which others cut and engraved. At a blowpipe reserved for the purpose, an operator fashioned animal figures and toys for children (284).

VI

GLASS MAKING IN PORTUGAL  
AND THE SPANISH COLONIES



## VI

GLASS manufacture in Portugal lagged far behind Spain's important industry, and there is little that can be considered native about the craft. Aliens chose the country as a promising field for their labour and worked unchallenged by the Portuguese, it would seem, until the eighteenth century. Italian artisans were making Venetian-style glasses at Lisboa as early as the sixteenth century, although their emigration caused banishment from their native Venice. It was to Lisboa that the Venetian, Antonio Pellizari, fled in 1678 to practice his craft, after trouble at the Spanish court, and later a worker from Altare, Francesco Costa, erected a factory in the same city. A Flemish glassmaker, Louis Verné of Antwerp, removed to Lisboa in 1689 and fostered the industry at Abrantes for about ten years (285).

The following century brought greater activity in glass importation and also its production in Portugal. Venice still sent mirrors (286) and such glassware as the bright carafes that attracted William Beckford's discerning eye (287). Much of the glass used in Portugal and her colonies came from Bayè in France, while common bottles and windowpanes were transported from the Dorado factory at Recuenco, Spain. Flanders was another source of supply, and about 1753 the glass blower Sébastien Zoude of Namur boasted of a Lisbonian clientele that admired his brilliant pieces (288).

Engraved German glass that had once been the pride of wealthy nobles and gentry had become cheapened by hawkers who carried commercial wares all over Europe early in the century. A few years later, enterprising manufacturers of Bohemia and Silesia exported glass decorated with little wreaths cut by means of a small copper wheel with emery as the abrasive (289). Transported from Hamburg and Trieste by sea, the glass found a good market in Portugal where it was stocked in branch stores at O Porto and Lisboa (290). Perhaps glasses enameled with the Portuguese coat of arms (Fig. 94) or with *vinas* for King John the Fifth were included among the items sold by these German shops. If not from Germany directly, the glasses came from Cataluña, decorated there by German enamelers (291).

The sale of South German wares, as in Spain, reached a peak shortly after 1750 and remained lively until protective tariffs almost prohibited

further importations. Many German families, attracted to Portugal as a result of the trade, continued living there although they were forced to engage in other businesses and, it was rumoured, gained considerable sums in contraband (292). Small amounts of Bohemian glass still crossed the border despite high duties. In 1794, a large, rambling house at Caldas da Rainha, a fashionable watering place, was splendidly equipped with Bohemian glass sconces and chandeliers that blazed with light in the barnlike drawing-room (293).

Profligately aping the French court, King John the Fifth established a glass manufactory in 1719 and anticipated by seventeen years the project endowed by King Philip at La Granja Palace, Spain. The Portuguese royal fabric, situated three leagues from Lisboa, existed briefly, for it had ceased to make mirrors and crystal glasses by the mid-century (294). England has been accused of its failure, but Gallic prejudice tinges the statement that, despite King John's determination to maintain the factory, the English provoked enough unrest to rout the French workers (295).

After Pombal had risen to power as prime minister to King Joseph the First, one of his most important efforts was to rally the moribund industries of Portugal, and so to him has been attributed a revival in glass manufacture. A furnace was erected across the Tejo River from Lisboa, but because the pine forests were not extensive enough to supply necessary fuel, operations at the fabric soon came to a halt (296). It must have been shortly afterwards that an Englishman, William Stephens by name, established a glass factory at Marinha Grande, then a village of tiny houses near Leiria. By special grant from the crown, he erected the furnace and workshops that he continued to supervise personally until about 1800. Reclaiming acres of waste land, he had forests planted and fields cultivated, built himself a beautiful home and garden, repaired and maintained the roads, in short, proved a benefactor to the community. Having visited the director for a month in 1789, James Murphy, the Irish architect, said, "The kingdom and its colonies are supplied from hence with every article of glassware, bottles excepted. It is the only factory of the kind in Portugal" (297).

The site of the glass fabric was advantageous because, close at hand, were quantities of sand and glasswort and a pine forest from which the King permitted deadwood to be cut for the furnace (298). The long road of nineteen leagues to Lisboa was traversed in three days by carriers who conveyed Marinha's products to the capital.

Through his own diligence and some good fortune, Stephens arose from the status of obscure industrialist to that of court favourite, although he never became exceedingly wealthy. He had settled in a Lisboa residence by

1800, leaving his manufactory to the care of a Portuguese director, José de Souza e Oliveira. At this period, materials better than the native sand and kelp were introduced into the glass paste for its improvement—Alicantine barilla and English sand, American potassium and fine tartar from O Porto. The new ingredients failed to perfect the metal, for, according to a German visitor, the glass was of bad quality and had neither the hardness nor the brilliance of foreign glass, being easily broken (299).

The Marinha Grande factory still belonged in 1822 to Stephens and members of his family, as a reference of that date declares that the glass fabric was then owned by "some Englishmen who have become considerably enriched, due to the licence possessed by them for many years" (300). The founder died about four years later, bequeathing the factory to the State (301). All kinds of glass emerged from the Marinha furnaces—tableware of plain and cut crystal or coloured glass, a few mirrors of small dimension, and panes for windows—but none of it could compare with the glass of France, England, or Bohemia.

Running in competition to the Marinha Grande fabric at this time were two establishments at Lisboa. It is unlikely that their owners ever realized any handsome returns from their venture, because the factories were not easily accessible to a fuel supply, and the glasswares were of but mediocre quality (302).

Valiant as had been these efforts to produce in Portugal a worthy substitute for foreign glass, they were not completely successful. Statistics of imports during the early years of the nineteenth century point to large shipments of crystals from England and Silesia (303), and it was not unusual for a Portuguese host to have served his guests wine in large Bohemian goblets that were rimmed with gold (304).

Marinha Grande still continues to make glass objects that have acquired a certain fame throughout the nation. The several factories now in operation include the former royal fabric. During the last quarter of the nineteenth century, the glassware for sale at the Lisboa warehouse in the *Rocio* copied slavishly the flint glass of England, the *Baccarat* of France, and the cut crystal of Bohemia. There was also great demand for economical moulded glass that was an output of the Marinha furnaces. The quality of paste for common articles was considered acceptable and that for fine pieces, good. Unfortunately, a lack of pleasing, original designs and shapes prevented Marinha glass from competing favourably with foreign manufactures (305).

The attainments at Marinha Grande aroused a notable Portuguese industrialist, José Ferreira Pinto Basto, to similar endeavours in 1824. He

had purchased a country estate near Aveiro, where pine forests extended for miles. This timber he recognized as potential fuel for glass furnaces when he installed a manufactory within the *quinta* of Vista Alegre. King John the Sixth was willing enough to aid Ferreira Pinto Basto, already director of the government tobacco and soap factories, in starting his new enterprise for glass, porcelain, and chemical manufacture. On July first of the same year, the King granted him a charter, later amplified to authorize the use of the name "Royal Factory" and the display of royal arms on fabric and salesrooms. No requests for capital were made of the King, as the wealthy Ferreira Pinto Bastos were proud of their personal distinction. Following this precedent from the opening day of the glass works until the present, the family has run the industry with its own capital, under its own direction and administration.

Initial trials in glass making proved successful as promoted by the German craftsman, Franz Miller, but he remained at Vista Alegre only two years. Following him came João da Cruz e Costa from Lisboa, who continued in office until 1854. The art of cutting was taught to numerous apprentices by an Englishman, and so proficient did his Portuguese pupils grow that by 1837 they had attained a high degree of skill which rendered their cut pieces indistinguishable from those of France and England (306). An Italian master was engaged to teach the native artisans floral decoration on glass. He protested that the climate of Vista Alegre brought on fever, and so lived at Lisboa. There the apprentices traveled for instruction until one of their number, João Ferreira Ribeiro, displayed such ability that he was recalled to Vista Alegre to manage this branch of the work.

As early as 1829 the manufactory had storerooms and shops at Aveiro, O Porto, and Lisboa where glass was sold to local trade or packed for transportation to China and Brazil. The offices at the national capital were impressive buildings beyond which the land stretched down to the river. Three ships belonging to the company rode at anchor on the Tejo's waters, the *galera*, *Vasco*, and the brigs, *Trocador* and *Santo Amaro*, all mounted with artillery to quell the Chinese corsairs. It is said that the vessels carried snuff to the Orient in flasks of gilded glass (307).

In the possession of the Vista Alegre factory is a catalogue, published in 1829, showing the kinds of glassware made during the early years of manufacture. Prices, names of objects, and drawings of popular shapes portray clearly the industry's progress. High-grade crystals imitating foreign products emerged from the workrooms and became easily confused with authentic English, Bohemian, or French glasses. The period between 1837 and 1846 has been called the golden age of Vista Alegre glass, and from

these years date heavy crystal objects, deeply cut, with cameo-like porcelain medallions applied to the sides. Goblets, decanters, and mugs (Figs. 95 and 96) were geometrically cut in faceted patterns and shaped after the traditional manner of English and Irish crystals. Tumblers were wheel engraved in German style (Fig. 97) with floral designs, coats of arms, and animal figures. Certain pieces borrowed without change from La Granja glass gilded patterns in shallow engraving. Crystal objects that were moulded or pressed into lacy patterns and coloured glasses augmented the varieties found among Vista Alegre's products. The factory was proving to the people of Portugal the possibility of making, within their own country, glassware less expensive and quite as attractive as importations. A Portuguese critic said of the glasses exhibited in 1844 at Lisboa that they surpassed the products of any country whatsoever in their perfect quality, beauty of design, and their moderate prices (308).

Contrary to expectations, the manufacture of glass at Vista Alegre ceased in 1846, but work was resumed in two years. The output consisted of undecorated glass objects and windowpanes, although even this ordinary glass was not made after another thirty years or so. The decline of glass decoration in 1846 drove the cutters and flower painters to the *Marinha Grande* factory, then operating under governmental directorship. Other workers tried to establish a fabric at *Malhada*, not far from Aveiro, but the feeble project soon died.

Of all Spain's colonies across the Atlantic, Mexico was alone in its early establishment of glass manufacture. The first settlers found that the Indians had no knowledge of the craft, but spurred by their admiration of the work, the natives acquired some ability in glass blowing under Spanish tutelage (309). When the first viceroy, Antonio de Mendoza, came in 1535 to rule New Spain, he brought many master craftsmen to enrich his province with their work. Among their number were glass blowers (310).

Espinosa, a glassworker of Puebla de los Angeles, owned a workshop in 1542 on the Street of the Glass Furnace. His products were of sufficient merit to warrant their mention in a letter from the city procurator to the Emperor Charles. The official wrote that the furnaces and the glass-making trade of the region were unique in all New Spain and that the industry flourished because necessary raw materials were close at hand. "Three kinds of glass are blown and fashioned, crystalline white, green, and blue, which are supplied to Spaniards and natives of these regions as far as Guatemala and beyond, and the glasses even go to Peru and other countries" (311). The production at Espinosa's factory was great enough to cause an alarm-



Fig. 94. TUMBLER  
Eighteenth century



Fig. 95. GOBLET  
1837-1846



Fig. 96. DECANTERS



Fig. 97. TUMBLER

1837-1846

ing consumption of firewood in its furnaces and, accordingly, the city government issued an order prohibiting the artisan from cutting wood within two leagues of the city (312).

The next decade witnessed at Mexico City an increase in population to two thousand Spaniards, and the birth of brisk trade and industrial life, in which the glass blowers took active part (313). In 1570 they were included with other craftsmen in an ordinance that admonished them to provide themselves with harquebuses and corselets in celebrating the festival of Saint Peter (314).

While Mexico produced good pieces of glass at the end of the sixteenth century (315), the colonial workshops could not independently supply the entire needs of the New World. The factories of Cataluña furnished much glass to the colonies at this period (316), and Venice sent beads for trade with the Indians. The early settlers had also to curtail their use of glass and learned to substitute for it less fragile materials—the abundant silver for table services and, for windows, thin slabs of alabaster or wooden shutters covered with waxed linen cloth (317).

Glass manufacture by the mid-seventeenth century centered at Puebla de los Angeles with its "glasse house, which is there a rarity, none other being as yet known in those parts" (318). Glasses from the fabric were described in 1698 as resembling those of Venice, although not so fine (319). Still unequaled elsewhere in Mexico, by 1746 the Pueblan industry produced beautifully formed glasses from paste that, while thick, was brilliantly and spotlessly clear. A loyal native son, Fray Juan Villa Sánchez, remarked that if the glass did not compete with Venetian wares, at least it rivaled the French (320), truly the ultimate compliment at a period when the fashionable world unreservedly favoured the engraved crystals of France and Germany. Such imitations of foreign pieces as decanters (Fig. 98), pulque jars (Fig. 100), and tumblers (Figs. 99 and 100) were blown at Puebla during the late eighteenth and early nineteenth centuries. Shallow cutting and engraving ornament their sides in patterns that are bold and free and cover the entire surface of the vessel. Gilding often brightens parts of the designs, which are based on floral motives. Tulips, daisies, and wild roses are the most common patterns, but on a few glasses of later date appear the emblem of the Mexican republic, an eagle with snake in mouth, and patriotic mottoes (Fig. 100).

Because of the few workshops and also the fragility of their products, the transportation of glassware from Puebla was inconsequential. Supposedly, the majority of pieces was for local use and not distributed throughout the kingdom. It is not surprising, then, that Mexico and the other New-World



Fig. 98. DECANTER



Fig. 99. TUMBLER

Late 18th or early 19th century



Fig. 100. PULQUE JAR AND TUMBLERS

Late 18th or early 19th century

colonies looked, as in previous years, to the Iberian Peninsula for additional supplies of glassware. Spain exported not only national products but forwarded the mirrors of France and Flanders, the crystals of England, and the bottles of Bohemia (321). Early in the eighteenth century, Spanish models for glasses were sent to the furnaces of Bayc in France where they were copied, and the replicas sent to Spain for exportation to Mexico and the West Indies (322). Each year from Bristol in England and Bayonne in France a million bottles arrived at the Spanish port of Santander, alone, to be filled with beer and other liquors, then shipped to America (323). To halt the progress of alien goods which nearly monopolized the world market, Castilian glass manufactories, in particular, strove to outdo their foreign competitors in quality and low prices, while a like interest animated the factories of Portugal. At this time occurred the ill-fated experiment of the San Ildefonso factory in shipping wares to New Spain (324).

Box loads by the thousands, packed with German glass, sailed to the Americas. The efficiency with which German traders competed with the glass manufactories of the Iberian Peninsula is displayed by their success in obtaining commercial privileges that diverted from both Spaniards and Portuguese much of the lucrative American trade. "Some of the German houses, established at Cádiz, are very respectable," said an Englishman in 1811, "and have long been the channels through which the linen, the glass, and the cutlery of Germany have been conveyed to Spanish America, where, on account of their durability and cheapness, they are preferred to those of England" (325).

A few German traders, not content to remain in Europe, ventured forth to the New World. J. Christof Socher from the Bohemian glass-making centre of Haïda established a business in Mexico during the year 1787 and remained to enjoy its profits for over seventeen years. Another dealer, Augustin Rautenstrauch, traveled to Lima in 1784 and may have opened a store, as he continued to live there for three years (326).

The glassworkers of Altare, Italy, were released from any restrictions on traveling in the early nineteenth century. They emigrated to such far places as Lima, Montevideo, Buenos Aires, and Rio de Janeiro to seek their fortunes with the blowpipe (327), and perhaps it was due to this influx of Italian artisans that a glass manufactory was operating in 1819 near Rio de Janeiro (328).

The shops of German glass venders mingled and competed with native companies during the nineteenth century at Mexico City, where in 1852 there was also a glass manufactory on the *Paseo de la Viga* (329). Its products were of common grade—windowpanes, bottles, and *bombillas*, that is,

drinking tubes for maté (330). The glasses from the factory at Puebla retained to some degree their preëminence over other Mexican wares. An English visitor to the "City of the Angels" in 1824 remarked, "The manufactory of glass has been lately much improved, and it is probable that shortly, with the adoption of some of our machinery in the preparation of the materials, the importation from Europe will be discontinued. They copy the forms well, and in the texture and colour of their glass they already rival us" (331).

Pueblan glass did not fulfill such hopeful promises for continued improvement and beauty. Crystalline objects with cut and gilded decoration ceased to be made, and toward the last of the century the native glass, although sold at high prices, was of the most ordinary kind (332).

At the present time, the industry has revived to fashion a popular grade of glassware for household purposes. The best factory, located at Mexico City, uses traditionally primitive methods to produce the cobalt, amber, aquamarine, and amethyst tones in glass paste that is filled with bubbles. Besides the table services and other large vessels, as the mould-blown bottles representing the Virgin of Guadalupe, the glassworkers form miniature animals, flowers, birds, and the like from the coloured pastes. A comparison of this work with current Spanish glasses, made in time-honoured style at Catalan and Mallorcan workshops, reveals a favourable ranking on the part of the Mexican ware.

VII

SPANISH GLASS IN THE COLLECTION  
OF THE HISPANIC SOCIETY  
OF AMERICA







T352

GOBLET

## GOBLET

T352

OF inverted bell shape, the goblet's bowl is ringed at the base by a flange of glass cording. A knop in the stem is moulded as a flattened globe with vertical ribbings. The circular foot with its overlapped edge rises in a hollow cone to meet the knop. The goblet was blown from deep cobalt glass, the paste containing small bubbles and unfused particles of sand. Three bands of enamel decoration surround the swelling brim, the topmost being a series of vertical lines, alternately straight and undulating, coloured green and white. The middle band consists of a waving white vine stem from which grow stylized leaves or flowers tinted green and yellow; below is a series of white scallops, between each of which is a white pendant tipped by a tongue of rosy terra cotta. Gilding once filled the spaces between these stripes, but the metallic paint has now almost disappeared. Repetitions of the vertical wavy and straight lines encircle the base of the bowl and the apex of the conical base. Dots and S-curves ornament the knop. Linked by a ring of dots, four clusters of foliage somewhat like the *fleur-de-lis* mark off the foot at equidistant points.

