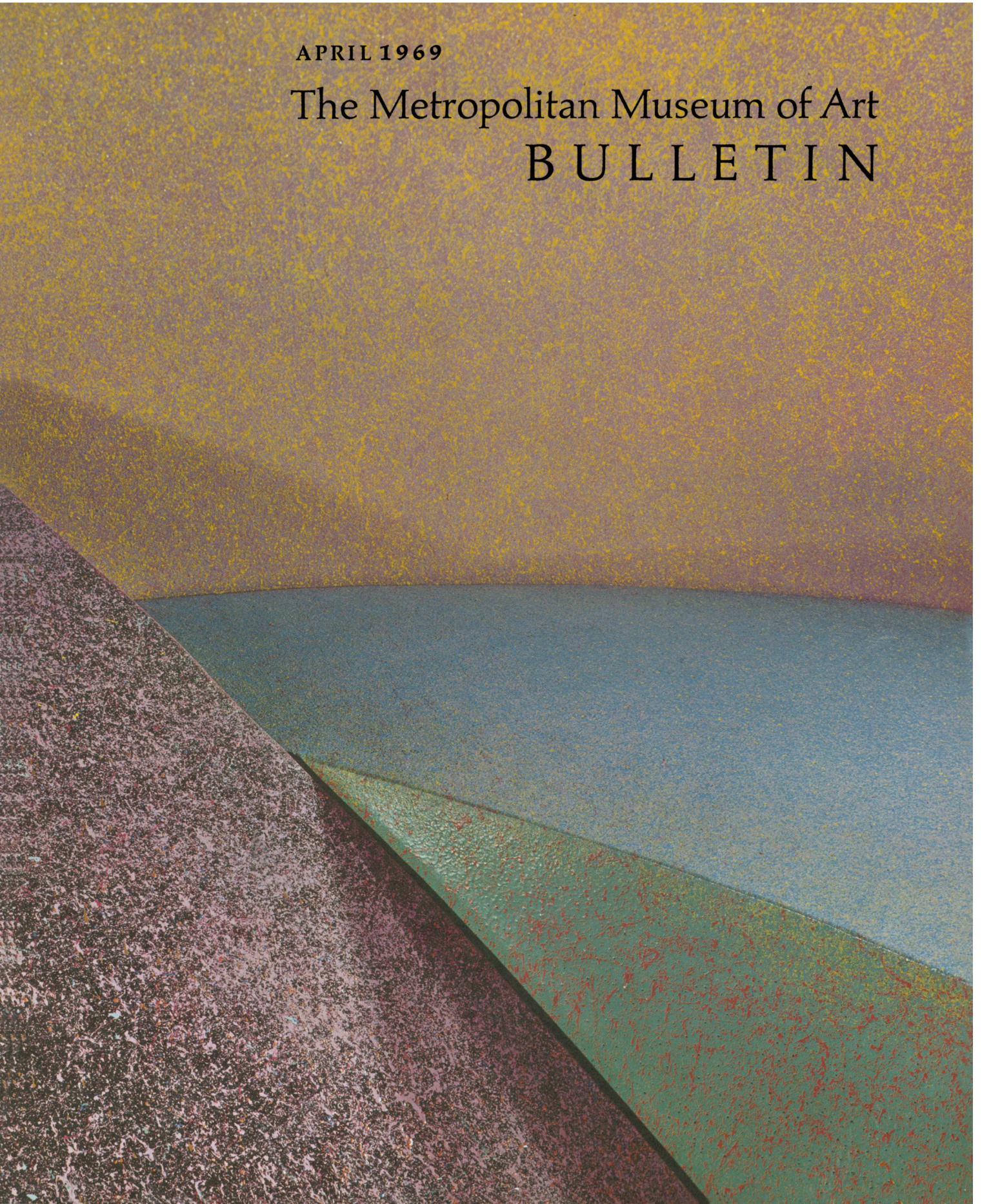
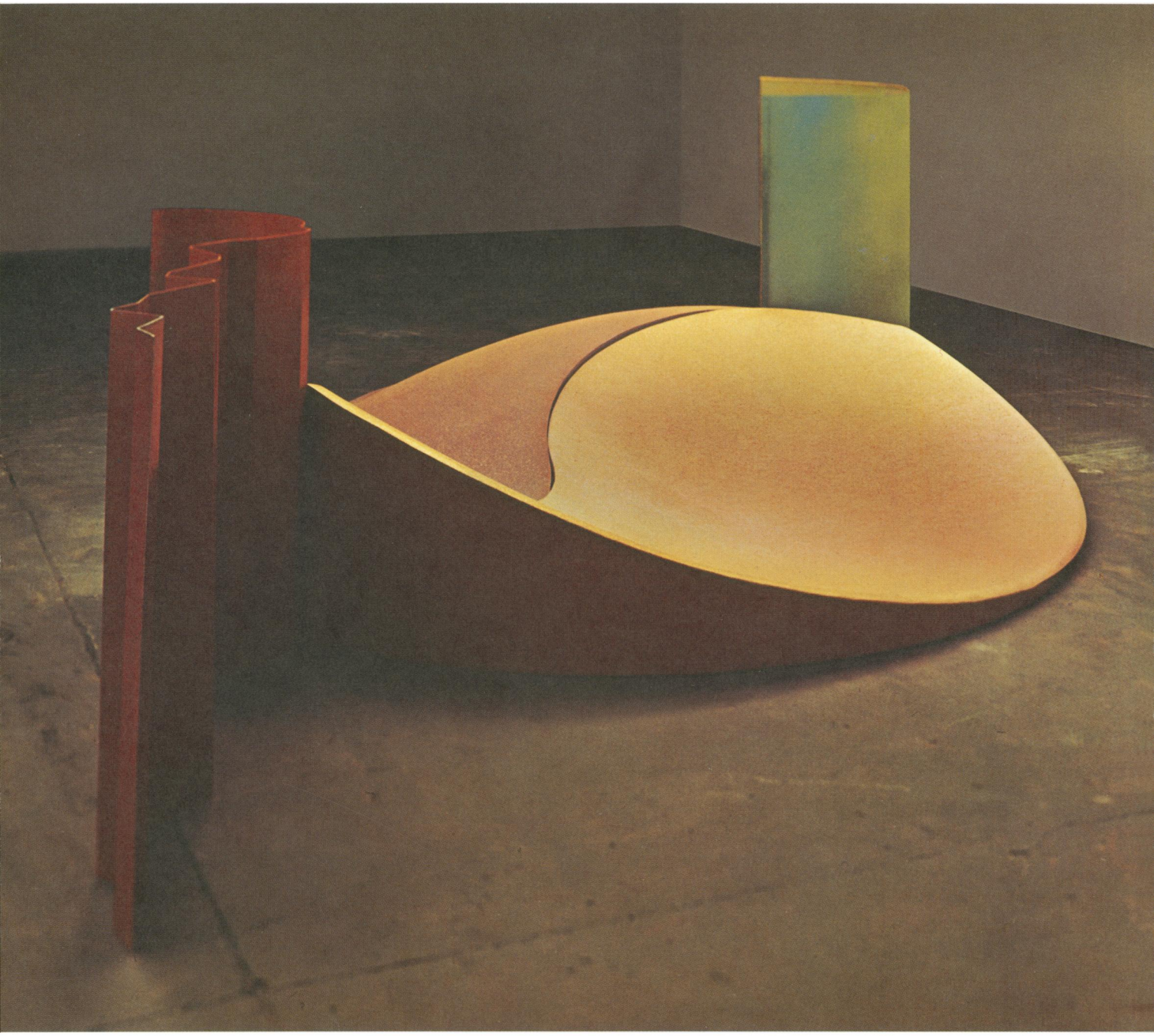
APRIL 1969