Enamelled, blown. Rim cut off and fused, pontil mark within apex of base. Sixteenth century. Height 20.3 cm.—Diameter at brim 13.2 cm. Spanish (?). From Spain. Reproduced in Singleton, Esther. *Spanish glass*. In *The Antiquarian*. February 1925. v. 4, p. 7.



T354

VASE  
(Side view)

## VASE

T351

(See also Frontispiece)

The body of the vase is a circular disk, standing on a hollow pedestal. Both body and conical collar were shaped from a single vesicle of glass. Another gathering was blown for the pedestal which was attached to the base and then shaped with a tool; the edge of the flaring pedestal was cut off and fused. Around the collar runs a glass-paste ring to which are fastened, at opposite sides, the tops of two ear-shaped handles. The solid glass handles curve up and outwards from the ring and terminate near the collar's base in loops pulled out horizontally. Painted in coloured enamels on the body of the vase, a woman and a man clasp hands under a large yellow and green flower. Standing with hand on hip, she wears a yellow bodice with a white ruff at the throat and a green skirt trimmed with yellow. Her head-dress and shoes are blue. Turned toward her, the man rests his left hand on his sword belt. He is wearing a yellow doublet, green breeches, and green hose. A white ruff encircles his throat, and a blue hat covers his head. A blue sword and belt, blue garters, and blue shoes are the accessories to his costume. Their faces are painted white, and the features scratched in the enamel. A green cypress tree grows at each side of the figures and other foliage at their feet. Overhead two white birds with fluttering wings perch on the branches. Green and yellow leafage decorates the neck of the vase. There is a repetition of this design on the opposite side of the vase. The enamels are apple green, canary yellow, and deep cerulean blue. Touches of gilding ornament the handles. The glass is transparent and tinged with a faint smoky yellow.

Enameled; blown. Rim cut off and fused; pomil mark within apex of base. About 1580. Height 23.5 cm. Made in Barcelona province, Cataluña. Formerly in the Adalbert von Lanna Collection. Presented to The Hispanic Society of America on December 9th, 1911. Reproduced in Fulch i Torres, Joaquim. *Els antics vidres catalans esmaltats*. Barcelona [1926]. pl. 25; Gudiol Ricart, Josep. *Els vidres catalans*. Barcelona [c1936]. pl. 54; Lanna, Adalbert von. *Sammlung des freiherrn Adalbert von Lanna*, Prag. Berlin, 1911. pt. 2. pl. 59, no. 797; Singleton, Esther. *Spanish glass*. In *The Antiquarian*. February 1925. v. 4, pl. facing p. [5].



T353

GOBLET

## GOBLET

T353

This upper portion of a goblet, which has been broken from the stem and foot, is made of clear glass tinged faintly. The lower half of the cup shows a mesh pattern in low relief, the ribs having been threads of glass trailed on the surface and fused. Near the rim the sides flare sharply and then curl upwards, probably finished off with the spring tool or other implement. The reticulated surface is traced with white enamel, and dark, reddish brown dots are enclosed within the meshes. Yellow-green oak leaves encircled by scrolling white stems embellish the flaring brim. Touches of gilding and green and blue dots are sprinkled among the foliage and twining stems. A cord of glass spiraled in a high coil forms the base of the goblet. A series of short diagonal lines are traced around the base in white enamel.

Enameled; blown; edge cut off and fused. Broken from stem at base of bowl; stem and base missing; two holes in bowl. Middle of sixteenth century. Height 10.2 cm.—Diameter at brim 14.6 cm. Made in Barcelona province, Cataluña. Formerly in the Spitzer and Adalbert von Lanna Collections. Presented to The Hispanic Society of America on December 9th, 1911. Reproduced in Gudiol Ricart, Josep. *Els vidres catalans*. Barcelona [1936]. pl. 39, fig. c; Lanna, Adalbert von. *Sammlung des freiherrn Adalbert von Lanna*, Prag. Berlin, 1911. pt. 2. pl. 39, no. 796; Spitzer, Frédéric. *Catalogue des objets d'art et de haute curiosité . . . composant l'important et précieuse collection Spitzer*. [Paris, 1893] v. 2, p. 83; ———. *La collection Spitzer*. Paris, 1891. v. 3, p. 105, no. 86.



T358

*CANTIR*

## CANTIR

T358

The *cântir*, a vessel for liquids, particularly water, has a globular body which rounds down to a flange topping a conical standard, in the base of which is a deep kick. The entire jar, both body and standard, is hollow, having been blown from a single vesicle of glass. There are two tubes rising vertically from opposite sides of the body; one, through which the vessel is filled, is cylindrical, edged with a thick convex lip of glass paste, and the other, used for drinking, is taller and attenuated. Fastened to the top of the globe by a lump of glass paste is a ring handle of solid glass. On it is perched a crested bird, shaped with pincers. Other ornamentations of pinched glass decorate both spouts and the body of the *cântir*. The juncture of body and flange is reënforced by short, knobby cords of pinched glass. The jar is smoke gray and transparent with large dots and braided bands of latticino. The glass is filled with air bubbles.

Blown. Base broken from body and mended; pontil mark in kick. Eighteenth century. Height 26.4 cm. Made in Cataluña. Presented to The Hispanic Society of America on September 17th, 1921.



T.159

OIL LAMP

## OIL LAMP

T359

The lamp is a circular tube of blown glass surrounding a central, flat plaque. It was formed by compressing the sides of a glass vesicle until they met in a circular plaque and by leaving the edges as a hollow tube to contain the oil. A broad, grooved ribbon of glass comprises a handle for hanging on the wall. It was bent to form a triangle with the base fixed to the top of the lamp. At right angles to the base of the lamp projects a tubular spout for the wick. A gathering of glass below the spout indicates the spot where the vessel was attached to the pontil. The clear, smoky-tinged paste is filled with air bubbles.

Blown. Pontil mark on gathering below spout. Dark deposit of oil within tube. Eighteenth century. Height 18.8 cm.—Width 12.5 cm. Made in Cataluña.



T354

FLASK

## FLASK

T354

The walls of the flask are of thick, olive green glass. The flattened body is circular in shape with the base indented by a kick. Viewed from the side, the bottle appears pear shaped. The neck is cylindrical, ringed near the top by a glass-paste flange. The rim is cut off and flat on top. Around the upper half of the body spirals a thread of olive green glass. Below the spiral is a glass-thread chain of triangular links. A flask very much like the Society's example belongs to the Kelvingrove Art Galleries and Museum at Glasgow.

Blown. Chip in flange; pontil mark on base. Late sixteenth century. Height 16.7 cm. Made in Almeria province, probably at Maria. Reproduced in Singleton, Esther. *Spanish glass*. In *The Antiquarian*. February 1925. v. 4, p. 6.



SIDE VIEW



T364  
T365

FLASK  
BOTTLE

## FLASK

T364

The flattened pear-shaped flask was blown from blue-green glass filled with bubbles. A slight kick indents the base, and a thick rim of glass paste encircles the narrow mouth. Gatherings of glass paste were fastened to opposite sides of the rim, looped and curved to form handles, then drawn down the body of the flask to its base. The extended handles were worked, while soft, with pincers. This instrument was used also in pulling up strands from gatherings applied to each face of the flask. The resulting decorations were fan-shaped clusters of knobby spines.

Blown. Parts of glass-paste decorations missing; small semicircular crack in one side; pontil mark and chip on base. Seventeenth century. Height 8.7 cm. Probably made in Almeria province. Presented to The Hispanic Society of America on November 28th, 1930.

## BOTTLE

T365

The pear-shaped bottle was blown from bubbly yellow-green glass. A thick rim of paste was wound around the narrow mouth, and the handles, fastened at opposite points under the rim, were looped, pulled, and pinched into knobby excrescences down the sides to the base. Lumps of glass paste, applied two on a side and one above the other, were worked into shell ornaments. There is a slight kick in the base.

Blown. Broken in two and mended; one handle and glass-paste decorations missing; pontil mark on base. Seventeenth century. Height 9.6 cm. Probably made in Almeria province. Presented to The Hispanic Society of America on November 28th, 1930.



T361  
T363

SALTSHAKER  
ANIMAL

## SALTSHAKER

T361

The saltshaker is nearly cylindrical, swelling with a slight bulge toward the top. Its flat base and top, which is perforated, are edged with pie-crust flutings. Five serrated strips of glass paste were applied vertically at equal distances around the sides. The thick blue-green glass is filled with minute air bubbles. A shaker of this type, different only in having a flat, circular base, belongs to M. Armand Baar of Liège, Belgium.

Blown. Pontil mark on base. Seventeenth century. Height 8.5 cm.—Diameter 7 cm. Probably made in Almeria province. Presented to The Hispanic Society of America on November 28th, 1930.

## ANIMAL

T363

The body and head of the monster, possibly a dragon, were blown from bluish green glass. Bristling horns rise above a long-snouted head and a fat neck which apparently were blown from a separate gathering and fastened to the hollow body. Two sets of small wings, worked in glass paste, were applied to the animal's sides, and glass paste was pulled and pinched to form its short legs and feet. A heavy twist of glass makes a serpentine tail. The creature, crudely fashioned, was doubtlessly intended as an ornament. The glass is full of air bubbles. Closely resembling this animal in manner of construction is a two-headed, monstrous bird that belongs to the *Museu Episcopal* at Vich. Other green glass birds and animals made in Almeria province are to be found in the Victoria and Albert Museum and the Kelvingrove Art Museum at Glasgow.

Blown. Pontil mark on animal's chest. Late seventeenth century. Height 11.8 cm. Probably made in Almeria province. Presented to The Hispanic Society of America on November 28th, 1930.



T362

FLASK

## FLASK

T<sub>362</sub>

The flask was blown from pale greenish amber glass. The flattened pear-shaped body is leveled at the base, in which there is a slight kick. The narrow ridge within the flask, intended perhaps to prevent sediment in wine from draining into the drinking glass, was folded in the sides of the vesicle while it was still soft. A band of emerald green glass, forming a heavy lip, was wrapped around the mouth of the short bottle neck. Handles of emerald glass paste were attached at the base of the neck, looped up to the rim, and then brought down at a right angle to the upper curve of the body; the ends were dragged to the base of the flask and toothed, while hot, with the pincers. The glass is brilliant and full of air bubbles.

Blown. Interior stained by alcohol; pontil mark on base. Seventeenth century. Height 13.5 cm. Made at Castil de la Peña (Granada). Presented to The Hispanic Society of America on November 28th, 1930.



T355

CUP

## CUP

T355

The blown-glass cup is decorated by a chain of glass thread fused around the lower curve of the body. A wide collar flares slightly from the pomi-form body which rests on a flat circular foot. This base was made by attaching a glass ring of double thickness to the body. An ear-shaped handle, fastened to the swelling wall of the body, is tubular, pinched flat and curled in a lobe at its termination. Glass paste applied to the top and outer side of the handle was pulled and shaped with pincers to a cockscomb ending in a series of spines. The glass, brilliant, transparent, and of a smoky yellow tinge, is filled with tiny air bubbles.

Blown. Edge of collar cut off and fused; pontil mark in base. Circular crack at base of handle. Late seventeenth century. Height 13 cm.—Diameter at mouth 9 cm. Probably made at Cadalso de los Vidrios.



T367

VASE

## VASE

T367

The bell-shaped vase rests on a broad, slightly raised foot. Low on the body, the two vertical handles are loops of blue glass paste attached opposite each other. Around the octagonal rim winds a glass thread, tinted faintly blue. Rings of threading also edge the foot which was formed from a bubble of glass, collapsed to a low cone of double thickness and fused to the bottom of the vase. The glass, extremely thin and writhen, is not crystal clear, having a yellowish cast, streaked with blue. The surfaces, on which moisture collected, were cloudy, or "crizzled", owing to partial decomposition of the paste but have been treated in an effort to stop the erosion.

Blown. Pontil mark on base. Seventeenth century. Height 12.8 cm.—Diameter at rim 12.3 cm. Probably made at Recuenco.



T426

SUGAR BOWL.

## SUGAR BOWL

T426

The crystalline sugar bowl rests on a low stem and a circular foot of double thickness, made from a flattened vesicle of glass. Two handles are fastened vertically to opposite sides of the cup-shaped body. They are rods of glass paste applied near the rim of the bowl, bent, cut off, and the ends pinched back. The gently sloping lid is topped by a solid glass knob of concave and convex turnings. The edge of the cover is bent inwards then down, forming a collar to prevent the lid from sliding off the bowl. Flower and ribbon festoons, tied with bowknots and draped from a horizontal chain, are engraved on the sides, and tiny eight-pointed stars are framed by these swags. The gilding on the designs is still bright and untarnished. Sprays of engraved and gilded leaves and berries encircle the lid of the sugar bowl, and a rosette covers the handle top.

Blown, engraved, and gilded. Occasional bubbles, unfused particles, and striations in paste; pontil marks at centre of base and inside cover beneath handle; edges of bowl and cover cut off and fused. Last quarter of eighteenth century. Height to top of cover 19.5 cm.—Diameter at brim 10.7 cm. Made at La Granja de San Ildefonso. Reproduced in Singleton, Esther. *Spanish glass*. In *The Antiquarian*. February 1925. v. 4, p. [5].



T429

MUG

## MUG

T429

The flat base of the mug is thick, and from it the sides rise perpendicularly. The surface of the base is rough as though the mug had been blown in a wood block or a sand mould. The vessel was removed from the mould, cut off and widened at the rim in an outward flare. In one of the reheating processes the rim melted unevenly and the base warped slightly. The single handle is a band of solid glass, curved on the outer surface and flat on the inner; fastened directly below the rim, the handle was bent in a loop then cut off, and the lower end pressed and fused to the mug. Encircling the rim, a wreath of fine leaves is engraved in the surface and gilded. Delicate sprigs of three-petaled flowers, engraved and gilded, are sprinkled in diaper arrangement over the sides. A mug of almost identical shape and design belongs to The Buffalo Historical Society.

Blown, engraved, and gilded. Occasional bubbles and striations in paste; pontil mark on base; rim cut off and fused; gilding faded. Last quarter of eighteenth century. Height 14.5 cm.—Diameter at rim 11.5 cm. Made at La Granja de San Ildefonso.



T430

COVERED JAR

## COVERED JAR

T430

The high, wide-mouthed collar of the jar joins an inverted pear-shaped body, which is affixed to a circular base. This foot was blown from a separate gathering, and the vesicle was collapsed, forming a double thickness of glass. The loop handles, flat thick ribbons of paste, were fastened vertically on opposite sides of the collar. The dome-shaped cover is finished by a glass-paste knob of one little ball resting on another. Incised between handles and encircling the rounded wall of the body are swags of flowers, fruit, and leaves tied to laurel wreaths with tasseled bowknots. A leafy garland is looped up with rosettes into three scallops around the cover. The shape shows Germanic influence. The gilding applied to the engraved decoration is faded and worn.

Blown, engraved, and gilded. Occasional bubbles, unfused particles, and striations in paste; pontil mark at centre of base; edges of bowl and cover cut off and fused. Last quarter of eighteenth century. Height to top of cover 30 cm.—Diameter at rim 10.6 cm. Made at La Granja de San Ildefonso.



T427

TUMBLER

## TUMBLER

T427

The lower part of the large flip glass shows the fluted impressions of a mould; the cylindrical walls rise erectly from the flat, smooth base of thick paste. Below the somewhat uneven rim runs a band of engraved and gilded ornamentation in the form of swags of ribbon, flowers, and foliage tied with bowknots to a wreath of leaves.

Blown in mould, engraved, and gilded. Occasional bubbles, unfused particles, and striations in paste; base marred with faint scratches; rim cut off and fused. Last quarter of eighteenth century. Height 14.5 cm.—Diameter 11.2 cm. Made at La Granja de San Ildefonso.



T428

DECANTER

## DECANTER

T428

The decanter has a long neck which tapers gradually from the body; the rim is flanged. Fastened to the stopper is an ovate glass-paste top which is engraved on each of the two flat surfaces with a maple leaf. A floral motive, gilded and engraved, ornaments the body; it is a large blossom, like a sunflower, with the corolla indicated by crossed diagonal lines and oval dots and the foliage cut in drooping curves. On the opposite side of the decanter, a small leafy sprig is centred within an area marked off by four scattered leaves. Two bands, the upper a simple chain and the lower a string of stars and reels, encircle the neck. All the engraved patterns are enriched with bright gold which is worn in places. The shape of the decanter is reminiscent of late eighteenth-century English pieces.

Blown, engraved, and gilded. Occasional bubbles and unfused particles in paste; base marred with faint scratches; interior stained; on base, pontil mark ground smooth. Last quarter of eighteenth century. Height to top of stopper 31.1 cm.—Diameter of base 11 cm. Made at La Granja de San Ildefonso.



STOPPER



T443

COVERED JAR

## COVERED JAR

T443

The base of the jar is glass of double thickness, pressed flat toward the outer edge and pushed up at the centre where it joins the body. In a shallow curve the collar, a broad cylinder, rises from the globular body. Rods of glass paste, flat on the inner surface and rounded on the outer, are fastened near the rim on opposite sides, pulled down in a curve, and pressed against the wall. A solid knob of convex and concave turnings surmounts the flat cover, the edge of which is bent to form a protective guard. A ribbon with scalloped edges and a ring of dots through the middle is engraved around the body of the jar and gilded. The ribbon is flanked on both sides by gilt sprigs of conventional buds or berries. On the collar, extending between the handles, are strands of the same ribbon, below which are two rows of buds, stiffly erect. A wreath of foliage encircles the cover. The gilding sparkles brightly.

Blown, engraved, and gilded. Occasional bubbles, unfused particles, and striations in paste; pontil mark at centre of base. Last quarter of eighteenth century. Height to top of cover 24.2 cm.—Diameter at rim 8.7 cm. Made at La Granja de San Ildefonso. Presented to The Hispanic Society of America on July 7th, 1928.



T44

COVERED JAR

## COVERED JAR

T444

The tall jar, resting on a circular base, has a bulbous body shaped like an inverted pear. A high, wide collar slopes up from it, flaring almost imperceptibly at the rim. Two glass-paste handles are fused to opposite sides of the collar; they are ear shaped with the lower ends cut off and pressed against the jar. The base is of double thickness, a flattened glass vesicle affixed to the bottom. The conical cover is peaked by a knob handle of solid glass modeled in concave and convex turnings; the edge is curved to form a guard that prevents the cover from slipping. Around the body runs a band of engraved decoration, an undulating ribbon that crosses and recrosses a horizontal stripe, from which spring triads of round berries. Leaf sprigs are engraved beneath this band. On each side of the collar between the handles extends a horizontal spray of leaves, below which are three rows of leaf clusters. A trio of foliage sprays, placed equidistantly, is engraved on the cover, and a rosette tops the knob. All the engraving was gilded, but the metal has tarnished and faded.

Blown, engraved, and gilded. Occasional bubbles, unfused particles, and striations in paste; small chip in rim; pontil mark at centre of base; edges of bowl and cover cut off and fused. Last quarter of eighteenth century. Height to top of cover 29.3 cm.—Diameter at rim 9.5 cm. Made at La Granja de San Ildefonso. Presented to The Hispanic Society of America on July 7th, 1928.



T445

SUGAR BOWL

## SUGAR BOWL

T445

The conical base of the bowl rests on a circular foot of double thickness made from a flattened vesicle of glass. Attached to opposite sides of the cylindrical body are two ribbon handles of solid glass looped in C-curves and their ends finished in neat rolls. On each side of the bowl is engraved a large sunflower with cross-hatched corolla and sweeping foliage. The gilding that enriches the engraving is still brightly burnished. Topping the bowl is a cover that rises to a dome at the centre and terminates in a solid knob of two graduated spheres. The edge of the lid is bent to form a guard. Two sprays of berries with needle-like foliage and two fern fronds decorate the cover; a rosette tops the knob. All these motives are engraved and gilded.

Blown, engraved, and gilded. Occasional bubbles and striations in paste; long three-branched crack extending from rim to base; bottom of bowl stained and scratched; pontil marks at centre of base and inside cover beneath handle; edges of bowl and cover cut off and fused. Last quarter of eighteenth century. Height to top of cover 25.5 cm.—Diameter at rim 12.3 cm. Made at La Granja de San Ildefonso. Presented to The Hispanic Society of America on July 7th, 1928.



NOTES  
REFERENCES  
INDEX



## NOTES

(1) Villanueva, Jaime. *Viage literario a las iglesias de España*. Madrid, 1850. v. 14, p. 320.

The document recounting the consecration was contained in the Monastery archives.

(2) To the Vich Museum belong four jars discovered in the Church of *Santa Maria de Monigrony*, a church in Vich bishopric, and the Monastery of *Sant Pere de Casserres* in Cataluña. Three have appeared from Andorra, two of which have gone to the Mateu Collection, Barcelona. The rectory at Encamp (Andorra) contains the third specimen, dating from 1167, found in the altar of the Church of *Sant Romà de les Bons*. In the church at Oliana was found the neck of an ampulla containing relics, dating from 1042, and a glass vessel is still within the altar of the twelfth-century church at Molló. From the Hermitage of *Sant Sadurni* at San Esteban del Mall came the unusually fine and well-preserved *lipanoteca* of the Macaya Collection. A reliquary box belonging to the ancient cathedral of Roda d'Isàbena still guards a glass vial (Gudiol Ricart, Josep. *Els vidres catalans*. Barcelona [1936], p. 68-69).

(3) Bible of Ripoll, eleventh century, in the Vatican Library, Rome; Bible of Roda, eleventh century, in the *Bibliothèque Nationale*, Paris; Homilies of Breda, twelfth century, Church of *San Feliú*, Gerona.

In scrutinizing many of the forms shown in early illuminations and paintings, one can but conjecture whether they are intended to represent glass, pottery, or metal.

(4) Toda i Güell, Eduart. *La col·lecció de vidres antics de Poblet*. In Societat arqueològica tarraconense. *Bulletí arqueològic*. April-June 1935. època 3, v. 5, p. 46-47; Gudiol Ricart. p. 133.

Towns, such as Vidreres and Vallvidrera, indicate only by their names that glass making was, from early times, their principal industry.

(5) James Howell, an English traveler, gave an account of the barrilla industry in a letter dated from Alicante on the twenty-seventh of March, 1621. "I am now . . . come to Alicant, the chief rendezvous I aimed at in Spain, for I am to send hence a commodity called barrilla, to Sir Robert Mansel, for making of crystal glass. This barrilla is a strange kind of vegetable, and it grows no where upon the surface of the earth, in that perfection as here . . . It grows thus; it is a round thick earthy shrub that bears berries like barberries, betwixt blue and green; it lies close to the ground, and when it is ripe they dig it by the roots, and put it together in cocks, where they leave it to dry many days like hay; then they make a pit of a fathom deep in the earth, and with an instrument like one of our prongs, they take the tuffs and put fire to them, and when the flame comes to the berries, they melt and dissolve into an azure liquor, and fall down into the pit till it be full; then they dam it up, and some days after they open it and find this barrilla juice turned to a blue stone, so hard that it is scarce malleable; it is sold at one hundred crowns a tun . . ." (Dillon, Sir John Talbot. *Travels through Spain*. London, 1780. p. 438).

(6) Rico y Sinobas, Manuel. *Del vidrio y sus artífices en España*. Madrid, 1873. p. 6-10.

(7) Capmany y de Montpalau, Antonio de. *Memorias históricas sobre la marina, comercio y artes de la antigua ciudad de Barcelona*. Madrid, 1779. v. 1, pt. 3, p. 135.

(8) Gudiol Ricart. p. 32.

(9) Aguiló, Estanislao K. *Industrias mallorquinas: fábricas de cinabrio y de vidrio (1347)*. In Sociedad arqueológica luliana. *Boletín*. November 1890. año 6, p. 318-320.

(10) Capmany. p. 18.

(11) Gudiol Ricart. p. 32.

(12) *Ibid.* p. 38; Beccadelli, Antonio, 1394-1471. *Dichos y hechos del rey don Alonso de Aragón*. Anvers, 1554. v<sup>of</sup> 108.

(13) From the register of ordinances for the years 1456 to 1462 in the *Arxiu Municipal Històric* at Barcelona (Gudiol Ricart. p. 136-139, note 43). Capmany (v. 1, pt. 3, p. 134-135) stated that the guild was founded in 1455.

(14) Gudiol Ricart. p. 38.

(15) Capmany. p. 134-135; Gudiol Ricart. p. 38.

(16) Gudiol Ricart. p. 40.

(17) *Ibid.* p. 38-39; Soler y Palet, Joseph. *L'art a la casa al segle xv*. In R. Academia de buenas letras de Barcelona. *Boletín*. año 16, p. 300.

(18) Gudiol Ricart. p. 39-41 and note 54, p. 140-141.

(19) Capdevila, Çans. *La industria vidriera a Tarragona*. In Societat arqueològica tarraconense. *Butlletí arqueològic*. April-June 1933. època 3, p. 243.

(20) Paulo, Jerónimo. *Barçino*. In *Hispania illustrata*. Francofurti, 1603. v. 2, p. 846.

(21) Matineus, Lucius. *Obra de las cosas memorables de España*. Alcala de Henares, 1539. v<sup>of</sup> 9, 11.

(22) The rectory at Rubió in 1352, furnished in Spartan severity, contained an ampulla with its stand and a glass cup, together worth two *dineros* (Segura, Juan. *Documentos para las costumbres de Cataluña durante la edad media*. In *Revista de ciencias históricas*, pub. per S. Sanpere y Miquel. Barcelona, 1887. v. 5, p. 327-328). An inventory made in 1389 of the belongings of Pere Girgós, a Barcelonese, is particularly rich in the variety of glass objects mentioned or briefly described. Among other possessions are listed: an *almorratxa* of white glass, almost full of rose water; a glass bottle (*barulet*) with a little rose water; an empty glass decanter (*brochal*); a glass ampulla with a little thistle water; in the cellar, an empty glass *barrall*, covered with straw cloth, capacity of three to five Barcelonese *cortés* (i.e. measure of over four litres for liquids); in a room off the dining room, nine glass ampullae filled with several kinds of water; in a dressing room, a glass inkwell and six *ampolletes* (Roca, Joseph Maria. *Inventari*. In R. Academia de buenas letras de

Barcelona. *Boletín*. January-June 1928. año 28, p. 307-314; July-December 1928. p. 387-390).

(23) A glass lantern appears in an inventory, dated 1377, listing the chapel furnishings of Mas-Deu preceptory in the Roussillon (Miret y Sans, Joaquim. *Les cases de Templers y Hospitalers en Catalunya*. Barcelona, 1910. p. 561). To a private citizen of Barcelona at some time between the years 1455 and 1467 belonged a wooden *retablo* of the Passion before which was a glass lamp. In 1490 a wool dresser of the same city listed as in his possession a glass lamp with iron ornamentations in front of an oratory (Soler. p. 294, 388). A glass lamp was sold at auction for six *dineros* in 1373 (Moliné y Brasès, E. *Inventari y encant d'una especieria ceroverina del segle xiv*. In R. Academia de buenas letras de Barcelona. *Boletín*. October-December 1911. año 11, p. 204); in the receipt books for expenses incurred by Mallorca Cathedral during 1392 and 1395 are recorded the prices of several lamps (Gudiol Ricart. p. 136, note 37).

(24) *Ibid.* p. 35.

(25) [Serrano y Sanz, Manuel] *Inventarios aragoneses de los siglos xiv y xv*. In R. Academia española. *Boletín*. October 1917. año 4, p. 518.

(26) A canon of Vich Cathedral owned an hourglass in 1371 as did a Barcelonese councilman in 1494 (Gudiol Ricart. p. 135, note 28; Soler. p. 389).

(27) Gudiol Ricart. p. 35, 41; Soler. p. 388.

(28) Soler. p. 390; Roca. p. 385.

(29) Bofarull y Sartorio, Manuel. *Inventari dels bens mobles del rey Martí d'Aragó*. In *Revue hispanique*. 1905. v. 12, p. 531; Gudiol Ricart. p. 43.

(30) Martorell Trabal, F. and Vall Taberner, F. *Pere Beçet (1365?-1430)*. In Institut d'estudis catalans. *Anuari*, 1911-12. any 4, p. 611.

(31) Rubió y Lluch, Antoni. *Documents per l'història de la cultura catalana mig-ecal*. Barcelona, 1921. v. 2, p. 112, 114; Gudiol Ricart. p. 133, note 29; p. 134-135, note 23; Martorell. p. 600, 614.

For glass jewels of the fifteenth century, see the inventories of objects belonging to a Zaragoza silversmith in 1406 (Serrano. p. 361) and to the Church of *Sant Joan*, Barcelona, in 1436 (Miret. p. 568, 569).

(32) The Hispanic society of America. *Catalogue of sculpture (13th-15th centuries)*. . . by Beatrice I. Gilman. New York, 1932. p. xlv, lxxiii-lxxiv. Two documents dated 1354 and 1379 concerning these tombs are to be found in Rubió, p. 203-204, 203-204.

(33) [Coroleu i Inglada, Josep] *Documents historichs catalans del segle xiv*. Barcelona, 1889. p. 28-29.

(34) A German traveler's manuscript of a trip made to Spain in 1617 described carefully the Royal Palace at Madrid, with especial note of the marble-framed windows glazed with "crystal" ([Zeiller, Martin, ed.] *Hispania et lusitania itinerarium*. Amstelodami, 1636. p. 172). In 1624 King Philip and his court visited the Duke and Duchess of Medina at Sanlúcar. The royal guests are described as walking through a little corridor of glazed windows (Herrera y Sotomayor, Jacinto de.

*Jornada que S. M. hizo a la Andalucia*. Barcelona [1624?]. *cap* [4]). Frans van Aarssens remarked that at Madrid one never saw glass windows and almost all of the houses had wooden blinds (*Voyage d'Espagne, contenant entre plusieurs particularitez de ce royaume*. Cologne, 1666. p. 133). Francis Willughby had said in 1664, quite to the contrary, that many of the madrileño houses had glass windows, "... which is worth the noting, because you shall scarce see any in all Spain besides". Catalans were generally poor, he said, and at their windows could be found neither glass nor paper, but only wooden shutters (Ray, John. *Travels through the low-countries*. London, 1738. p. 419, 405). There is an ingenious explanation of how Lugo obtained its name in an account of the queen-bride's arrival and progress to meet her husband, King Charles the Second. The author writes that Lugo "... is called in Latin *Givitas Lucensis* because the nobility of the town, who are here very numerous, living atop the ramparts which are of extraordinary height, use in their windows great squares of glass, which, from the sun's reflection in them, dazzle for a distance of one or two leagues all who travel towards the town" ([Leonard, Jean]. *Journal du voyage de la reine*. Bruxelles, 1691. p. 112, *tr.*).

(35) For this reason, a detailed account of their achievements as shown by documents has been excluded from this publication which deals primarily with hollow ware.

(36) The reliquary, the cruet, and the cup found at Poblet are in the Monastery Museum; the cup from Barcelona is in the Joan Prats Collection. There are, in addition, a few more fifteenth-century glasses. From the depths of a silo at Badalona, along with coins of the fifteenth century, emerged many fragments which, fitted together, reconstructed a goblet (now in the Badalona Museum) with shallow bowl, high pedestal, and ornamentation of applied glass threads. A wineglass of the late Gothic period, brought possibly from Mallorca and now in the Barcelona Museum, has the slim form of a lily calyx. Glass threadings and *cabochons* adorn the bowl which is held aloft by a thin stem on a circular base. A little cruet in the *Cau Ferrat* Museum at Sitges has a pear-shaped body, loop handle, and curved spout. From small fragments discovered at Poblet, original shapes have been reconstructed as decanters, a rotund bottle, goblets with gracefully curving or conical walls, a squat vase, a tumbler, and a shallow dish. Other fragments were excavated from two castles near Vich and from a convent cloister at Villafranca del Panadés.

(37) Bofarull. p. 571.

(38) Soler. p. 390; Gudiol Ricart. p. 42.

(39) Girona Llagostera, Daniel. *Itinerari del rey En Martí (1396-1402)*. In Institut d'estudis catalans. *Anuari*. 1911-12. any 4, p. 105.

(40) Moliné. p. 195-204.

(41) Miret. p. 556; Roca. p. 307.

(42) Segura. *Aplech de documents curiosos i inèdits fahents per la historia de las costums de Catalunya*. In [Consistori dels jocs florals de Barcelona] *Jocs florals de Barcelona*. Barcelona, 1885. p. 208.

(43) Bofarull. p. 530, 587, 588, 589.

(44) Martorell. p. 602.

(45) Soler. p. 389, 388.

(46) Gudiol Ricart. p. 413; Soler. p. 389.

(47) Records of earlier date mention glass objects "of divers colours", painted or enameled glass, but do not specify whether they are of Syrian or Catalan manufacture.

Gudiol Ricart. p. 37.

(48) *Ibid.* p. 43 and p. 141, note 67.

(49) Gestoso y Pérez, José. *Pedro Millán*. Sevilla, 1884. p. 66.

(50) Soler. p. 387, 388, 390.

(51) Pérez Bueno, Luis. *Vidrio*. In Carreras y Candi, Francisco, ed. *Folklore y costumbres de España*. Barcelona, 1931. v. 2, p. 466.

(52) Vidal, Pierre. *Guide historique et pittoresque dans le département des Pyrénées-Orientales*. Perpignan, 1879. p. 184; Gudiol Ricart. p. 40.

A French gentleman, Barthélemy Jaubert, built a glass furnace at Perpignan in 1476; at this period there were fabrics also at Vallbona, Villalonga, Sorède, and Albera in the Roussillon (Saint-Quirin). *Les verriers du Languedoc, 1290-1790*. In Montpellier. Société languedocienne de géographie. *Bulletin*. 1905. v. 28, p. 184).

(53) Aguiló. p. 318-320.

(54) *Idem*. *Documento sobre la fabricación de vidrio en Mallorca*. In Sociedad arqueológica luliana. *Boletín*. June 10th, 1889. año 5, p. 88.

(55) Gudiol Ricart. p. 32.

(56) *Ibid.* p. 40.

(57) [Mir, José] *Tarifa impuesta a los vendedores de objetos de cristal [1453]*. In Sociedad arqueológica luliana. *Boletín*. September 25th, 1889. año 5, p. 141-142.

(58) There is a late fifteenth-century goblet said to have come from Mallorca in the Barcelona Museum, but there is no final proof that the glass is of Mallorcan manufacture.

(59) Llabrés, Gabriel. *Inventario de la herencia de Ramón de Sant Martí*. In Sociedad arqueológica luliana. *Boletín*. August 1890. año 6, p. 286.

(60) Mir, José. *Secuestro de los bienes y alhajas de la iglesia de Lluch e inventario de los mismos*. In Sociedad arqueológica luliana. *Boletín*. February 1890. año 6, p. 214, 215.

(61) Aguiló. *Inventari dels bens y heretat den Miquel Abeyar, notari, notable bibliòfil mallorquí del segle xv*. In Sociedad arqueológica luliana. *Boletín*. October 1898. año 14, p. 417, 418.