The Metropolitan Museum of Art BULLETIN





With the founding of the Department of Contemporary Arts less than two years ago, the Metropolitan Museum made clear its awakened interest in the art of our time. While there had never been any actual proscription against acquiring modern art, the Museum extensively collected only twentieth-century American painting. The reasons for this were twofold and equally important in the history of our collections. The first was the establishment of the George A. Hearn Fund (1906) and the Arthur H. Hearn Fund (1911), which made it possible to buy works by living American painters (not sculptors). The second was the magnificent Alfred Stieglitz Bequest, made in 1949, coincidentally the year of the founding of the Department of American Paintings and Sculpture. Through the Hearn funds, Robert Beverly Hale, the curator of the new department, was able to make such major purchases as Pollock's Autumn Rhythm, de Kooning's Easter Monday, and Gorky's Water of the Flowery Mill; more recently we have purchased Morris Louis's Alpha Pi, Ad Reinhardt's Red Painting, 1952, and Barnett Newman's Concord. The Stieglitz bequest gave us an impressive collection of works by American artists whose pieces were first exhibited in Stieglitz's galleries, such as Hartley, Dove, O'Keeffe, and Marin, together with fascinating minor works by Matisse, Picasso, Brancusi, Severini, and others of the European artists Stieglitz introduced in America.

The Department of Contemporary Arts looks forward to building on these foundations by collecting significant twentieth-century European and American painting, sculpture, and decorative arts. To signal this interest, last year we exhibited James Rosenquist's F-111, and mounted a small show of large works by Kenneth Noland, Morris Louis, and Anthony Caro.

This year we further establish ourselves as active participants in the field of contemporary art with the exhibition, for the first time anywhere, of the sculpture of Jules Olitski. Last fall I had gone to Olitski's studio outside Cambridge in England to see what this American painter was doing. I found to my great surprise that Olitski was involved in making sculpture – innovative sculpture of a very high order, which we would be proud to exhibit in our galleries.

There has been a long-standing rule at the Metropolitan Museum against holding one-man shows of living artists. It became apparent to the Trustees, however, that a Department of Contemporary Arts unable to show artists of our time would be hamstrung from the outset. Therefore in December the Board changed the rule in order to permit such exhibitions, and the show of Olitski's sculpture that opens this month heralds our commitment to the art of the present.