(62) Obrador, Matheu. *Inventari de la heretat den Berenguer Vida (1388)*. In Societat arqueològica luliana. *Boletí*. June 1905. any 21, p. 87; Aguiló. *Inventari*. p. 419.

(63) Hieronymus Muenzer, a German, remarked upon the superb glasses made not alone in Cataluña but in Valencia.

Muenzer, Hieronymus. *Itinerarium hispanicum, Hieronymi Monetarii, 1494-1495* [ed. by Ludwig Pfandl]. In *Revue hispanique*. February 1920. v. 48, p. 353.  
 Puyol, Julio. *Serónimo Münzer. Viaje por España y Portugal en los años 1494 y 1495*. In R. Academia de la historia. *Boletín*. January 1924. v. 84, p. 75.

The inventory of household goods belonging to a lawyer of Benasal in 1445 lists a glass barrel in the cellar and, in the dining room, a dozen flasks (*ampoles, ampoletes*) and six *almorratxes*, all of glass. There is no indication that these pieces were of Valencian manufacture (Ferrer, Eloi. *Un inventari del segle xv*. In Sociedad castellonense de cultura. *Boletín*. 1926. v. 7, p. 251, p. 300).

(64) Gudiol Ricart. p. 41.

(65) Ibarra y Ruiz, Pedro. *Elche, materiales para su historia*. Cuenca, 1926. p. 145-146. (Contribución al estudio del arte español)

(66) Cavanilles, Antonio Josef. *Observaciones sobre la historia natural, geografía . . . del reyno de Valencia*. Madrid, 1797. v. 2, p. 127, 246; Rico y Sinobas. p. 54.

(67) Ibn Sa'id as quoted by the seventeenth-century traveler and historian Ahmad ibn Muhammad, *Al-Maḥḥarī*, in his *The history of the Mohammedan dynasties in Spain*; tr. by Pascual de Gayangos. London, 1840. v. 1, p. 51, 93.

(68) Muenzer. p. 39; Puyol. p. 79-80, tr.

(69) Muenzer. p. 34-35; Puyol. p. 74-75.

(70) Riaño y Montero, J. F. *The industrial arts in Spain*. London, 1890. p. 232-233.

(71) A small ring flask, in the Macaya Collection, said to date from the fifteenth or sixteenth century, displays these features.

(72) Marineus. *op. v*, tr.

(73) Riaño. p. 240; Gudiol and Artífano. p. 77.

(74) Gudiol Ricart. p. 142-154, note 72.

(75) Navagero was at Granada from May to November 1526. Fabié, Antonio Maria. *Viajes por España . . . de Andrés Navajero*. Madrid, 1879. p. 293. (Libros de antaño. v. 8)

(76) Lalaing, Antoine de, lord of Montigny. *Voyage de Philippe le Beau en Espagne, en 1501*. In *Collection des voyages des souverains des Pays-Bas*, pub. par M. Gachard. Bruxelles, 1876. v. 1, p. 257. ([Collection de chroniques belges inédites])

(77) The glass blowers maintained the political power granted by Alfonso the Fifth and served on the Council of One Hundred, the governing body of Barcelona (Gudiol Ricart. p. 47).

(78) A German's memoranda on Spain in the early seventeenth century noted that the residents of Barcelona were famous for their achievements in making excellent glass (Zeiller. p. 302), and in 1629 a Flemish geographer, director of the West India Company, remarked on this exceptionally fine ware ([Laet, Joannes de]

*Hispania, sive de regni hispaniæ regni et opibus commentarius.* Lygd: Batav., 1629. p. 16).

(79) Cock, Henry. *Relación del viaje hecho por Felipe II, en 1585, á Zaragoza, Barcelona y Valencia* . . . pub. . . por Alfredo Morel-Fatio y Antonio Rodríguez Villa. Madrid, 1876. p. 127-128.

(80) The sum of 843 *reales*, the price of her three hundred purchases, was paid several years after her death (Bassegoda y Amigó, Bonaventura. *Santa Maria de la Mar*. Barcelona, 1925. v. 1, p. 381, note 9).

Onofre Manescal preached a sermon in 1597, in which he referred to the glass of Barcelona as famous everywhere (Manescal, Onofre. *Sermó vulgarment anomenat del Sereníssim Senyor Don Jaume Segón . . . y historia de la pèrdua de Espanya, grandeses de Catalunya, comtes de Barcelona y reys d'Aragó. Predicat en la Santa Iglesia de la inigne ciutat de Barcelona a 4 de novembre de l'any 1597.* Barcelona, 1602. *oof* 69).

(81) [Aedo y Gallart, Diego de] *El memorable y glorioso viaje del infante cardenal Don Fernando de Austria [desde 12. de abril 1632 hasta 4. de noviembre de 1634]*. Amberes, 1635. p. 8-9.

(82) Corbera, Esteban. *Cataluña ilustrada*. Napoles, 1678. p. 67.

(83) Gudiol Ricart. p. 47-48.

(84) *Ibid.* p. 48.

(85) *Ibid.* p. 52.

(86) The ordinances are preserved in the Municipal Historical Archives of Barcelona (*Ibid.* p. 46-47).

(87) Rebullosa, Jaime. *Relacion de las grandes fiestas que en esta ciudad de Barcelona se han echo, a la canonizacion de su hijo San Ramon de Peñafort*. Barcelona, 1601. p. 153, 475; Dalmau, José. *Relacion de la solemnidad con que se han celebrado en la ciudad de Barcelona las fiestas a la beatificacion de la Madre S. Teresa de leser*. Barcelona, 1615. f 122.

(88) Gudiol Ricart. p. 52-54.

(89) Another workman from the Roussillon in 1536 was Pere Patau (*Ibid.* p. 48).

(90) The names of two master craftsmen appeared, as has already been recounted, in the Barcelona ordinances of 1594-95 governing the newly organized glass-blowers' guild, and two years later there followed another worker, Pere Vila. Noted in 1653 were Jaume and Francesc Soler, Josep Andreu, Josep Martí Casalius, and Ramón Sala (*Ibid.* p. 48, 53, 55).

(91) Narcís Guillem was the name of the apprentice (Mas, Josep. *Notes històriques del bisbat de Barcelona*. Barcelona, 1907. v. 2, p. 27-28).

Other notices confirm the existence of furnaces at Vilanova de la Fussa, Vilafranca del Panadés, Cervelló, and Arenys de Mar.

(92) Joan Roig and Pere Renu, both glass blowers of San Vicente, helped to give the examination (Gudiol Ricart. p. 52-53).

- (93) *Ibid.* p. 56; Gudiol and Artífano. p. 90, note 68.
- (94) Two more glass blowers of the same town, Bernat Font and Joan Cubells, signed the agreement as witnesses (Gudiol Ricart, p. 159, note 125).
- (95) *Ibid.* p. 160-161, note 125.
- (96) Villalón, Cristóbal de. *Ingeniosa comparación entre lo antiguo y lo presente*. Valladolid, 1539. In Sánchez Cantón, Francisco Javier. *Fuentes literarias para la historia del arte español*. Madrid, 1923. v. 1, p. 32-33.
- (97) Gudiol Ricart. p. 46 and note 79, p. 154-157. The manuscript belongs to the *Biblioteca del Seminari*, Barcelona.
- Ibid.* p. 157, note 79, *tr.*
- (98) Núñez, Luis. *Hispania sive populorum, urbium, insularum, ac fluminum*. Antverpiæ, 1607. p. 279, *tr.*
- (99) There was an Italian working as early as 1428 in Vienna, and members of the Ferro family from Altare made glass in the Venetian style about 1443 for René of Anjou (Schuermans, H. *Verres à la vénitienne fabriqués aux Pays-Bas*. In Belgium. Commissions royales d'art et d'archéologie. *Bulletin*, 1890. 29<sup>e</sup> année, p. 104; 26<sup>e</sup> année, p. 315; Dillon, Edward. *Glass*. London [1907]. p. 229).
- (100) Schuermans (29<sup>e</sup> année, p. 140) lists for 1544 Domenico Moro, Mattio di Piave 2<sup>de</sup> Vissiga, and Antonio (di Piave?), and for eleven years later Alvise Serena, Antonio del Sol, Marino Moro, and Francisco Caner. Two members of the Ballarin family are noted in 1555 as having worked in Spain for ten years.
- (101) Fajarnés y Tur, Enrique. *Sobre invenciones industriales antiguas en Mallorca*. In Sociedad arqueológica luliana. *Boletín*. November 1895. año 11, p. 191.
- (102) Many of the glasses were decorated with the imperial arms, others were gilded or had gilt knobs. Some were made of frosted or embossed glass while others were clear and unadorned ([Sánchez Cantón, Francisco Javier] ed. *El primer inventario del Palacio de El Pardo* (1564). In *Archivo español de arte y arqueología*. January-April 1934. v. 10, p. 73-74). Left to his sons at the Marquis of Priego's death in 1528 were several pieces of Venetian glass (Medinaceli, Luis Fernández de Córdoba y Salavert, duque de. *Serie de los más importantes documentos del archivo y biblioteca del Exmo. Señor Duque de Medinaceli*. [Madrid, 1915] v. 1, p. 159).
- (103) Schuermans. 29<sup>e</sup> année, p. 140-141; cf. p. 146-147, 166-167.
- (104) Medinaceli. v. 1, p. 394-395.
- (105) Cf. the metal goblet depicted in the Spanish primitive painting, *The Marriage of Cana* (Fig. 7).
- (106) Miret. p. 580, 582.
- (107) When the furnishings of the Castell de Fogons were recorded in 1523, the pantry contained seven ampullæ, and a small tower room had ten, both large and small, some containing fragrant waters. Twenty-three years later, showing an increase in equipment, the same castle was provided with ampullæ and *brocals* (de-

canters) in the wine vault, additional decanters in another room, and in the pantry off the drawing room several of these vessels, one partly filled with rose water (Alós, Ramon d'. *Inventaris de castells catalans (sigles xiv-xvi)*. In *Estudis universitaris catalans*. January-June 1910. v. 4, p. 162, 163, 174, 176, 178).

(108) The procurator owned, in addition, *brocals* containing rose water and rose vinegar, their value exceeding seven *soldos* apiece ([Ramis de Ayreflor y Sureda, José] *Familias extinguidas de Mallorca, iv: Berard*. In *Societat arqueològica luliana. Bolletí*. August-September 1919. any 35, p. 316).

Cf. Gudiol Ricart. p. 162, note 128.

(109) Ramis de Ayreflor. p. 316.

(110) Roca. año 30, p. 385, 388.

(111) Sánchez Cantón. *El primer inventario*. p. 74.

(112) Gudiol Ricart. p. 143, 151, note 72.

(113) A seventeenth-century specimen is in the possession of M. Armand Baar of Liège, Belgium. Believed to have come from the Balearic Islands, it was blown from colourless glass ornamented with cords of latticino; spouts, lateral handles, and base are of violet glass.

(114) Gudiol Ricart. p. 151, note 72.

(115) Toda y Güell. p. 48.

(116) Gudiol Ricart. p. 48-51.

(117) Alós. p. 155-156, 189.

(118) Ramis de Ayreflor. p. 312.

(119) Sánchez Cantón. *El primer inventario*. p. 75.

(120) Gudiol Ricart. p. 154, note 72.

(121) Gudiol i Cunill, Josep. *Objectes en l'ara de l'altar*. In *Institut d'estudis catalans. Anuari*. 1915-20. v. 6, p. 751-752.

(122) Sánchez Cantón. *El primer inventario*. p. 74, *tr.*

(123) *Inventario del moviliario, alhajas, ropas, armería y otros efectos del Excelentísimo Señor D. Beltrán de la Cueva, tercer duque de Albuquerque. Aº 1560*. In *Revista de archivos, bibliotecas y museos*. March 31st, 1883. año 9, p. 102, *tr.*

(124) Gabriel Esléssies in 1516 and Pere Vidrier in 1549, both merchants at Vich, were supplied with *almorratxes*, and Pau Montgraule in 1530 included an *almatge* (*almorratxa*?) among his belongings (Gudiol Ricart. p. 48-49, 50).

(125) Ramis de Ayreflor. p. 316.

(126) Queen Isabel had five caldrons of gilded and enameled glass (Gudiol Ricart. p. 147, 148, note 72). King Philip the Second had a dozen little caldrons, some with gilded handles (Sánchez Cantón. *El primer inventario*. p. 74).

(127) Gudiol Ricart. p. 146, 148, note 72.

(128) *Ibid.* p. 153, note 72.

(129) In his lengthy description of glass manufacture, Father Pere Gil enumerated many small animals, insects, and birds modeled by Catalan artisans.

(130) Gudiol Ricart. p. 147, 143, 153, note 72.

(131) *Ibid.* p. 55-56 and p. 160-161, note 125.

(132) A Fleming, Jean Carré, claimed in 1567 to have established a glass factory in London. He went to great expense to purchase Spanish soda because the English product was not of sufficiently good quality (Schuermans, 29<sup>e</sup> année, p. 124). At Liège in 1588 a glassman received a shipment of ashes from Spain for the manufacture of glass (*Ibid.* 22<sup>e</sup> année, p. 370). The workers of Nevers and Normandy used barilla of Alicante from 1594 to 1602 (*Ibid.* 26<sup>e</sup> année, p. 211). An English document dated August 29th, 1691, refers to the barilla of Spain made from the ashes of an herb found near Alicante (*Ibid.* 26<sup>e</sup> année, p. 212).

(133) Gudiol Ricart. p. 155-157, note 79.

(134) Medinaceli. v. 1, p. 160.

(135) *Inventario del moviliario.* p. 102.

(136) Gudiol Ricart. p. 142-154, note 72.

(137) *Ibid.* p. 88, tr.

(138) *Ibid.* p. 50.

(139) Roca. año 30, p. 293.

(140) Gudiol Ricart. p. 156, note 79.

*Vidre gelat* seems to be the same as "pitted" glass (*vidrio apedreado*) of which there were six pieces belonging to the Catholic Kings (*Ibid.* p. 152, 153, note 72). The Duke of Albuquerque, also, had an ornate scallop-shell glass, blown and "pitted" (*Inventario del moviliario.* p. 102).

(141) Sánchez Cantón. *El primer inventario.* p. 74.

Hugo de Berard of Mallorca counted as his assets eight large drinking vessels of fine glass, a number of them being frosted (Ramis de Ayreñor. p. 316).

(142) Doña Joanna Berard kept three enameled bowls in a bedroom cupboard. The glasses were ornately painted with the *Ave Maria* and the figures of Saints Jerome and Joseph (*Ibid.* p. 316).

(143) An *almorratxa* of gold glass (1514), a trumpet of gilded glass (1514), a jug of gilded soda glass (1532) (Gudiol Ricart. p. 51 and p. 158, note 102). The most elaborate piece of gilded Catalan glass belonging to Queen Isabel was a large purple plate with gold decorations on the brim and the royal coat of arms surrounded by a wreath in the centre. Gold brims, handles, and spouts may be noted on several of the Queen's possessions, and the pedestals were often flecked with powdered gold (*Ibid.* p. 142, 148, 149, 151, 153, note 72).

(144) *Inventario del moviliario.* p. 102.

(145) Seven additional goblets were designated especially as lacking gold, *por dorar* (Sánchez Cantón. *El primer inventario.* p. 74).

(146) The vase is now in the *Museus d'Art de Barcelona*.

(147) Two dishes belong to the *Museus d'Art de Barcelona* (Cabot Collection), one to the Victoria and Albert Museum, one to the *Kunstgewerbe Museum*, Berlin, and one to the *Musée Céramique* at Sèvres. The jar is in the *Museo Civico Correr*, Venice.

(148) The present locations of two specimens, consisting of the Espina jar and a vase formerly in a Roman collection, are unknown. The jar is reproduced in Folch i Torres, Joaquim. *Els antics vidres catalans esmaltats*. Barcelona [1926]. plate 10. (*El tresor artístic de Catalunya. sèrie II, secció 4*). The vase is reproduced in *Forma*. Barcelona, 1907. v. 2, p. 465. Three examples are to be found in London (British Museum and Victoria and Albert Museum), another at Prague, and a goblet in the *Rijksmuseum*, Amsterdam. At Paris, one may see two pieces, a goblet at the *Musée des Arts Décoratifs* and the shallow bowl of a wineglass in the Cluny Museum.

(149) The foot on the British Museum goblet is a later addition and the cover probably belonged to another, but similar, vessel. Both neck and base of the little egg-shaped vase in the same collection are later additions.

(150) Gudiol and Artífano. p. 64.

(151) *Ibid.* p. 68-69.

(152) Medinaceli. v. 1, p. 159.

(153) Gestoso y Pérez. *Ensayo de un diccionario de los artífices que florecieron en Sevilla desde el siglo xiii al xviii inclusive*. [Sevilla, 1908] v. 3, p. 456.

(154) Juliá Martínez, Eduardo. *Almoneda e inventarios valencianos*. In Sociedad castellonense de cultura. *Boletín*. January 1921. año 2, p. 19; February 1921, p. 38.

The entire lot of sixty-one pieces was purchased for nineteen Valencian pounds, one *sueldo*, and two *dineros*.

(155) García, Honorio. *De nuestras fuentes de la historia. Una casa alcarina en el siglo xvii*. In Sociedad castellonense de cultura. *Boletín*. 1925. v. 6, p. 255.

(156) Juliá Martínez. p. 266.

(157) Gudiol and Artífano. p. 65.

The will of Antonio de Mendoza, dated December 20th, 1508, augments our knowledge. The gentleman ordered that 2600 maravedis be paid to the heirs of a certain Vidal, glass blower of Caspe, for glass that Don Antonio had purchased from the artisan (Rius Serra, J. *Subsidios para la historia de nuestra cultura*. In *Archivo español de arte y arqueología*. September-December 1929. v. 5, p. 271-272).