HENRY GELDZAHLER, *Curator of Contemporary Arts*

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Detail of Figure 3. Photograph: Malcolm Varon

FRONTISPIECE:
Whip-out, by Jules Olitski (born 1922), American. 5 feet x 21 feet x 12 feet. All the sculptures illustrated are dated 1968 and made of aluminum with acrylic air-drying lacquer; with the exception of Figure 3, they were lent by Lawrence Rubin Gallery and Kasmin Ltd. Photographs: John Goldblatt

The Sculpture of Jules Olitski

KENWORTH MOFFETT *Instructor of History of Art, Wellesley College*

ON SCULPTURE

Sculptural shape, conceived of as extensions and as further levels of the ground support, becomes, wherever placed, inseparable from the latter. It is the sense of shape not as separate object placed closely in relation to the ground, but as being in itself *derived* from the ground. *Sculptural shape is to the ground support what pictorial shape is to the painting support.*

Since edge cannot be separated from shape, drawing is everywhere to be found in sculpture. Sculpture conceived of in terms of drawing, by relying on line for direction and extension, may articulate the ground it rests on, but it does not possess the ground or the surrounding space. That sculpture is horizontal, diagonal, or vertical, that it tilts, crawls, or rises like a totem, is irrelevant. Nor does removing the pedestal suffice of itself to make sculpture possess the ground. Sculpture ought to be conceived, in its entirety, as *coming from* and *out of* and *going into* the ground. Even an overhang or "ceiling" shape is to be realized as projected ground.

Sculpture is surface in space-possessing ground. Surface is inevitably color – if only the color of the untreated surface. Sculpture *is* colored surface. Nonetheless, to be meaningful as colored surface, the work must – from beginning to end – be achieved in terms of sculptural shape. Colored surface and sculptural shape move together in space. Unlike painting, sculpture need not be available in one glance, need not be read in its entirety from any one point of view. The excitement and problem in a sculpture lies in the multiple points of view that can be seen only one at a time. Wherever you stand and look there is a single visual experience – as in painting – except that with sculpture the cumulative experience consists in looking by going *around* and *around* colored surface, while in painting it lies in looking *across* and *across* colored surface.

JULES OLITSKI

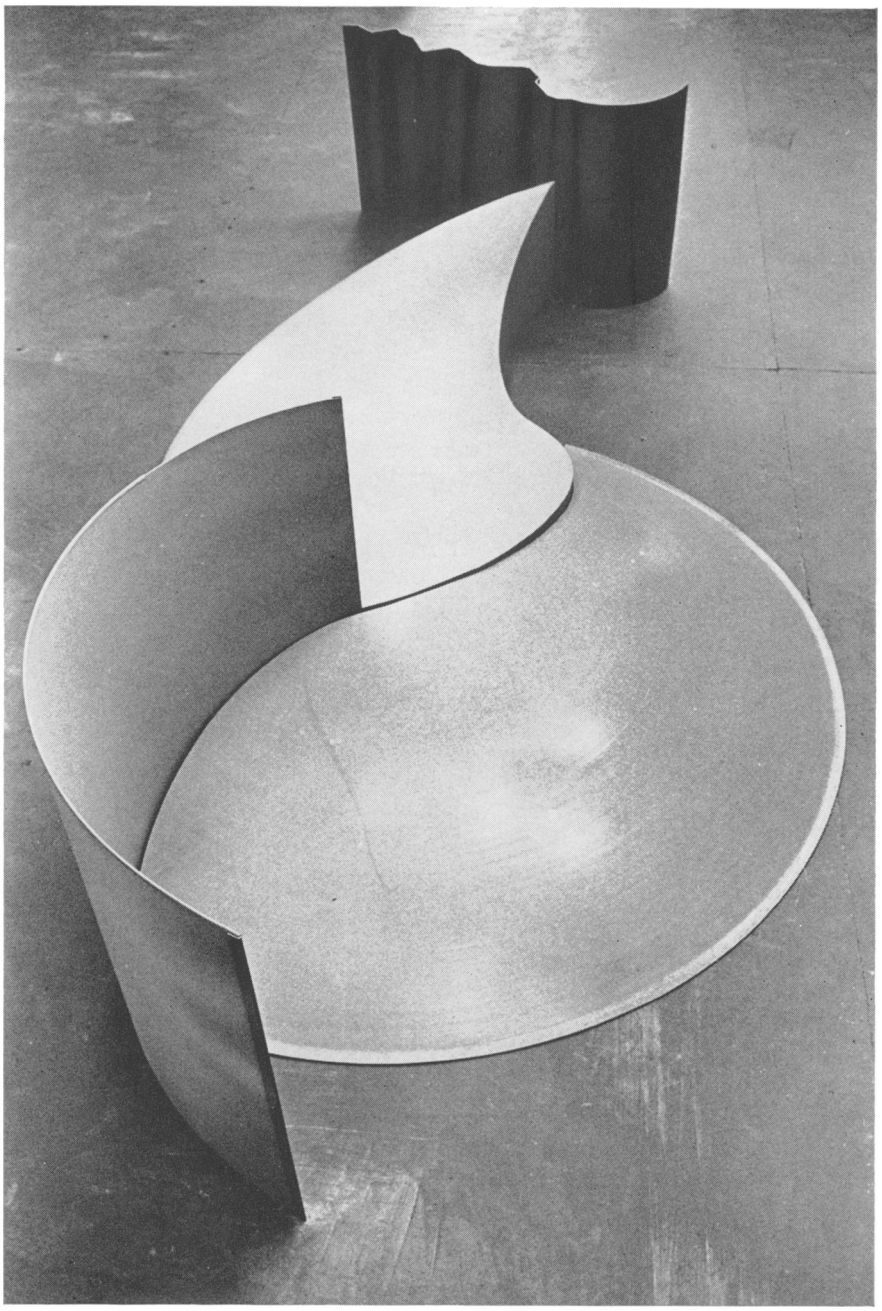
Jules Olitski's first major venture into sculpture is an important event, and not simply because one of America's leading painters has turned to three dimensions. The startling originality of the works and their sheer size show that he has approached his new medium with daring; he has raised issues and opened possibilities hitherto unperceived. The Metropolitan Museum of Art is now presenting the first showing of Olitski's sculpture. Five pieces have been selected from a series of twenty completed in the fall of 1968.

Olitski once remarked that he would like to spray color in the air and have it remain there. The closest possible realization of this would be color surfaces in space, and Olitski's forms are all surface: their raison d'être is to be bearers of color. They demonstrate how color can exist *for itself* in three dimensions when sculpture becomes truly abstract.

The same process of reduction and "purification" that has infected sculpture is operative in modernist painting. One result has been the emergence of paintings like Olitski's (Figure 2), concerned exclusively with color sensation. It is in the context of his painting that Olitski's sculptures are fully comprehensible. For it has been in his hands that painting has become purely color surface and that surface itself has taken on a new meaning.

The modernist reduction has also led to an increasing flatness and a painted surface that calls attention to itself as object. This limiting of possibilities and increase in literalness have prompted modernist painters to turn to sculpture (one thinks of Ellsworth Kelly and Barnett Newman, as well as the minimalists)

1. Another view of Whip-out, illustrated as the frontispiece

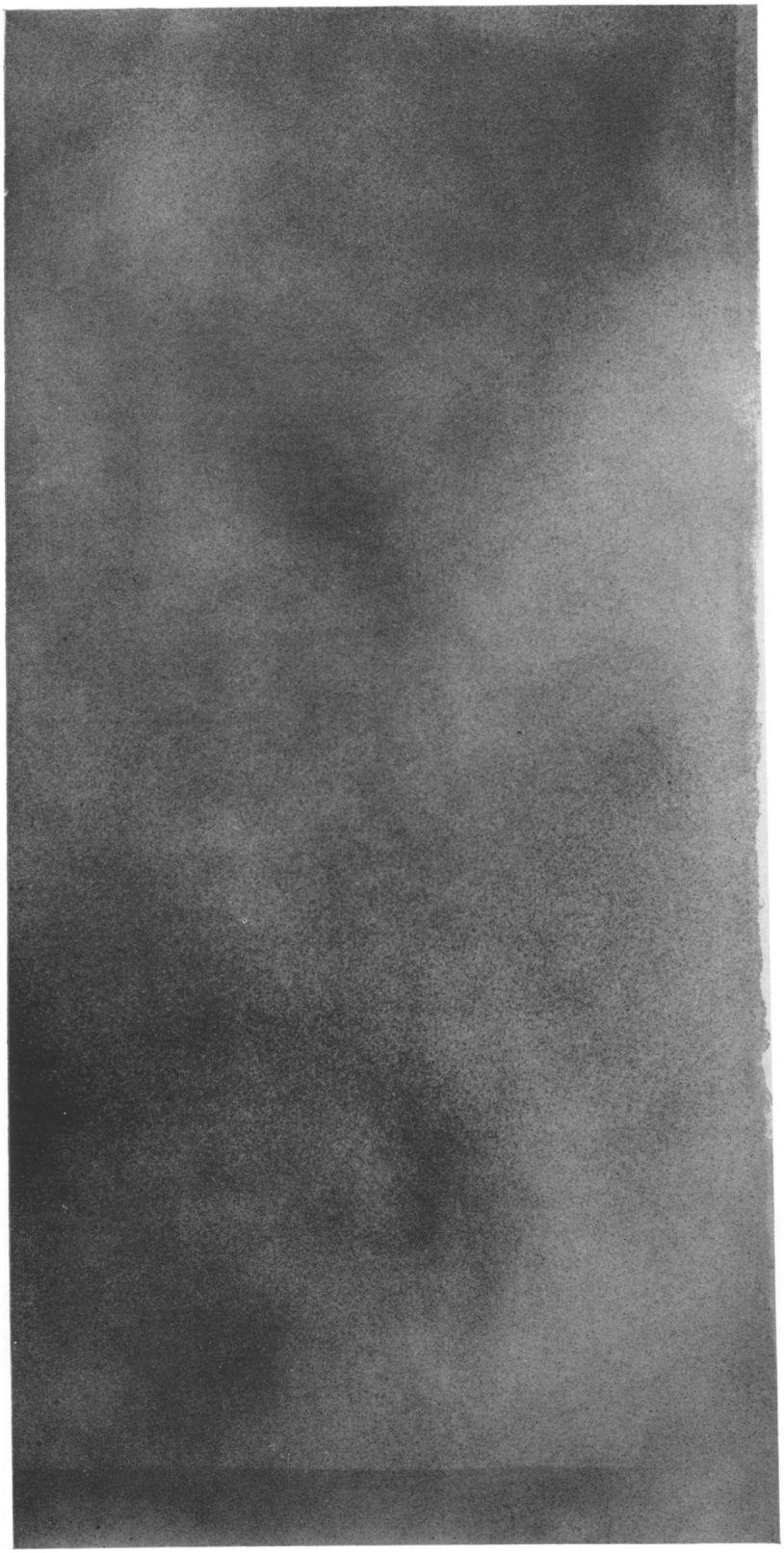


The Metropolitan Museum of Art Bulletin

VOLUME XXVII, NUMBER 8

APRIL 1969

Published monthly from October to June and quarterly from July to September. Second class postage paid at New York, N. Y. Subscriptions $5.00 a year. Single copies fifty cents. Sent free to Museum members. Four weeks' notice required for change of address. Back issues available on microfilm from University Microfilms, 313 N. First Street, Ann Arbor, Michigan. Volumes I-XXXVII (1905-1942) available as a clothbound reprint set or as individual yearly volumes from Arno Press, 330 Madison Avenue, New York, N. Y. 10017, or from the Museum, Box 255, Gracie Station, New York, N. Y. 10028. Editor of Publications: Leon Wilson. Editor-in-chief of the *Bulletin:* Katharine H. B. Stoddert; Editor of the *Bulletin:* Susan Goldsmith; Designer: Peter Oldenburg.



2. *Rexus, by Jules Olitski. 1966. Acrylic water-base paint on canvas, 92½ x 45 inches. Private collection, Boston. Photograph: Eric Pollitzer*

and to work on the boundary between painting and sculpture (the shaped canvas of Ron Davis, Frank Stella, and the freestanding sculpture paintings of Kelly and Michael Bolus). Olitski, too, must be seen in this context, for the potentialities and limitations implicit in his paintings led to the new sculptures: they issue naturally from his work in two dimensions.