(158) Quelle, Otto. *Die faktoreien der süddeutschen glashändler in Spanien und Portugal*. In *Ibero-amerikanisches archiv*. October 1937. jahr. 12, p. 387-390.

(159) Jacob, William. *Travels in the south of Spain*. London, 1811. p. 168.

(160) Quelle. p. 389.

(161) Gudiol and Artífano. p. 64.

(162) [Folch i Torres] *Col·lecció de vidres esmaltats (segles xviii-xix)*. In Institut d'estudis catalans. *Anuari*. 1915-20. v. 6, p. 304.

- (163) [Mackenzie, Alexander Slidell] *A year in Spain, by a young American*. New York, Boston, 1830. v. 1, p. 71.
- (164) Cavanilles. v. 2, p. 127.
- (165) *Ibid.* v. 2, p. 246; Espinalt y García, Bernardo. *Atlante español*. Madrid, 1874. v. 8, p. 340.
- (166) Pérez Bueno. p. 499-500.
- (167) Rico Sinobas. p. 57, 49.
- (168) Ulloa, Bernardo de. *Restablecimiento de las fábricas y comercio español*. Madrid, 1740. p. 44.
- (169) Schuermans. 27<sup>e</sup> année, p. 265.
- (170) *Ibid.* 26<sup>e</sup> année, p. 212, tr.
- (171) *Ibid.* 26<sup>e</sup> année, p. 199.
- (172) Fajarnés y Tur, Enrique, ed. *Documenti, viii: El aragonés Rigal fabricante de vidrio en Mallorca (1719)*. In Societat arqueològica luliana. *Rolletti*. September-October 1933. any 49, p. 418.
- (173) Pérez Bueno. p. 495.
- (174) Espinalt. v. 3, p. 176.
- (175) Laborde, Alexandre de, count. *Itinéraire descriptif de l'Espagne*. Paris, 1827-29. v. 1, p. 475; v. 5, p. 361.
- (176) Espinalt. v. 7, p. 86.
- (177) Gudiol Ricart. p. 57-58.
- (178) Madoz, Pascual. *Diccionario geográfico-estadístico-histórico de España*. Madrid, 1848. v. 11, p. 303.
- (179) Gudiol Ricart. p. 163, note 132; Miquel y Badia, Francisco. *Cerámica, joyas, y armas*. Barcelona, 1882. p. 129. (His *La habitación*. v. 3)
- (180) Espinalt. v. 4, p. 224.
- (181) *Ibid.* v. 6, p. 63-64.
- Glass making continued to function at Corbera de Llobregat (Gudiol Ricart. p. 56). La Junquera near the French border is believed to have had several furnaces, and by tradition, a house within the town limits was locally known as the "Glass Furnace" (Rico y Sinobas. p. 53).
- (182) *Ibid.* p. 57.
- (183) Espinalt. v. 6, p. 84.
- (184) Gudiol Ricart. p. 58.
- (185) Mal-Lara, Juan de. *Recebimiento que hizo la muy noble y muy leal ciudad de Sevilla, a la C. R. M. del rey D. Philippe. N. S.* Sevilla, 1570. [Sevilla? 1882?] v<sup>o</sup> f 25-f 26, v<sup>o</sup> f 88-v<sup>o</sup> f 89, v<sup>o</sup> f 148.
- (186) Gestoso y Pérez. *Ensayo*. v. 3, p. 453-454, 457.

(187) *Ibid.* v. 2, p. 401.

(188) Espinalt. v. 14, p. 34.

The glass works of the Andalusian capital were also referred to in 1587 (Morgado, Alonso. *Historia de Sevilla*. Sevilla, 1587. v<sup>o</sup>f 57), and thirty years later a German traveler commented upon a manufactory at Sevilla where glass was blown (Zeiller. p. 249).

(189) Riaño. p. 241.

(190) Schuermans. 29<sup>e</sup> année, p. 146.

(191) Riaño. p. 231-234.

(192) Jiménez Patón, Bartolomé. *Historia de la antigua y continuada nobleza de la ciudad de la. Ilen*, 1628. f. 9 [i.e. 14], Madoz. v. 9, p. 207; v. 3, p. 302.

(193) Ulloa. p. 44.

(194) Davillier, Jean Charles, baron. *Fortuny; sa vie, son œuvre, sa correspondance*. Paris, 1875. p. 70, tr.

(195) In the Victoria and Albert Museum, London.

(196) There is an amber glass lamp of this kind in the collection of M. Armand Baar at Liège. M. Baar has a number of objects from the glass factories of Granada and Almería.

(197) In the Victoria and Albert Museum, London.

(198) Madoz. v. 8, p. 42.

(199) Pérez Bueno. p. 532-533.

(200) Madoz. v. 5, p. 590.

The Valarino establishment was still in existence in 1892 (Alzola y Minondo, Pablo de. *El arte industrial en España*. Bilbao, 1892. p. 512).

(201) Sánchez Cantón. *El primer inventario*. p. 75.

(202) Rico y Sinobas. p. 38, 39; Gudiol and Artíñano. p. 78.

(203) Sánchez Cantón. *Fuentes literarias*. v. 1, p. 52-53.

(204) Colmeiro, Manuel. *Historia de la economía política en España*. [Madrid, 1863] v. 2, p. 326, note 2.

(205) The *redomas* for fruit juices had stopcocks near the bases. There were also flat vessels called *tortas*, a two-handled dish in which rested a spouted jug, a large, covered basin, a covered jar with two handles, four cube-shaped jars with lids, a lantern with glass panes, and a leather tray to hold drinking glasses (*Inventario del moviliario*. p. 100, 101, 102).

(206) Making windows for the Cathedral was the principal occupation for the glassworkers at Toledo, but the archives indicate that they also made other objects for ecclesiastical purposes. Lamps for the Cathedral were supplied by Bartolomé López in 1546 and by Pedro Fernández in 1590, while Tomás Núñez, seventy years later, fashioned not only lamps but three crosses of crystalline glass (Riaño. p. 240). By the following century most of the glass blowers had disappeared from the city.

along with artisans of other trades. Only one glass shop is said to have remained (Colmeiro. p. 193).

(207) Pinheiro da Veiga, Thomé. *Pincigraphia ou descripção e historia natural e moral de Valladolid*. In his *Fastigimia*. Porto, 1911. p. 339-340, tr.

(208) Pérez Bueno. p. 491-492; Gudiol and Artífano. p. 78.

(209) Cervantes Saavedra, Miguel de. *El licenciado vidriero*. In his *Novelas exemplares*. Madrid, 1613. c<sup>o</sup>f 117.

(210) Lerma, Francisco Gómez de Sandoval y Rojas, duque de. *Descripción, e inventario de las rentas, bienes, y hacienda del cardenal Duque de Lerma*. [dated Valladolid, May 27th, 1622] no. 211, 219.

(211) Mendes Silva. f 40.

(212) [Aulnoy, Marie Catherine Jumelle de Berneville, comtesse d'] *Relation du voyage d'Espagne*. La Haye, 1691. v. 2, p. 109, 114, 137, 140-141. v. 3, p. 120.

— *The ingenious and diverting letters of the Lady—travels into Spain*. 2. ed. London, 1692. [New York & London, 1899] p. 136-137.

(213) An interchange of glassworkers between Spanish-controlled Flanders and Spain is further indicated by the adventures of a Spaniard, Francisco del Bueno, in Brussels. In 1623 he had difficulties with an Italo-Fleming, Antoine Miotti, over the right to operate a furnace making Venetian-style crystal glasses (Schuermans. 28<sup>e</sup> année, p. 220; 29<sup>e</sup> année, p. 141-142).

(214) From the archives at Venice. Another company headed by an Italo-Fleming, Guglielmo Toreata, settled at an unknown location in Castilla. Between 1689 and 1699, the master blower was an Italian, Giacomo Bertoletti (Schuermans. 29<sup>e</sup> année, p. 166-167, 141-142).

(215) Larruga y Boneta, Eugenio. *Memorias políticas y económicas sobre los frutos, comercio, fábricas y minas de España*. Madrid, 1792. v. 16, p. 222-223; Schuermans. 29<sup>e</sup> année, p. 142-143.

The prices ranged from twenty-four maravedis to one and a half reales apiece. A decree of Charles's reign established the fees at which glass of divers makes, including that of San Martín de Valdeiglesias, might be sold throughout the realm (Pérez Bueno. p. 505).

(216) France, Flanders, and other countries, Vistabella in Aragón, and San Martín de Valdeiglesias employed the same process, Danis claimed.

(217) The strongest barilla was from Cíezar (Cieza in Murcia?) and its environs, and that with the least green discolouration was from the vicinities of Murcia and Alicante; the best clay for furnaces and pots, unbreakable in high temperatures, was a mixture of the black clay, taken from a stream near Valdeiglesias and Cadalso, and a white variety from Segovia. Accompanying the text by Danis were descriptive drawings by Herranz of furnaces, crucibles, and tools (Pérez Bueno. p. 494-496). Cf. Bosarte, Isidoro. *Viage artístico á varios pueblos de España*. Madrid, 1804. v. 1, p. 93-95.

(218) Segovia (City). *Ordinances, etc. Tassa general y moderacion de precios*

de todos generos de mantenimientos, y otras cosas. Hecha en virtud de real provision de Su Magestad y señores de su real consejo. Madrid, 1680. p. 28.

(219) The most adroitly wrought Valdemarqueda goblets were valued at four reales each, as compared to six reales for true Venetian goblets of the same kind. The products of San Martín de Valdeiglesias, Recuenco, and Beteta were ordered sold at cheaper amounts (Pérez Bueno. p. 505-506). By the Villafranca indicated in the document is perhaps meant Villafranca del Panadés (Barcelona province); there are, however, several cities in Spain by that name.

(220) This is the spelling given by Larruga. Espasa (*Enciclopedia universal ilustrada europeo-americana*, Bilbao, Madrid, etc. [1928]. v. 62, p. 1288) mentions Torre de Esteban Hambrán, which is probably the same town.

(221) Larruga. v. 16, p. 223.

(222) Riaño quotes a letter sent in 1690 to Count Gondomar, then Spanish ambassador at the Court of Saint James's. Said the Count's correspondent, "Your lordship knows we have a glass oven here; this week we have made the glass called crystalline, of which I send in a basket sixteen specimens for my lady Dña. Costanza" (from the archives of the Royal Palace, Madrid, as given by Riaño. p. 240).

(223) The annual output for the factories was at this period 240,000 pieces, netting 40,000 reales. The factories continued under the ownership of the marquises of Villena, but by the late eighteenth century their number had been reduced from three to two (Larruga. v. 10, p. 53-54; Méndez, Francisco. *Noticias de la vida y escritos del Rmo. P. Mro. Fr. Henrique Florez*. Madrid, 1780. p. 265).

(224) Gudiol and Artiñano. p. 77.

(225) Pérez Bueno. p. 478, 1<sup>a</sup>.

(226) Gudiol and Artiñano. p. 76.

(227) Pérez Pastor, Cristóbal, ed. *Noticias y documentos relativos a la historia y literatura españolas*. In R. Academia española. *Memorias*. Madrid, 1910. v. 10, p. 314, 315.

(228) Rico y Sinobas. p. 48.

(229) Segovia (City). *Ordinances*, etc. p. 12, 27.

(230) Pérez Bueno. p. 505.

When the poet Garcilaso de la Vega died, he left a dozen glasses of Cadalso manufacture and thirty-one Venetian glasses that were inventoried in 1537 as having belonged to his home at Toledo (San Román, Francisco de B. de, ed. *Documentos de Garcilaso en el Archivo de protocolos de Toledo*. In R. Academia de la historia. *Boletín*. December 1918. v. 73, p. 529).

(231) In addition to the belief in state protection for industries, Philip the Fifth followed the precepts of French economists, especially Colbert, in considering that the guild system would save Spanish industry. In 1703 he required every merchant and artisan to belong to a guild. As late as 1766 the minor guilds of Madrid counted among their number the guilds of glaziers and window-glass makers (Kany, Charles Emil. *Life and manners in Madrid, 1750-1800*. Berkeley, California, 1932. p. [156], 427).

(232) An Italian opened a modest glass workshop at Madrid in 1758. He specialized in the manufacture of lamps (Pérez Bueno. p. 531).

(233) The town had had a glass furnace operating under royal permission previous to 1751, the year that it was rented to Antonio Fernández Hermosilla. The transaction between him and the town council is given in a document in which were itemized the amounts of rent for the workshop and the stone for grinding the barilla which he was to import from Murcia. There were stated also the yearly quantities of firewood, barilla, and sand needed, the numbers of workers and their duties, the firepots and tools required. A compound for clearing the glass of unwanted colouration was to be brought from Aragón. After all the expenses had been paid, the industry was supposed to net at least 100,000 *reales* annually. Eleven years later Fernández Hermosilla bought it outright. The privilege of conferring upon the factory the title *Real* was granted in 1763. In the same year the mayor of Cuenca pronounced to the Board of Commerce that Vindel's glass ranked high with that made at other factories. The establishment furnished employment to the entire population of the town and the adjacent village, Alcántud (Larruga. v. 19, p. 287-291; Pérez Bueno. p. 481-482; Gudiol and Artiñano. p. 71).

(234) Recuenco glass was reported to be insufficiently strong to hold beer and other liquors by a contemporary, Antonio Manso Bustillo. He requested that he might establish a glass furnace at Santander for the manufacture of beer bottles, but his petition was refused (Pérez Bueno. p. 524). The glass salesmen of Recuenco, vending their goods at Madrid, stopped at the inn called *La Gallega* on the *Calle Angosta de San Bernardo* (Cavestany, Julio. *De los viajes retrospectivos. iii Las posadas*. In *Sociedad española de excursiones. Boletín*. December 1931. año 39, p. 290).

(235) In 1772 foreign artisans were permitted to settle in Spain at their trades without paying a special tax or undergoing examinations (Chapman, Charles Edward. *A history of Spain*. New York, 1918. p. 417).

Two Muranese glassworkers, Acquabona and Z. Ant. Vitori *detto* Gazzabin, found their way to Madrid from Innsbruck in 1770, so wrote the Venetian ambassador, and another of their countrymen, Domenico Gazzabin, fled the Court of Madrid where he had been making glass (Schuermans. 29<sup>e</sup> année, p. 142).

Conditions developed to such a state that "... some Spaniards pretended to be foreigners, and assumed French names in order to enhance the value of their shops and their goods in the eyes of the public" (Kany. p. 161).

(236) Larruga. v. 19, p. 260-287.

(237) Madoz. v. 5, p. 111, tr.

Glass made with sulphate of soda was produced at Aranjuez in 1829. The neighbouring towns of Avila province formed the markets for the crystalline sheetglass and hollow ware from Collado de Contreras (Pérez Bueno. p. 533).

(238) A commercial fabric at Arbeteta, first noted in the late eighteenth century, was still making bottles, vases, *porrones*, and windowpanes in 1845 (Larruga. v. 19, p. 260; Madoz. v. 2, p. 459; Muñoz y Soliva, Trifón. *Noticias de todos los Ilmos. Señores obispos que han regido la diócesis de Cuenca*. Cuenca, 1860. p. 413). Vindel had one factory for crystalline glass, but the Carlists seized it in 1840 for a munitions factory (Madoz. v. 16, p. 326-327).

(239) Count Alexandre de Laborde considered Recuenco and Pajarejos (Segovia province) the best centres of the glass industry in Castilla. Crystal glasses made at the two towns were supplied even to neighbouring provinces (*His Itinéraire descriptif de l'Espagne*. Paris, 1827-29. v. 1, p. 383; v. 5, p. 561; Madoz. v. 13, p. 390).

(240) Tomás del Burgo opened his factory in 1712, and Juan Bautista Pomeray, although granted royal protection in 1718, did not successfully conclude his plans.

(241) Goyeneche and his heirs were given complete freedom for thirty years to maintain in the vicinity as many factories as they needed to make mirrors, hollow vessels, and windowpanes. Other individuals attempting to operate competitive establishments within the kingdom would be liable to penalty of a heavy fine and the threat of the factory's destruction. Complete freedom from personal taxation was offered all the officials and workmen at the Nuevo Baztán factory, and its products escaped taxes at Madrid and other cities of the kingdom. No duties or imposts need be paid on barilla, firewood, and other materials.

(242) The preliminary cutting of glass was done by pressing the objects against revolving stone wheels, or iron wheels fed with damp sand and emery. They varied in size and their edges were either rounded, V-shaped, or flat. The glass surfaces left rough and white by cutting were polished with an earthy powder flowing over wheels made of wood or felt. The engraving was executed by means of copper wheels, of which the highly skilled artisan employed scores, all different in diameter and thickness. An abrasive of emery powder mixed with oil dripped on the wheels as the engraver pressed the glass upward against the revolving edge.

(243) The tumbler now belongs to the *Museo Arqueológico Nacional*, Madrid.

(244) Larruga. v. 10, p. 54-63; Artífano. *La fabricación de vidrio en el Nuevo Baztán*. In *Arte español*. 1929. año 18, p. 427-429.

(245) Gerspach, Edouard. *L'art de la verrerie*. Paris [1885]. p. 304. (Bibliothèque de l'enseignement des beaux-arts)

(246) Ponz, Antonio. *Viage de España*. 2. ed. Madrid, 1787. v. 10, p. 181.

(247) Cruz y Bahamonde, Nicolás de la, conde de Maule. *Viage de España, Francia, é Italia*. Cádiz, 1812. v. 12, p. 19-21.

(248) Espinalt. v. 6, p. 34.

(249) Cruz. v. 12, p. 20.

(250) The earth was also known by the name of the town from which it came.