Olitski's spray paintings, begun in 1965, display a tactile quality of surface. This serves to sustain explicitness and immediacy, and prevent the pictures from seeming merely a window into a soft, fictive, atmospheric world. By stressing tactile effect the illusion seems to materialize on the surface while the latter expands to contain the illusion – "color that appears integral to material surface," as Olitski puts it. At the same time as the surface becomes a total field, the edges of the rectangle tend to be felt as determinate drawing – the whole becomes a *shaped surface*. The proportions and edges of the whole are experienced as pictorial qualities rather than, as in previous painting, simply neutral limits.

The spray pictures, while making us aware as never before of what surface in painting is or can be, limited Olitski as to the kind of color accentuation that could be tolerated within the field, namely fluctuations of value and hue that avoided discrete edge. Olitski himself has written: "When the conception of internal form is governed by edge, color . . . appears to remain on and above the surface. I think, on the contrary, of color being seen in and throughout, not solely on, the surface." This, among other considerations, caused Olitski to introduce drawing in a variety of ways close to the framing edge of his pictures. An alternative, and one that Olitski began to consider only later, was to exploit the pictorial, drawn quality of the edges of his surfaces to create shaped surfaces in actual space and to relate them to each other – that is, sculpture. Edge is inherent in sculp-

ture, and Olitski could draw in three dimensions in a way that he no longer could in two. A whole new range of color possibilities suddenly opened up.

It is, then, the momentum of Olitski's impulse toward ever more varied and rich color experience that lies behind his new work.

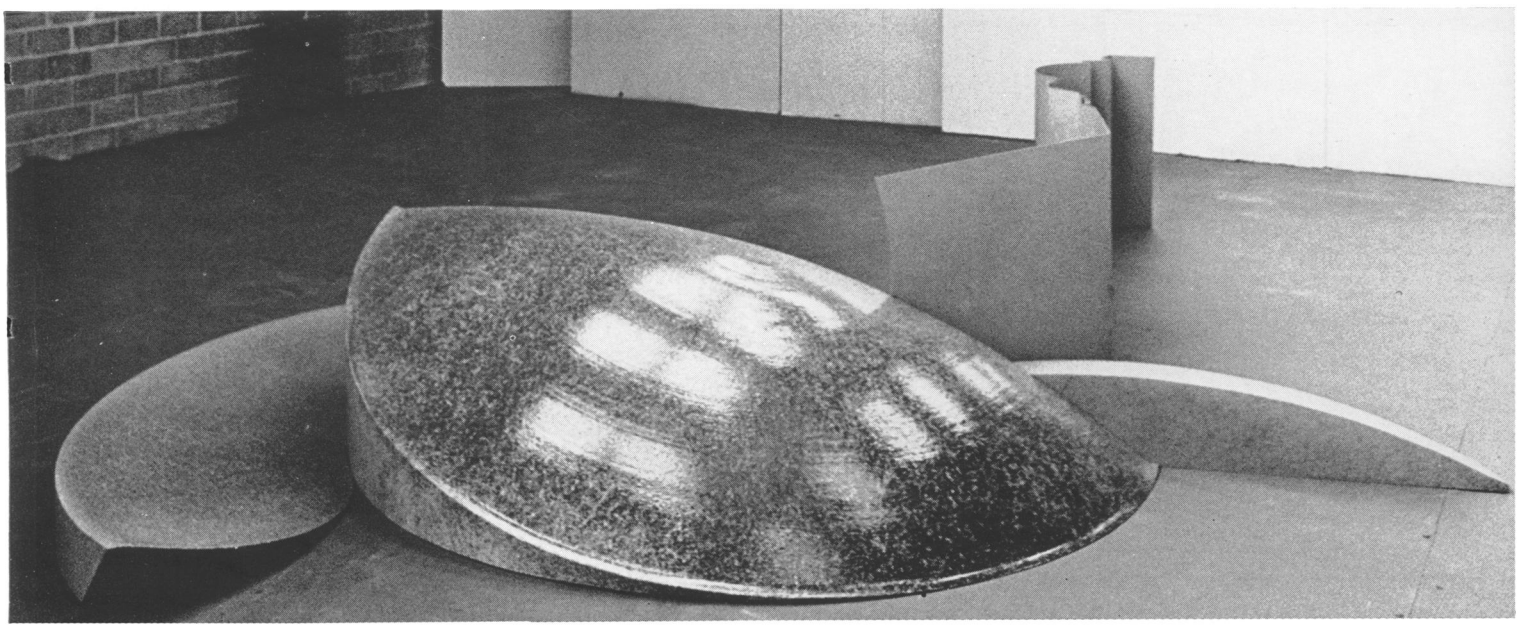
Olitski completed the entire series of twenty sculptures in a seven-week burst of activity, working in a large factory at Saint Neots near Cambridge in England. He first ordered a great number of aluminum pieces of three types: tubes, domes, and sheets. He specified that some be treated with an anodized color surface: this gave him a colored ground to spray onto, and also permitted him to calculate color effects as he went along. He arranged, cut, reshaped, welded, and corrugated these parts, and the sculptures were sprayed with acrylic, air-drying lacquer. Then he further adjusted and sprayed them.

The sculptures display a horizontal, floor-oriented, open character and an additive deployment of distinct elements. The vocabulary – the circular and elliptical, the concave and convex – is intended to present ever-changing and flowing surfaces. Analogous to the impressionists who, interested in the purely visual in nature, so organized their awareness that it was only nature's surface that manifested itself to their eyes, Olitski seeks to so contrive and spray three-dimensional forms that they appear solely as color surfaces.

More than any previous sculpture, these works exist in a specifically pictorial mode consisting of "drawn" line and color. Despite their spreading extension into the room they seem to move away from us, irrespective of our point of view. Containing their own space and light within themselves, they emit their own rarefied atmosphere and are strangely insubstantial and weightless. A general close valuing of the colors and the spray technique gives a unity of effect and sustains the pictorial mode. Color is not simply on the surface, but creates a new kind of enriched surface and new spatial relationships. By means of various consistencies, absorbent or reflective, as well as the sharp cutting away of similarly colored surfaces, real light is implicated in the indeterminate effect. Subtle chiaroscuro is made to confound with actual shadows, producing an added illusiveness. Rather than relating color to sculpture, Olitski has related three-dimensional forms to color, and from the beginning each choice about the piece was made with color in mind.

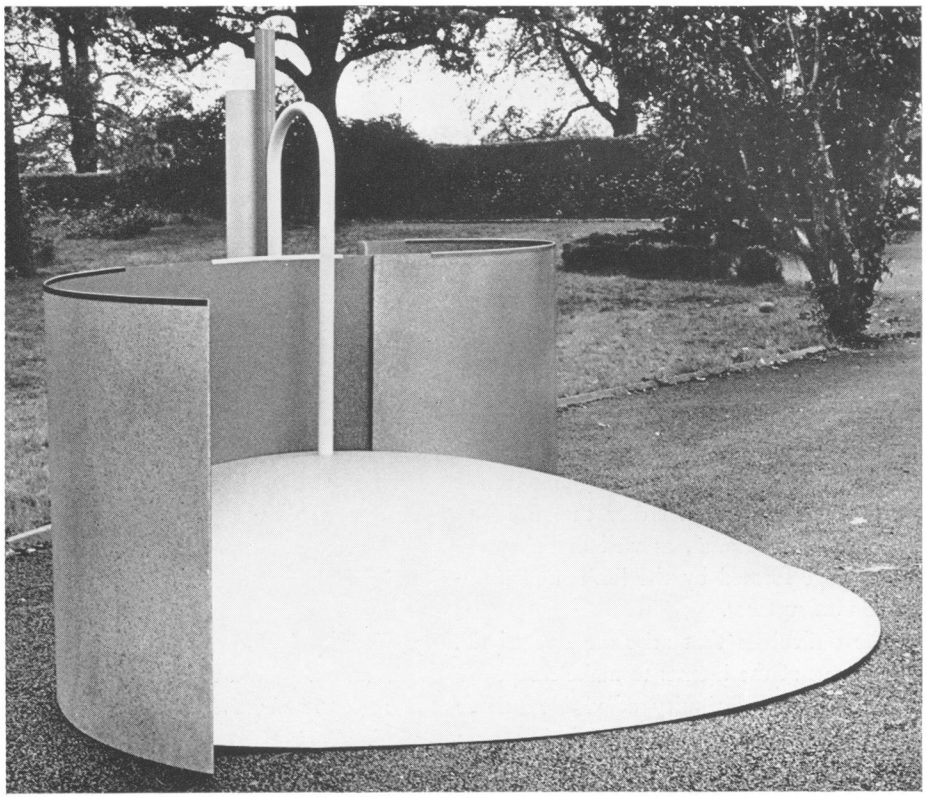
Olitski's primary interest is surface, yet his drawing, too, has become liberated and cuts out some very personal, "free" shapes. The contour frequently conveys poignant feeling or a playful effect. In either case it is experienced as pictorial, as well as being the literal edge formed by the limits and intersections of surfaces.