Dillon, Sir John Talbot. p. 355, 411; Breton de la Martinière, J. B. J. *L'Espagne et le Portugal*. Paris, 1815. v. 2, p. 186-187.

(251) They belong to the collections of the *Museo Arqueológico Nacional*, Madrid.

(252) Larruga. v. 13, p. 274; Ponz. v. 10, p. 179-185.

(253) [Caimo, Norberto] *Voyage d'Espagne, fait en l'année 1755*. Paris, 1772. pt. 2, p. [49]-50, *tr.*

(254) Dowling operated a factory of cutlery at San Ildefonso, employing workmen chiefly from Birmingham, England, to make knives and razors. The Marquis

of Langle stated in 1785 that Dowling had been thrown into prison two years previously (Twiss, Richard. *Travels through Portugal and Spain, in 1772 and 1773*. London, 1775. p. 87; [Fleuriot, Jean Marie Jérôme, *called* marquis de Langle] *Voyage en Espagne*. [n.p.] 1785. v. 1, p. 26-27).

Connected with the factory, other foreigners whose names are known were Juan Sivert, Mateo Daudin(?), an engraver, Piquer who experimented in coloured glasses, and Bernard Ward and Joseph Lauthier(?), both directors. The names of certain Spanish workmen are known: Francisco Chilo, José Busquet, enameleer, and Juan Vel and Manuel Sac, engravers (Rico y Sinobas. p. 54, 50; Pérez Bueno. p. 516, 517).

(255) Bourgoing, Jean François, *baron de. Tableau de l'Espagne moderne*. 4. ed. London, 1808. v. 1, p. 211, *tr.*

(256) *Ibid.* p. 210-213.

(257) Pérez Bueno. p. 523; Bourgoing. p. 213; Dalrymple, William. *Travels through Spain and Portugal in 1774*. London, 1777. p. 36.

(258) Dalrymple. p. 40.

(259) Méndez. p. 250.

(260) Southey, Robert. *Letters written during a short residence in Spain and Portugal*. Bristol, 1797. p. 185-186, 190.

(261) They are in the Museo Arqueológico Nacional, Madrid, and the Kelvingrove Art Galleries and Museum, Glasgow.

(262) They belong to the Victoria and Albert Museum, London, accession nos. 353-1873, 354-1873, 355-1873.

(263) Pérez Bueno. *Real fábrica de cristales de San Ildefonso (La Granja): antecedentes y apuntes para su historia*. In *Arte español*. 1926. año 15, p. 15, *tr.*

(264) [Peyron, Jean François] *Nouveau voyage en Espagne, fait en 1777 et 1778*. Londres, Liège, 1783. v. 2, p. 122, *tr.*

(265) Ezquerro del Bayo, Joaquín. *La duquesa de Alba y Goya*. Madrid, 1928. p. 293-295.

The grandson of the painter, Mariano Goya, wrote to Valentín Carderera concerning the tumbler which the antiquarian purchased. It was acquired directly from Señor Carderera's heirs by Señor Ezquerro del Bayo.

(266) Pérez Bueno. *Vidrio*. p. 517.

(267) Sauzay, Alexandre. *Wonders of glass-making*. New York, 1885. p. [159]-160. (Wonders of art and archaeology)

(268) Pérez Bueno. *Vidrio*. p. 522.

(269) The Victoria and Albert Museum has a tumbler engraved with the name F<sup>te</sup> NYCOLAS DE MADRID, the Glasgow Museum another inscribed in gilt, D<sup>te</sup> MARIA GIL. Señor Pérez Bueno has a tumbler dated 1790 that belonged to D<sup>te</sup> TERESA TEXEIRO and another with the name D<sup>te</sup> MARIA GUTIERREZ. In the *Musée des Arts Décoratifs*, Paris, is a tumbler, with gilt floral and landscape decorations, inscribed D<sup>te</sup> FELIX RUIZ.

(270) Pérez Bueno. *Vidrio*. p. 528.

(271) Peyrun. v. 2, p. 122, *tr.*

(272) Townsend, Joseph. *A journey through Spain in the years 1786 and 1787*. London, 1791. v. 2, p. 114.

(273) For five years (1791-1795) in Galicia alone were imported from Bohemia 42,000 dozen hollow vessels, 8,000 dozen crystalline glasses, 4,000 glass jars, and more than 1,000 crystal lamps (Pérez Bueno. *Vidrio*. p. 523-524).

(274) The pieces were to be from twenty to thirty per cent cheaper than during the previous year. Later in the century a new tariff decreed still lower prices for La Granja glass (Pérez Bueno. *Vidrio*. p. 520).

(275) Larruga. v. 13, p. 276-279.

(276) Pérez Bueno. *Vidrio*. p. 527.

(277) Cruz. v. 12, p. 22.

(278) Pérez Bueno. *Vidrio*. p. 517.

Two Spaniards set up a glass workshop on the *Calle de Toledo* in 1765. Several years later two companions joined them in forming a company for the manufacture of small glass objects, optical supplies, and *bielots* of metal, shell, and ivory (Pérez Bueno. *Vidrio*. p. 531-532).

(279) In 1763 the storeroom was in the *Puerta del Sol*; twenty-two years later the home of the Count of Altares on the *Calle del Turco* was purchased to serve as showroom for La Granja glassware (Pérez Bueno. *Vidrio*. p. 530-531; *idem*, *Real fábrica*. p. 14).

(280) *Paseo por Madrid, ó Guía del forastero en la corte*. Madrid, 1815. p. 93.

(281) Fagoaga, José de and Muñico, Tomás. *Descripción de los reales sitios de San Ildefonso, Valiain y Riofrio*. Segovia, 1845. p. 194, *tr.*

(282) *Ibid.* p. 199-200.

(283) Breñosa y Tejada, Rafael and Castellarnau y de Llopart, Joaquín María de. *Guía y descripción del real sitio de San Ildefonso*. Madrid, 1882. p. 53, *tr.*

(284) Fagoaga and Muñico. p. 195-196.

(285) Schuermans. 23<sup>e</sup> année, p. 20; 29<sup>e</sup> année, p. 101, 141-142, 166-167.

(286) *Description de la ville de Liébonne*. Paris, 1730. p. 227.

(287) [Beckford, William] *Recollections of an excursion to the monasteries of Alcobaca and Batalha*. London, 1835. p. 28.

(288) Schuermans. 27<sup>e</sup> année, p. 264; 29<sup>e</sup> année, p. 167.

(289) Dillon, Edward. p. 285-287.

(290) Quelle. jahr. 11, p. 389.

(291) Cf. p. 61, 63 of this book.

(292) Hoffmansegg, Johann Centurius von Hoffmann, graf von. *Voyage en Portugal*. Paris, 1805. v. 3, p. 255.

- (293) Beckford. p. 173-174.
- (294) *Description . . . de Lisbonne*. p. 218.
- (295) [Merveilleux, — de] *Mémoires instructifs pour un voyageur*. Amsterdam, 1738. v. 2, p. 160.
- (296) Hoffmansegg. p. 255.
- (297) Murphy, James Cavanah. *Travels in Portugal*. London, 1795. p. 83.
- (298) Dalrymple. p. 132; Link, Heinrich Friedrich. *Voyage en Portugal depuis 1797 jusqu'en 1799*. Paris, 1803. v. 1, p. 379.
- (299) Hoffmansegg. p. 255-257.
- (300) Balbi, Adrien. *Essai statistique sur le royaume de Portugal et d'Algarve*. Paris, 1822. v. 1, p. 459-460, tr.
- (301) Kinsey, William Morgan. *Portugal illustrated*. London, 1828. v. 1, p. 209.
- (302) Balbi. p. 460.
- (303) *Ibid.* p. 433, 435.
- (304) *Portugal and Galicia*. London, 1836. v. 1, p. 101.
- (305) Giner de los Ríos, Francisco and Hermenegildo. *Portugal, impresiones para servir de guía al viajero*. Madrid [1888]. p. 248-249; Jackson, Catherine Hannah Charlotte (Elliott) lady. *Fair Lusitania*. London, 1874. p. 53-54.
- (306) [Ferreira Pinto Basto, J. T.] *A fábrica da Vista Alegre; o livro do seu centenário, 1824-1924*. [Lisbon: 1924] p. 85, note 1.
- (307) *Ibid.* p. 50.
- (308) *Ibid.* p. 50.
- (309) Terreros y Vinent, M. R. de, marqués de San Francisco. *Las artes industriales en la Nueva España*. Mexico, 1923. p. 175. (El arte en México)
- (310) López de Gómara, Francisco. *Historia general delas Indias* [with] *la conquista de Mexico*. Medina del Campo, 1553. pt. 2. ccf cxxxviii.
- (311) Terreros y Vinent. p. 175-176, tr.
- (312) *Ibid.* p. 176.
- (313) López de Gómara. f xciii.
- (314) Barrio Lorenzot, Juan Francisco del. *El trabajo en México durante la época colonial. Ordenanzas de gremios de la Nueva España*. Mexico, 1920. p. 264-265.
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- (316) Gudiel Ricart. p. 157.
- (317) Terreros y Vinent. p. 176; Bullock, William. *Six months' residence and travels in Mexico*. London, 1824. p. 100-102.

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(320) Villa Sánchez, Juan de. *Puebla sagrada y profana. Informe dado a su muy ilustre ayuntamiento el año de 1746.* Puebla, 1835. p. 42.

(321) Pérez Bueno. p. 523.

(322) Schuermans. 29<sup>e</sup> année, p. 139.

(323) Pérez Bueno. p. 524.

(324) Cf. p. 112-113 of this book.

(325) Jacob. p. 186.

(326) Quelle. jahr. 11, p. 390; jahr. 10, p. 318.

(327) Schuermans. 26<sup>e</sup> année, p. 356; 29<sup>e</sup> année, p. 172.

(328) Fischer, Christian August. *Neuestes gemälde von Brazillen.* Leipzig, 1819. v. 1, p. 20.

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# INDEX

- Aarsens, Frans van, 174  
 Abeyar, Miquel, 23  
 Abolais. *El lapidario*, 5  
 Abrantes (Portugal), 117  
 Alimad ibn Muhammad, *Al-Mahhar*, 176  
 Alba, Maria Teresa de Silva, *duchess of*, 109  
 Albera (Roussillon), 175  
 Alburquerque, Duke of *see* Cueva, Beltrán de  
   *la, 3rd duke of Alburquerque*  
 Alcalá de Henares (Madrid), 101  
 Alcalá la Real (Jaén), 71  
 Alcántud (Cuenca), 186  
 Alcira (Castellón de la Plana), 60  
 Alexandria, 20  
 Alfonso II, *king of Aragón*, 21  
   *Tomb of*, 14, 173  
 Alfonso V, *king of Aragón*, 6, 176  
 Alfonso X, *king of Castilla and León*, 5  
 Alhama (Murcia), 25, 26  
 Alicante, 46, 60, 61, 63, 64, 171, 180, 184  
 Almagro, 104, 106, 187  
 Almanzora river, 63  
 Almatret (Lérida), 65  
 Almazarrón (Murcia), 104  
 Almería (city), 25, 74, 75, 76, 79, 92, 183  
 Almería (province), 76, 141, 143, 145  
 Altare, 37, 38, 117, 125, 178  
 Altarea, Count of, 189  
 Amat, *Father Bartomeu*, 56  
 Amatller Collection, Barcelona, 35, 59, 64  
 Amposta (Tarragona), 63  
 Amsterdam. *Rijksmuseum*, 57, 59, 181  
 Audalucia, 64, 74, 79, 97  
 Andorra, 171  
 Animal (T363), 79, 145  
 Anna of Austria, *queen of Spain*, 34, 177  
 Annealing of glass, 4, 102, 104, 106  
 Anthony of Padua, *Saint*, 14, 63, 73-74  
 Antic, Box d', 64  
 Antoni de Lisboa, *Saint*, 63  
 Antwerp, 37, 38  
 Aragón, 3, 21, 23, 26, 33, 60, 64, 98, 104, 186  
 Aragonese School. *Retable of the Visitation*  
   (A17), 17  
 Aranjuez, 186  
   *Royal Palace*, 106  
 Arbeteta (Guadalajara), 98, 186  
 Atreus de Mar (Barcelona), 177  
 Armallones (Guadalajara), 92, 98  
 Arroyo de los Molinos (Jaén), 74  
 Aulnoy, Marie Catherine Jumelle de Berneville,  
   *comtesse d'*, 88  
 Austria, Archduke of, 63  
 Aveiro (Portugal), 120, 121  
 Avila (province), 26, 186  
 Baar, Armand. Collection, Liège, 145, 179, 183  
 Baccarat glass *see* Glass, Baccarat  
 Badalona (Barcelona), 174  
 Bages, San Benito de *see* San Benito de  
   Bages, Monastery of  
 Bailén (Jaén), 74  
 Balsain (Segovia), 112  
 Bañolas (Gerona). Monastery of *San Esteban*,  
   3, 171  
 Barcelona (city), 5, 6, 9, 10, 17, 18, 20, 22,  
   23, 26, 33, 34, 35, 37, 41, 42, 45, 50,  
   57, 65, 71, 83, 84, 89, 173, 174, 176,  
   177  
   *Arxiu Municipal Històric*, 172, 177  
   *Biblioteca del Seminari*, 178  
   *Calle de la Vidriera*, 5  
   *Calle de las Vidrieras*, 5, 55  
   Cathedral, 35  
   Chapel of the Guardian Angel and Saint  
     Bernardino, 6  
   Church of *Sant Joan*, 173  
   Diocesan Museum, 50  
   Monastery of the Minorites, 6  
   *Museu d'Art de Catalunya*, 42, 45, 56, 59,  
     174, 175, 180  
   Cabot Collection, 44, 56, 57, 75, 91, 181  
   Plandiura Collection, 55, 56  
 Barcelona (province), 9, 153, 155  
 Barilla, 5, 22, 26, 46, 63, 64, 65, 74, 89, 104,  
   112, 119, 171, 180, 184, 186, 187  
 Bassa, Ferrer, 17  
 Bayè (France), 117, 125  
 Bayonne (France), 125  
 Beçet, Pere, *baillif of Catalunya*, 20  
 Beckford, William, 117  
 Beirut, 20  
 Bellafior (Sevilla), 71  
 Benasal (Castellón de la Plana), 176  
 Benet (Barcelona), 65  
 Berard, Joanna de, 180  
 Berard y de Palou, Hugo de, *royal procurator*  
   *of Mallorca*, 41, 43, 179, 180  
 Berlin. *Die Staatlichen Museen*, 181  
 Bernardino, *Saint*, 6  
 Bernui (Segovia), 104  
 Beteta (Cuenca), 92, 185  
 Bilbao, 60

Birmingham (England), 187  
 Blowing of glass *see* Glass blowing  
 Bohemian influence *see* Glass, Bohemian;  
     Glassmakers, Bohemian  
 Bonilla, Victorino, 60  
 Borrassà, Lluís, 13  
 Boston, Museum of Fine Arts, 109  
 Bottles  
     (T365), 76, 143  
     (T437), 63  
     (T442), 63  
 Breda, Homilies of, 171  
 Brescia, 37  
 Bristol (England), 125  
 Brussels, 184  
 Buckley Collection *see* London, Victoria and  
     Albert Museum, Buckley Collection  
 Buenos Aires, 125  
 Buffalo, The Buffalo Historical Society, 155  
 Burgos, Cathedral, 92  
 Burgos School, *The Epiphany*, 29  
 Busot (Alicante), 24, 63  
  
**C**  
 Cabot Collection, Barcelona *see* Barcelona-  
     Museu d'Art de Catalunya, Cabot Col-  
     lection  
 Cabrà (Córdoba), 73  
 Cadalso de los Vidrios (Toledo), 26, 29, 37,  
     71, 83, 84, 87, 88, 90, 91, 92, 97, 149,  
     184, 185  
 Cádiz, 60, 61, 73, 80, 112, 113, 125  
 Cala (Huelva), 71  
 Calatrava, Order of, 92  
 Caldas da Rainha (Portugal), 118  
 Cantigas de Santa Maria, 26  
 Cántir (T358), 67, 137  
 Cardener y Solano, Valentín, 188  
 Cardona, Duke of, 38  
 Carroc, Esteban de, 50  
 Cartagena (Murcia), 60, 64, 79, 80, 104, 106  
 Caspe (Zaragoza), 21, 60, 181  
 Caszterres, Monastery of *Sant Pere de*, 171  
 Castilla, 5, 26, 29, 33, 64, 76, 83, 84, 91, 92,  
     97, 98, 184, 187  
     Arms of, 51  
 Casting of glass, 80, 104  
 Castril de la Peña (Granada), 26, 74, 79, 92,  
     147  
 Catalan School, *Retable of the Transfigura-  
     tion. The Marriage at Cana*, 13, 178  
 Cataluña, 3, 4, 5, 13, 14, 17, 18, 20, 21, 24,  
     26, 29, 33, 34, 36, 37, 38, 42, 45, 50,  
     51, 56, 59, 63, 64, 65, 98, 110, 123,  
     133, 135, 137, 139, 171, 175  
 Catholic kings, 26, 33, 180  
     *see also* Ferdinand V, of Castile, king  
     of Spain; Isabel I, La Católica, queen of  
     Spain  
 Cavanilles, Antonio, 24, 63  
 Cebrenos (Ávila), 90