The difficulties that arise are due to the uniqueness of the intent: to make sculptures that maintain continuity of visible surface in the round. Numerous points of view must



3. Heartbreak of Ronald and William. 4 feet x 26 feet x 15 feet 6 inches. Private collection, New York

be considered, mass suppressed, volume rendered less palpable. Often line conspires with color to abstract volume, making it seem not exactly flat but an illusion of itself, a purely pictorial existent. In Heartbreak of Ronald and William (Cover and Figure 3), where a large dome emerges from the floor, the strongly tactile texture of the sprayed paint transforms potential volume into sensuous, expanding, and spreading surface. Sometimes, as in Whipsaw (Figure 6), color flow appears



4. Six-banger. 6 feet 9 inches x 15 feet x 8 feet 6 inches

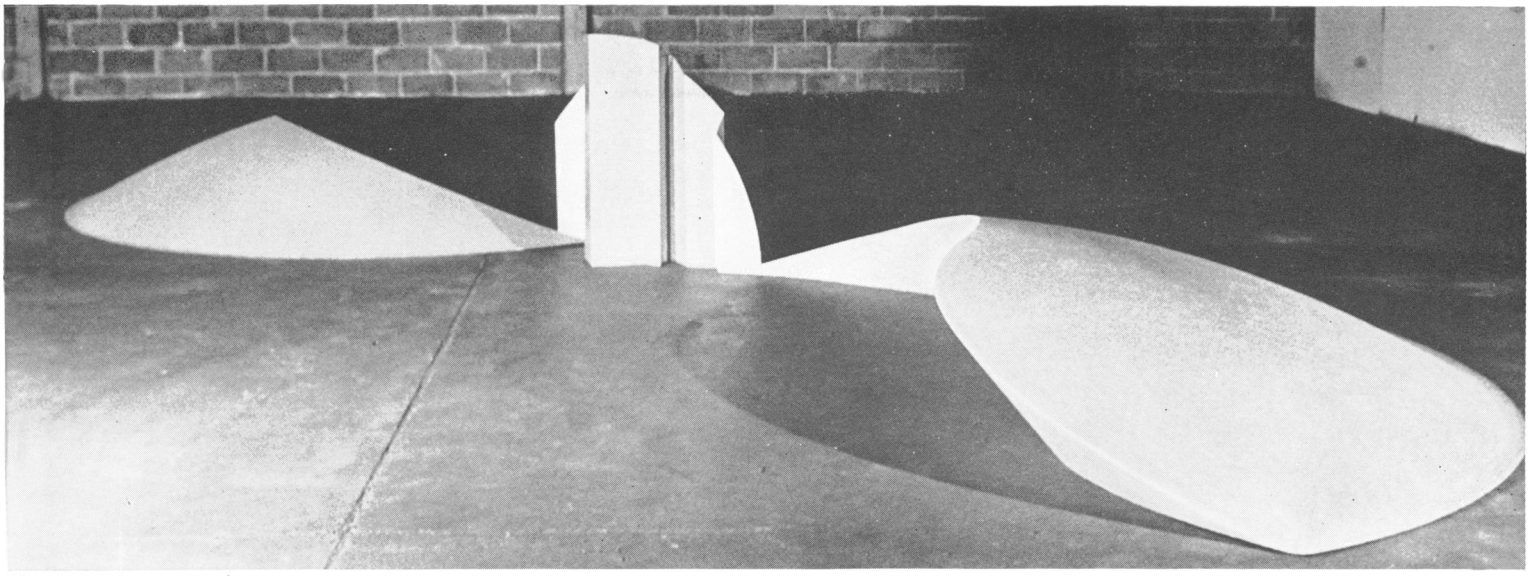
to determine shape and inflect surface, the whole a kind of color event. In Wheels-up (Figure 5) the cursive drawing that carries the viewer around the work seems to occur *against* the plane of the floor; the floor, like the real light, becomes involved in the illusion – existing purely visually, not perpendicular to our bodies but oblique to our eyes, a further surface.

These huge forms with their seemingly eccentric shapes can appear merely as strange abstract objects if the viewer does not give himself over to the color surfaces and contours. The floor, as a constant coordinate that we share with the works, could become the occasion for such a distancing, making us see them as things existing in a space continuous with our own. This accounts for Olitski's efforts to make the floor party to the illusion.

As another means to involve the viewer, he even considered a sculpture that was to include a spiral staircase with a huge dome suspended from it halfway up, permitting views from above and below. When he first had this idea, in the summer of 1968, technical difficulties prevented him from carrying it through; but his most recent drawings for sculpture show spiral forms and overhanging domes, and indicate that he has returned to his original conception.