Cervantes Saavedra, Miguel de. *El licenciado  
     vidriero*, 87  
 Cervelló (Barcelona), 177  
 Cervera (Lérida), 20, 36  
 Charles V, emperor of the Holy Roman Em-  
     pire and king of Spain, 33, 38, 84, 123  
 Charles II, king of Spain, 34, 88, 89, 92,  
     174, 184  
 Charles III, king of Spain, 61, 96, 97, 106,  
     108, 109, 110, 112  
     Cross of, 80  
 Charles IV, king of Spain, 63, 109  
 Chopitea Collection, Barcelona, 43, 44  
 Churriguera, José, 101  
 Cieza (Murcia), 184  
 Cíeraz, 184  
 Coats of arms, 51, 55, 56, 59, 61, 102, 106,  
     108, 117, 120, 121, 123, 178, 180  
 Cobos, Domingo, 60  
 Cock, Henry, 34  
 Colbert, Jean Baptiste, 185  
 Collado de Contreras (Ávila), 186  
 Colonia, Santa *see* Queralt, Pere de, Lord of  
     Santa Coloma  
 Colonius  
     Portuguese, 117, 120, 125  
     Spanish, 60, 102, 112-113, 121-126  
 Corbera de Llobregat (Tarragona), 36, 182  
 Córdoba (city), 14, 71  
 Córdoba (province), 73  
 Córdoba, Pedro de. *The Annunciation*, 14  
 La Coruña, 60  
 Crackle glass *see* Glass, Frosted  
 Crivillén (Teruel), 64  
 Crown glass *see* Glass, Crown  
 Cruilles, Castle of, 9  
 Crystals, Venetian, 37, 38, 41, 51, 83, 184  
     *see also* Glass, Crystal  
 Cuéllar (Segovia), 84  
 Cuenca (city), 92, 95, 186  
 Cuenca (province), 98  
 Cuenca mountains, 83, 92, 102  
 Curva, Beltrán de la, 3rd duke of  
     Alburquerque, 43, 49, 52, 84, 180  
 Cup (T355), 92, 149  
 Cut glass *see* Glass, Cut; Wheel-engraving  
     on glass  
  
**D**  
 Damascus, 20, 21, 23  
 Davillier, Jean Charles, baron, 75  
 Decanter (T428), 109, 161  
 Diamond-point etching on glass, 5, 38, 50  
 Dowling, John, 104, 187-188  
  
**E**  
 Ebro river, 65  
 Elche (Alicante), 23, 24  
 Elizabeth, Saint, 17  
 Elne (Roussillon), 22  
 Enameling on glass *see* Glass, Enamelled  
 Enamels, Composition of, 51-52, 110

- Encamp (Andorra), 171  
 Church of *Sant Romà de les Bons*, 171  
 English influence *see* Glass, English; Glass, English-style; Glassmakers, English  
 Engraving *see* Glass, Engraved; Wheel-engraving on glass  
 Escorial, Monastery of *San Lorenzo del*, 83, 89  
 Esglésies, Gabriel, 179  
 Espalargues, Pere. *Retablo* (A5). *The Presentation*, 13-14  
 Espina Collection, Barcelona, 57, 181  
 Espinosa, Jerónimo Jacinto. *Saint Peter Paschal Celebrating Mass*, 42  
 Espinosa, Juan Bautista de. *Still Life*, 87  
 Esplugas de Francolí (Tarragona), 41  
 Estany (Barcelona), Monastery of *Santa Maria de l'Estany*, 21  
 Exportations *see* Glass, Exportation of  
 Extremadura, 97  
 Eyeglasses, 5, 49, 88, 92, 110, 111, 189  
 Ezquerro del Rayo, Joaquín, 188
- Fairs**, 26  
 Glass, 6, 34  
 Ferdinand III, *king of Castilla and León*, 3  
 Ferdinand V, *el Católico*, *king of Spain*, 10, 33  
 Ferdinand VI, *king of Spain*, 96, 108  
 Ferdinand VII, *king of Spain*, 113, 114  
 Ferdinand I, *king of the Two Sicilies*, 106  
 Arms of, 106  
 Feria, Count of, 59, 178  
 Fernández de Córdoba, Diego, 92  
 Fernando of Austria, *cardinal-infante*, 34  
 Ferreira Pinto Basto, José, 119-120  
 Ferrol (La Coruña), 60  
 Flashing of glass, 14, 104  
 Flasks  
 (T354), 76, 79, 141  
 (T362), 75, 79, 147  
 (T364), 75, 76, 143  
 Flemish influence *see* Glass, Flemish; Glassmakers, Flemish  
 Fleuriot, Jean Marie Jérôme, *called* *marquis de Langle*, 187-188  
 Flint glass *see* Glass, Flint  
 Flis (Tarragona), 9  
 Fogosa, Castell de, 178-179  
 Chapel of *Sant Antoni*, 42-43  
 Fortuny y Marsal, Mariano José María Bernardo, 75  
 Francis of Assisi, Order of Saint, 56  
 French influence *see* Glass, French; Glass, French-style; Glassmakers, French  
 Frosted glass *see* Glass, Frosted

Galicia, 97, 112, 189  
 Garcilaso de la Vega, 185  
 Gardeny (Lérida), 20  
 Genoa, 37, 46, 84

- German influence *see* Glass, German; Glass, German-style; Glassmakers, German; Glass traders, German  
 Gerona (city), Church of *San Feliú*, 171  
 Gerona (province), 9  
 Gil, Maria, 188  
 Gil, Father Pere, 37, 46-49, 50, 180  
 Gilding on glass *see* Glass, Gilded  
 Girgós, Pere, 172  
 Glasgow, Kelvingrove Art Galleries and Museum, 67, 75, 76, 108, 141, 145, 188
- Glass**  
 Alexandrine, 20  
 Baccat, 119  
 Bohemian, 61, 101, 112, 118, 119, 120, 125, 189  
 "Crisaled", 95, 151  
 Crown, 14, 17  
 Crystal, 46, 49, 50, 64, 65, 71, 74, 80, 83, 88, 89, 97, 98, 101, 102, 103, 106, 108, 109, 110, 112, 113, 114, 118, 119, 120, 121, 123, 125, 126, 183, 185, 186, 187, 189  
*see also* Crystallo, Venetian  
 Cut, 61, 80, 103, 106, 108, 114, 119, 120, 121, 123, 126  
*see also* Wheel-engraving on glass  
 Damascene, 20-21, 23, 51  
 Damascene-style, 21, 23  
 Enameled, 5, 18, 20-21, 23, 33, 41, 42, 43-44, 45, 50, 51-59, 61, 63, 75, 110, 117, 120, 131, 133, 135, 179, 180, 188  
 English, 112, 119, 120, 121, 125  
 English-style, 67, 102, 109, 119, 161  
 Engraved, 5, 20, 61, 63, 102, 106, 108, 109, 110, 111, 114, 117, 123, 133, 155, 157, 159, 161, 163, 165, 167, 178, 188  
*see also* Diamond-point etching on glass; Glass, Cut; Wheel-engraving on glass  
 Flemish, 18, 71, 73, 108, 112, 117, 125  
 Flint, 119  
 French, 67, 92, 112, 117, 119, 120, 123, 125  
 French-style, 103, 109  
 Frosted, 38, 50-51, 59, 178, 180  
 German, 18, 49, 57, 60-63, 67, 84, 101, 113, 117-118, 123, 125  
 German-style, 61, 63, 103, 108, 121, 157  
 Gilded, 5, 20, 33, 41, 42, 44, 45, 52, 57, 59, 63, 81, 92, 109, 110, 113-114, 119, 120, 121, 123, 126, 131, 133, 135, 153, 155, 157, 159, 161, 163, 165, 167, 178, 179, 180, 188  
 Gothic, 17, 45  
 Irish, 121  
 Italian, 49, 57, 73  
*see also* Glass, Muranesco; Glass, Venetian; *Vetro di trina*  
 Italian-style, 41, 46, 52  
 Lace *see* *Vetro di trina*

Glass (*continued*)

- Lamp, 46-49  
 Latticino, 38, 42, 44, 49-50, 60, 61, 65, 71, 76, 91, 110, 114, 117, 179  
*see also Vetro di teina*  
 "Marble", 91, 92  
 Millefiori, 90  
 Moorish-style, 21, 25, 26, 59, 74, 75, 76  
 Mould-blown, 41, 44, 45, 59, 65, 102, 103, 126, 155, 159  
 Moulded, 65, 110, 119, 121, 131  
 "Muff", 17  
 Muranese, 50, 103  
*see also Glass, Italian; Glass, Venetian; Vetro di teina*  
 Near-Eastern, 20-21, 23, 51  
 Netherlandish, 63  
 Pressed, 63, 121  
*see also Glass, Moulded*  
 Syrian, 20-21, 41, 75, 175  
 Venetian, 23, 37-38, 42, 49-50, 59, 67, 71, 74, 83, 84, 88, 91, 92, 103, 110, 117, 123, 178, 185  
*see also Glass, Muranese*  
 Venetian-style, 29, 37-38, 41, 42, 45, 49, 51, 57, 59, 65, 71, 74, 83, 88, 89, 90, 91, 117, 123, 178, 184  
 Exportation of, 37, 60-63, 97, 102, 112-113, 120, 121, 125, 125  
 Importation of, 14, 18-20, 29, 37, 38, 43, 44, 49, 60-63, 67, 71, 83, 84, 89, 91, 92, 101, 102, 112-113, 117-118, 119, 121, 121, 125  
 Treatises on, 4-5, 46-49, 50, 89  
 Glass backgrounds for sculpture, 14  
 Glass blowers *see* Glassmakers  
 Glass blowing, 4, 13, 14, 17, 45, 46, 49, 50-51, 65, 68, 79, 80, 83, 88-89, 91, 95, 98, 103, 133, 135, 137, 139, 147, 153, 155, 157, 163, 165  
 Glassmakers  
 Altarist *see* Glassmakers, Italian  
 Andalusian, 71, 76  
 Botia, Vicente, 74  
 López de Porras, Diego, 71  
 Martínez, Juan, 74  
 Ribera, Alonso de, 71  
 Rodríguez, Juan, 71  
 Valarino family, 80, 183  
 Aragonese  
 Rigal, Blas, 64  
 Vidal of Caspe, 181  
 Bohemian, 61, 103  
 Castilian, 20, 83, 90, 183-184  
 Buena, Francisco del, 184  
 Burgo, Tomás del, 187  
 Busquet, José, 110, 188  
 Chilo, Francisco, 188  
 Danis, Juan, 89, 95, 184  
 Dorado, Diego, 95-96, 97, 117

Glassmakers, Castilian (*continued*)

- Dorado, Diego, *the younger*, 97  
 Dorado, Joaquín, 97  
 Espinosa, Francisco, 83-84  
 Espinosa, Hernando, 83  
 Fernández, Pedro, 183  
 Fernández Hermosilla, Antonio, 96, 186  
 Girado, José, 113  
 Goyeneche, Juan de, 101, 102, 187  
 Herranz, Francisco, 89, 184  
 López, Bartolomé, 183  
 López de Aragón, Fernando, 95  
 Núñez, Tomás, 183  
 Ovando, Antonio de, 90, 91, 92  
 Pomeraye, Juan Bautista, 187  
 Ramos, Félix, 114  
 Sac, Manuel, 188  
 Sit, Ventura, 96, 102-103, 104, 109  
 Torcada, Guillermo, 89  
 Vel, Juan, 188  
 Velilla, Blas, 113  
 Catalan, 46, 83, 89, 90, 176  
 Agut, Josep, 36  
 Alies, Joan, 35  
 Arniguet, Felip, 35-36  
 Andreu, Josep, 177  
 Badarc, Gabriel, 36  
 Barceló, Guillem, 5, 22  
 Busquet, José, 110, 188  
 Calcina, Benet, 36  
 Casallús, Josep Martí, 177  
 Cubella, Joan, 178  
 Flor, Pau, 36  
 Font, Bernat, 178  
 Frontvila, Pere, 65, 104  
 Galcerán of Quejigal, 84  
 Gallart, Pere, 6  
 Gralla, Antoni, 36  
 Granada, Damià, 9  
 Guillem of Barcelona, 5  
 Guillem of Poblet, 4  
 Guillem, Narcís, 177  
 Guinda, Jaume, 36  
 Llorens, Asbert, 9  
 Mate, Pere, 9  
 Monte of Barcelona, 5  
 Oliver, Jaume, 6  
 Patau, Pere, 177  
 Reniu, Pere, 177  
 Roger, Jaume, 9  
 Roig, Joan, 177  
 Roselló, Pau, 36  
 Sala, Ramón, 177  
 Sala family, 9  
 Sit, Ventura, 96, 102-103, 104, 109  
 Soler, Francesc, 177  
 Soler, Jaume, 177  
 Verdaguier, Joan, 35  
 Vergonyó, Montserrat, 36  
 Vespi, Alexandre, 5

Glassmakers, Catalan (*continued*)

- Vila, Pere, 177  
 Xatart, Berenguer, 21  
 Xatart, Joan, 36  
 Xatart, Martí, 22  
 Xatart, Pere, 9  
 Xatart family, 36  
 English, 46, 102, 120  
 Flemish, 17, 46, 83, 88, 107  
 Carré, Jean, 180  
 Hardy of Liège, 88  
 Lambotte, Dieudonné, 88  
 Verné, Louis, 117  
 Zoude, Sébastien, 64, 117  
 French, 17, 46, 80, 103, 118, 180  
 Berger, Antoine, 103  
 Daudin (?), Mateo, 188  
 Jaubert, Barthélemy, 175  
 Piquer of France (?), 188  
 Rossoli, Miquel, 36  
 Savertés, Jaume, 9  
 Scuder, Joan, 36  
 Seigne, Claude, 103  
 Sivert, Dionísio, 103  
 Sivert, Juan, 188  
*see also* Glassmakers, Norman  
 German, 61, 97, 103, 117  
 Brun, Sigismund, 107, 108, 109  
 Miller, Franz, 120  
 Granadine *see* Glassmakers, Andalusian  
 Italian, 29, 37-38, 73, 83, 90, 103, 117, 120, 125, 178, 186  
 Acquabona of Murano, 186  
 Ballarín family, 178  
 Bantoleto, Santiago, 88-89  
 Barrouier, Domingo, 37-38  
 Bertoletti, Giacomo, 184  
 Bertolucci, Prospero, 38  
 Canet, Francisco, 178  
 Costa, Francesco, 117  
 Ferro family, 178  
 Gazzabini, Domenico, 186  
 Miotti, Antoine, 184  
 Moro, Domenico, 178  
 Moro, Marino, 178  
 Neri, Antonio, 52, 80  
 Pellizari, Antonio, 88, 117  
 Perotto, Giuseppe, 38  
 Piave (?), Antonio di, 178  
 Piave *da* Vissiga, Mattio di, 178  
 Pisano, Giovanni Battista, 38  
 Serena of Murano, 38  
 Serena, Alvise, 178  
 Sol, Antonio del, 178  
 Torcata, Guglielmo, 184  
 Varaldo of Italy, 38  
 Vitori *ditta* Gazzabini, Z. Ant., 186  
 Zanattino, Secondino, 38  
 Italo-Fleming *see* Glassmakers, Italian

Glassmakers (*continued*)

- Mallorcan  
 Coloma, Nicholau, 22  
 Joan de Mallorca, 9, 22  
 Mexican, 123  
 Espinosa of Puebla de los Angeles, 121  
 Moorish, 75  
 Muranese *see* Glassmakers, Italian  
 Netherlandish, 61  
 Norman, 64, 180  
 Norwegian  
 Eder, master, 103, 108  
 Eder, Joseph, 103  
 Eder, Laurence, 103  
 Portuguese  
 Cruz e Costa, João, 120  
 Ferreira Pinto Basto, José, 119-120  
 Ferreira Ribeiro, João, 120  
 Souza e Oliveira, José de, 119  
 Sevillian *see* Glassmakers, Andalusian  
 Toledan *see* Glassmakers, Castilian  
 Valencian  
 Camporelles, Bernat, 23  
 Castell, Francesch, 24  
 Gil of Elche, 24  
 Torres, Nadal, 23-24  
 Venetian *see* Glassmakers, Italian  
 Glass pastes, 4-5, 18, 22, 25-26, 45-46, 74, 79, 89, 95, 102, 109, 119, 123, 131, 139, 141, 143, 145, 147, 149, 151, 153, 186  
 Glass traders, German, 60-61, 117, 125  
*see also* Rautenstrauch, Augustin; Sohier, J. Christof  
 Goblets  
 (T352), 41, 131  
 (T353), 52, 135  
 Golden Fleece, Order of the, 84, 102  
 Gondomar, Count, 185  
 Gondomar, Costanza, countess, 185  
 Goya, Mariano, 188  
 Goya y Lucientes, Francisco José de, 109  
 Goyeneche, Juan de, 101, 102, 187  
 Granada, 25, 26, 74, 75, 76, 79, 176, 183  
 Cathedral, 33  
 Church of Nuestra Señora de las Angustias, 106  
 La Granja de San Ildefonso *see* San Ildefonso  
 Granollers del Vallès (Barcelona), 9  
 El Greco *see* Theotocopuli, Doménico  
 Guadalupe, Virgin of, 126  
 Guadarrama mountains, 83, 90  
 Guardia de Montserrat (Cataluña), 36  
 Gudiol Ricart, Josep, 49-50  
 Guilds  
 Glassmakers', 6, 34-35, 36, 172, 177, 185  
 Glass merchants', 96  
 Gulsando (Avila), Monastery of San Jerónimo, 26  
 Gutiérrez, María, 188

**Haida** (Bohemia), 125  
**Hamburg**, 117  
*Museum für Kunst und Gewerbe*, 55  
**Hannover** (Germany), 103  
**Havana**, 112  
**Hinojares** (Jaén), 74  
**The Hispanic Society of America**, New York,  
 13, 17, 41, 52, 56, 63, 67, 76, 79, 92,  
 95, 109  
 Spanish glass in the collection of, 127-167  
**Homar**, Gaspar. Collection, 56  
**Horta** (Barcelona), 65, 104  
**Howel**, James, 171  
**Ibn Sa'Id**, 176  
**Ice glass** *see* Glass, Frosted  
**Imports** *see* Glass, Importation of  
**Innsbruck** (Austria), 186  
**Isabel I**, *la Católica*, queen of Spain, 10, 26,  
 33, 42, 51, 179, 180  
**Isabel Farnese**, queen of Spain, 96, 102, 103  
**Italian influence** *see* Glass, Italian; Glass,  
 Italian-style; Glassmakers, Italian  
**Jacomart**, Follower of. *Saint Anthony of*  
*Padua*, 24  
**Jaén**, 74  
**Jaime I**, king of Aragón, 3  
 Tomb of, 14, 173  
**James of the Marches**, *Saint*, 73  
**Jars**, Covered  
 (T430), 157  
 (T443), 163  
 (T444), 165  
**Jaulin** (Zaragoza), 64  
**Jerome**, *Saint*, 180  
**Jesuits**, Order of the, 55  
**Jewelry**, Glass, 4, 14, 21, 23, 44, 67, 88, 173  
**Joanna**, *infanta* of Spain, 33  
**John V**, king of Portugal, 117, 118  
**John VI**, king of Portugal, 120  
**John of Jerusalem**, Order of Saint, 41  
**Joseph**, *Saint*, 180  
**Joseph I**, king of Portugal, 118  
**Juanes**, Juan de. *The Last Supper*, 41  
**La Junquera** (Gerona), 182  
**Laborde**, Alexandre Louis Joseph, *comte* de,  
 187  
**Lace glass** *see* *Vetro di trina*  
**Laet**, Joannes de, 176  
**Lamp**, Oil (T359), 67, 139  
**Lamp glass** *see* Glass, Lamp  
**Langle**, Marquis of *see* Fleuriot, Jean Marie  
*Jérôme*  
**Lanna**, Adalbert von. Collection, 133, 135  
**Larrolde**, Joaquín de, 38  
**Larruga y Boneta**, Eugenio, 185  
**Latticinio** *see* Glass, Latticinio

**Lauthier** (I), Joseph, 188  
**Leiria** (Portugal), 118  
**León**, 29, 83, 87  
**Lérida** (province), 20  
**Lerma** (Burgos), 87  
**Lerma**, Francisco Gómez de Sandoval y  
*Rojas*, duke of, 87  
**Liège**, 38, 88, 145, 179, 180, 183  
**Lima**, 125  
**Lisboa**, 87, 88, 117, 118, 119, 120, 121  
*Rocio*, 119  
**Llobregat plain**, 46  
**Lluch**. Parochial church, 23  
**London**  
 British Museum, 52, 57, 75, 109, 181  
 Victoria and Albert Museum, 43, 45, 49,  
 51, 55, 67, 74, 75, 76, 91, 110, 145,  
 181, 183, 188  
 Buckley Collection, 76, 95  
**Lugo**, 174  
**Macaya**, Alfonso. Collection, Barcelona, 50,  
 56, 63, 76, 79, 95, 171, 176  
**Madrid**, 60, 87, 88, 90, 92, 96, 102, 106,  
 108, 110, 113, 174, 185, 186, 187  
*Calle Angusta de San Bernardo*, 186  
*Calle de Alcalá*, 102, 113  
*Calle de Toledo*, 113, 189  
*Calle del Turco*, 189  
*Calle Mayor*, 89  
 Church of San Isidro, 113  
 Customs house, 113  
 Exposition of 1842, 80  
 Inn of La Gallega, 186  
*Instituto de Valencia de Don Juan*, 55, 56  
*Museo Arqueológico Nacional*, 92, 187, 188  
 Palace of the Duke of Medinaceli, 106  
*Puerta del Sol*, 189  
 Royal Palace, 88, 106, 110, 173  
 Archives, 185  
**Madrid**, Fray Nicolas de, 188  
**Málaga**, 25  
**Malhada** (Portugal), 121  
**Mallorca**, 5, 22, 23, 37, 41, 56, 174, 175  
 Cathedral, 10, 22, 57, 175  
**Malta**, Knights of, 55  
**Manescal**, Onofre, 177  
**Mansel**, Sir Robert, 171  
**Manso Bustillo**, Antonio, 186  
**Margaret of Prades**, queen of Aragón, 18  
**Maria** (Almería), 74, 75, 76, 80, 141  
**Maria Ana** of Neuburg, queen of Spain, 174  
**Maria del Campo** (Almería), 74  
**Marimón**, Father F., 56  
**Marimón**, Felipe, bp. of Ampurias, 56  
**Marineus**, Lucius, *the Sicilian*, 10, 26  
**Marinha Grande** (Portugal). Glass factory,  
 118-119, 121  
**Martin I**, king of Aragón, 18, 20  
**Mary Magdalene**, *Saint*, 87

- Mas-Deu (Roussillon), 173  
 Mataró (Barcelona), 9, 34, 35, 64, 65, 67  
   Church of *San José*, 35  
 Maten, Miquel. Collection, Barcelona, 43, 171  
 Medina del Campo (Valladolid), 87  
 Medina Sidonia, Duchess of, 173  
 Medina Sidonia, Duke of, 173  
 Medinaceli, Duke of, 106, 108  
   Arms of, 108  
 Medinaceli, María de Silva, duchess of, 49  
 Mendoza, Antonio de, 121, 181  
 Mexico, Arms of, 123  
 Mexico City, 123, 125, 126  
   *Paseo de la Viga*, 125  
 Michael, Saint, 34  
 Milk glass *see* Glass, Latticino  
 Millefiori *see* Glass, Millefiori  
 Mirrors, 14, 23, 44, 67, 87, 88, 92, 102, 103, 104, 106, 108, 110, 112, 113, 117, 118, 119, 125, 187  
 Moliner, Frances, 59-60  
 Molló (Gerona). Church, 171  
 Moncada (Barcelona), 9  
 Montevideo, 125  
 Montgraulé, Pau, 179  
 Montgrony, Church of *Santa Maria de*, 171  
 Montserrat, Monastery of, 55  
 Moorish influence *see* Glass, Moorish-style; Glassmakers, Moorish  
 Moors, 3, 13, 26  
 Moriscos, 71  
 Mostoles (Madrid). Parish church, 106  
 Mould-blowing of glass *see* Glass, Mould-blown  
 Muenzer, Hieronymus, 25, 26, 175  
 "Muff" glass *see* Glass, "Muff"  
 Mug (T429), 155  
 Mur (Lérida). Church of *Santa Maria*, 3  
 Murzno, 38, 50, 103  
 Murcia, 24, 25, 26, 46, 63, 74, 80, 104, 184, 186  
 Murillo, Bartolomé Esteban. *Saint Anthony and the Christ Child*, 73-74  
 Murphy, James Cavanah, 118  
 Murviedro (Valencia), 23  
 N  
 Namur, 64, 88, 117  
 Naples, 34, 106  
 Navagero, Andrea, 33, 176  
 Neri, Antonio, 52, 89  
 Nevets, 103, 180  
 Nuevo Bastán (Madrid), 101, 102, 187  
 O  
 Oliana (Lérida). Church, 171  
 Olleria (Valencia), 24, 63  
 Orders *see*  
   Calatrava, Order of  
   Charles the Third, Cross of  
   Francis of Assisi, Order of Saint  
   Golden Fleece, Order of the

# Orders *see* (continued)

- Jesuits, Order of the  
 John of Jerusalem, Order of Saint  
 Malta, Knights of  
 Osona, Rodrigo de. *The Annunciation*, 25  
 Osona, Pedro, *110 daho of*, 34  
 Painted glass *see* Glass, Enameled  
 Pajatejos (Segovia), 187  
 Palau del Vidre (Roussillon), 21, 22, 36  
 Palma de Mallorca, 22, 64  
   Convent of *Santa Catalina*, 57  
 El Pardo Palace, 34, 38, 42, 43, 50, 52, 83  
 Paris, 112  
   *Bibliothèque Nationale*, 171  
   *Musée de Cluny*, 44, 49, 52, 181  
   *Musée des Arts Décoratifs*, 35, 181, 188  
 Paste *see* Glass pastes  
 Paterna (Valencia), 24  
 Pau, Jeroni, 10  
 Pedralbes, Monastery of, 55  
 Peñalba (Huesca), 64  
 Pérez Bueno, Luis, 188  
 Perpignan, 175  
   Church of *Sant Marcu*, 22  
 Peter, Festival of Saint, 123  
 Peter IV, king of Aragón, 14, 22  
 Philip II, king of Spain, 34, 38, 42, 43, 71, 83, 84, 179  
 Philip III, king of Spain, 84, 87  
 Philip IV, king of Spain, 33, 84, 87, 88, 92, 173  
 Philip V, king of Spain, 95-96, 97, 101, 103, 118, 185  
   Arms of, 102  
 Philip, archduke of Austria, 33  
 Pinar de la Vidriera, 74  
 Plandiura Collection *see* Barcelona, *Museu d'Art de Catalunya*. Plandiura Collection  
 Poblet, Monastery of Santa Maria de, 4, 14, 17, 42, 174  
   Museum, 174  
   Narula, Fount of, 4  
 Polishing of glass, 104, 106  
 Pombal, Sebastião José de Carvalho y Mello, *marquis of*, 118  
 Porcelain, Imitations of Chinese, 110  
 O Porto, 117, 119, 120  
 Portugal, Arms of, 59, 61, 117  
 Prague. *Umělecko-průmyslové museum obchodu a živnostenské muzeum*, 59, 181  
 Prats, Joan. Collection, Barcelona, 174  
 Prats de Molló (Cataluña), 36  
 Preboste, Francisco, 84  
 Pressed glass *see* Glass, Pressed  
 Prices of glass, 20, 22-23, 41, 59, 60, 87, 88, 89, 92, 102, 106, 110, 112, 120, 121, 125, 126, 172, 173, 177, 179, 181, 184, 185, 189  
 Priego, Marquis of *see* Feria, Count of

Puebla de Don Fadrique (Granada), 74  
Puebla de los Angeles (Mexico), 121, 123, 126  
Street of the Glass Furnace, 121

Quejigal (Salamanca), 83, 84  
Queral, Pere de, *lord of Santa Coloma*, 20

Ramón de Peñafort, Festival of Saint, 35  
Rautenstrauch, Augustin, 125  
Rebullón, Jaime, 35  
Recueno, 92, 94, 96, 97, 98, 102, 117, 151,  
185, 186, 187  
René, *duke of Anjou*, 178  
Riaño y Montero, Juan Facundo, 185  
Rio de Janeiro, 125  
Ríofrío (Segovia), 112  
Ripoll, Bible of, 171  
Roda, Bible of, 171  
Roda d'Isabena, Cathedral, 171  
Rolling of glass, 104  
Rome  
    *Biblioteca Apostolica Vaticana*, 171  
    Private collection, 181  
    Court of, 10  
Roussillon, 21, 36, 42, 175, 177  
Rovirola, Antoni, *abbot of Santa Maria de l'Estany*, 21  
Rubió (Barcelona), 172  
Ruiz, Félix, 188

Sadurní, Antoni, 9  
Saint *see* individual names of saints  
Salamanca, University, 87  
Salinas (Alicante), 24, 63  
Saltshaker (T361), 76, 145  
Salvat, Pere, 9-10  
San Benito de Bages, Monastery of, 14, 17  
San Esteban del Mall (Huesca), Hermitage  
of *Sauí Sadurní*, 171  
San Fernando (Isle de Leon, Cadix), 80  
San Ildefonso (Segovia)  
    Cutlery factory, 187  
    La Granja Palace, 96, 102, 118  
    Glass factory, 65, 96, 97, 102-114, 125,  
    153, 155, 157, 159, 161, 163, 165,  
    167, 188  
Sanficar de Barrameda (Cadix), 173  
San Martín de Valdeiglesias (Madrid), 88,  
90, 184, 185  
San Sebastián, 60  
Santander, 60, 125, 186  
Santas Creus, Monastery of, 17, 24  
San Vicente dels Horts (Barcelona), 35, 36,  
177  
Segovia, 89, 92, 102, 112, 184  
    Cathedral, 89  
    *Semforés*, Castle of, 18  
Sent Jordi, *señor*, 23, 24

Serra, Jaime, 13  
Serra, Pere, 13  
Serra family, 24  
Serras, Follower of the  
    *The Last Supper*, 13  
    *Retable of Saint John the Baptist and*  
    *Saint Stephen*, 13  
Sevilla, 3, 39, 60, 61, 71, 73, 112, 183  
    *Calle del Vidrio*, 71  
Sèvres, *Musée Céramique*, 44, 55, 67, 181  
Shops, 5-6, 17, 35, 42, 43, 59, 60-61, 89,  
96, 102, 110, 112, 113, 117, 119, 120,  
125, 184, 189  
Sierra Segura, 74  
Sit, Ventura, 96, 102-103, 104, 109  
Sitzes, *Museu del Cau Ferrat*, 43, 174  
Socher, J. Christof, 125  
Sorède (Roussillon), 175  
Southey, Robert, 106  
Spain, Arms of, 61  
Spitzer, Frédéric, Collection, 135  
Squillace, Leopoldo de Gregorio, *marquis of*,  
112  
Stephens, William, 118-119  
Sugar Bowls  
    (T426), 153  
    (T445), 109, 167  
Syrian influence *see* Glass, Damascene; Glass,  
Damascene-style; Glass, Near-Eastern;  
Glass, Syrian

Talavera de la Reina (Toledo), 106  
Tarragona, 4, 9, 104  
    *Carrer del Vidre*, 9  
Tarrasa, Church of *Santa Maria*, 43  
Tejo river, 118, 120  
Teresa de Jesús, *Saint*, 35  
Texedor, Teresa, 188  
Theophilus, *presbyter*, 4-5  
Theotocópuli, Doménico *known as* El Greco,  
84  
    *Saint Mary Magdalene*, 87  
Theotocópuli, Jorge Manuel, 84  
    *Jesus in the House of Simon* (A75), 84, 87  
Tile (E1207), 46  
Toledo (city), 87, 106, 185  
    Cathedral, 183  
Toledo (province), 90  
Tolls, Glassmakers', 4, 46, 184, 186  
Torre de Esteban Hambrán (Toledo), 185  
Torre de Estevan Hambroz, 89  
Tortosa (Tarragona), 9, 21, 46, 65, 101  
Transportation of glass, 6, 60, 87, 106, 112-  
117, 123  
Trieste, 117  
Tumbler (T427), 159  
Turkey, Sultan of, 106  
Tyrol, 57

Utrillas (Teruel), 64

- Valdequereda (Madrid), 89, 92, 93, 185  
 Valdepeñas (Jaén), 74  
 Valencia, 3, 23, 24, 25, 26, 34, 42, 46, 59,  
 60, 61, 63, 80, 110, 175  
 Cathedral, 24  
 Valencian School. *The Last Supper*, 24  
 Valladolid, 87  
 Vallbona (Barcelona), 36, 46  
 Vallbona (Roussillon), 175  
 El Valls de Canet Collection, 63, 95  
 Vallromanes (Barcelona), 9  
 Valls, Domingo, 21  
 Vallvidrera (Barcelona), 171  
 Vases  
 (T351), 41, 56, 133  
 (T367), 95, 151  
 Vega, Garcilaso de la. *see* Garcilaso de la  
 Vega  
 Veiga, Thomé Pinheiro da, 87  
 Velázquez, Diego Rodríguez de Silva y  
*The Old Woman Frying Eggs*, 73  
*The Water Carrier of Sevilla*, 73  
 Venders, Glass, 6, 18, 22, 35, 60-61, 71, 96,  
 98, 117, 125, 179, 186  
*see also* Glass traders, German; Shops  
 Venetian influence. *see* Glass, Muranese;  
 Glass, Venetian; Glass, Venetian-style;  
 Glassmakers, Italian  
 Venice, 10, 33, 35, 37, 38, 43, 44, 45, 50,  
 51, 59, 71, 74, 81, 84, 91, 117, 123  
 Archives, 184  
*Museo Civico Correr*, 55, 57, 181  
 Vera Cruz (Mexico), 112  
*Petrus di trina*, 49-50  
 Vich, 6, 9, 18, 36, 171, 174, 179  
 Cathedral, 173  
*Museo Episcopal*, 50, 55, 143, 171  
*Vidre gelat. see* Glass, Frosted  
 Vidreres (Gerona), 171  
 Vidrier, Pern, 179  
*Vidrio apedrado. see* Glass, Frosted  
 Vienna, 37  
 Villanova de la Fussa (Cataluña), 177  
 Villafraanca del Panadés (Barcelona), 63, 89,  
 174, 177, 185  
 Villahermosa, Duke of, 88  
 Villalón, Cristóbal de, 37  
 Villalonga (Roussillon), 175  
 Villanueva de Alcorón (Guadalajara), 102  
 Villa Sánchez, Fray Juan, 123  
 Villena, Marquis of, 88, 90, 185  
 Vindel (Cuenca), 92, 96, 98, 186  
 Vistu Alegre (Portugal)  
 Royal factory of porcelain, glass, and  
 chemicals, 120-121  
*Quinta of*, 120  
 Vistabella (Aragón), 64, 184  
 Vizcaya, 112
- Ward, Bernard, 112, 188  
 Wheel-engraving on glass, 101, 106, 108,  
 110, 114, 117, 120, 187  
*see also* Glass, Engraved  
 Willughby, Francis, 174  
 Windowpanes, 4, 9, 14-17, 65, 83, 88, 89,  
 90, 92, 97, 98, 103, 106, 117, 119, 121,  
 125, 173-174, 185, 186, 187  
 Windows, Stained-glass, 9, 17, 22, 71, 80,  
 92, 183
- Zafra, Hernando de, 26  
 Zaragoza, 10, 18, 34  
 Zeiller, Martin, 173, 176, 183  
 Zúbarán, Francisco de  
*Saint James of the Marches*, 73  
*The Young Christ with the Crown of  
 Thorns*, 73