Heartbreak of Ronald and William, the last of the series, is the most extraordinary. Unlike Wheels-up, it presents no symmetry or total image, and the viewer is invited to surrender to the unfolding of surfaces that present themselves in a variety of levels. He encounters surprise effects and unexpected relations, but without the transparency that makes previous abstract sculpture fully visible (if not fully graspable) at first glance. Here color and the abstract create a new kind of roundness. Heartbreak of Ronald and William has no frontality, no beginning, and no end. It is the opposite of minimalist work. With the latter the unity is initial, oppressive, while with Olitski it is final, cumulative. And whereas the minimalists give us preconceived forms that are "finished," Olitski presents shaped color surfaces in space.

The boldness of the artist's statements is testimony to Olitski's confidence in his powers, and their beauty to the range of his sensibility and artistic imagination. One can find them puzzling and disturbing while continuing to learn from them. Without question we are confronted with works of major artistic ambition and newness. They constitute the first authentic attempt in the history of art to realize pure color in three dimensions.



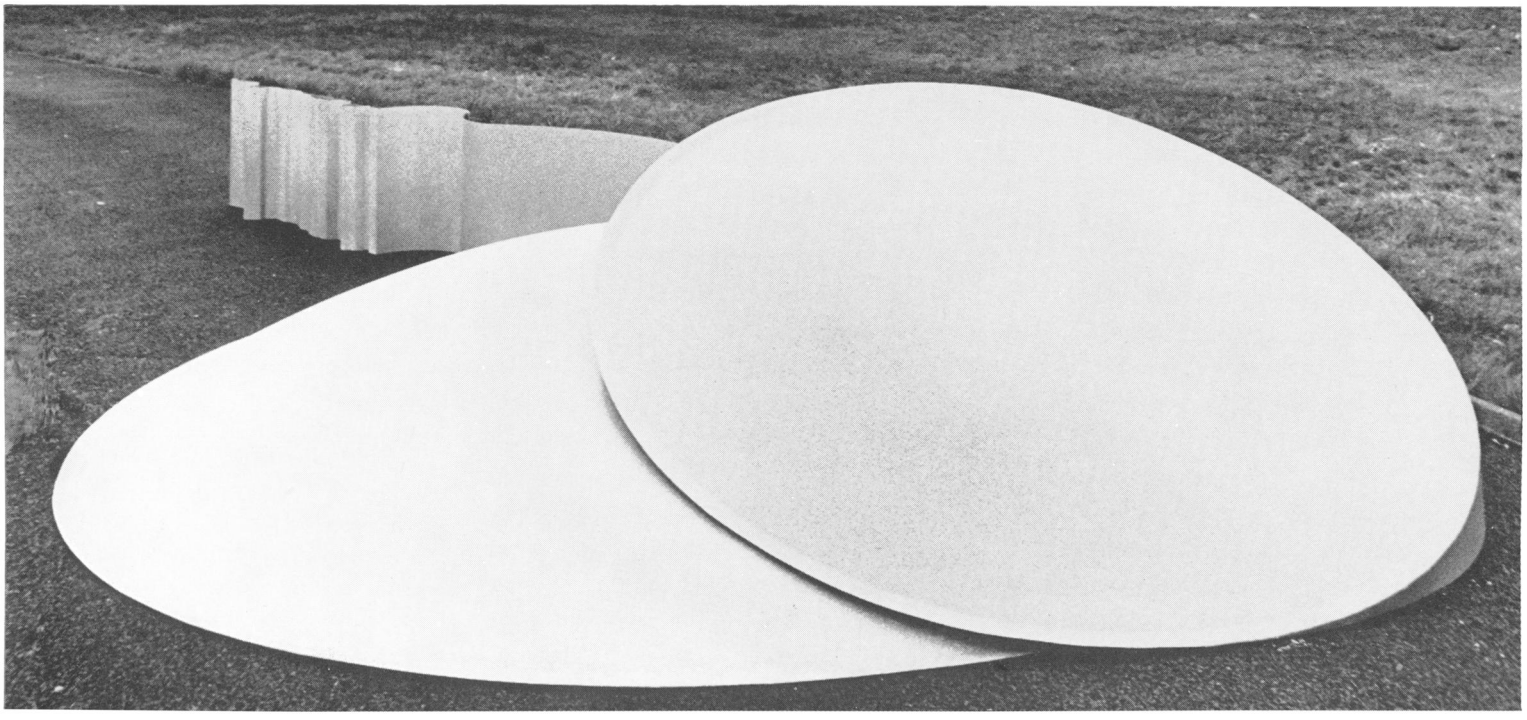
5. Wheels-up. 3 feet 6 inches x 28 feet 6 inches x 10 feet

NOTES AND REFERENCES

Olitski's interest in making his sculpture all surface was demonstrated even in his first sculpture, Bunga 45, 1967, as was pointed out at the time by Michael Fried, "Art and Objecthood" in *Artforum*, v (Summer 1967), pp. 20-21. Olitski's comments are taken from his article "Painting in Color" in *United States of America, 33rd International Biennial Exhibition of Art* (Venice, 1966), p. 39; see also Clement Greenberg's essay in that catalogue.

The question of the relation of these works to the history of polychromy and to recent developments in abstract sculpture will be dealt with in another place.

6. Whipsaw. 3 feet x 21 feet x 11 feet 6 inches



Nighttime and Easter Time

The Rotations of the Sun, the Moon, and the Little Bear in Renaissance Time Reckoning

CLARE VINCENT *Assistant Curator, Western European Arts*

BRUCE CHANDLER
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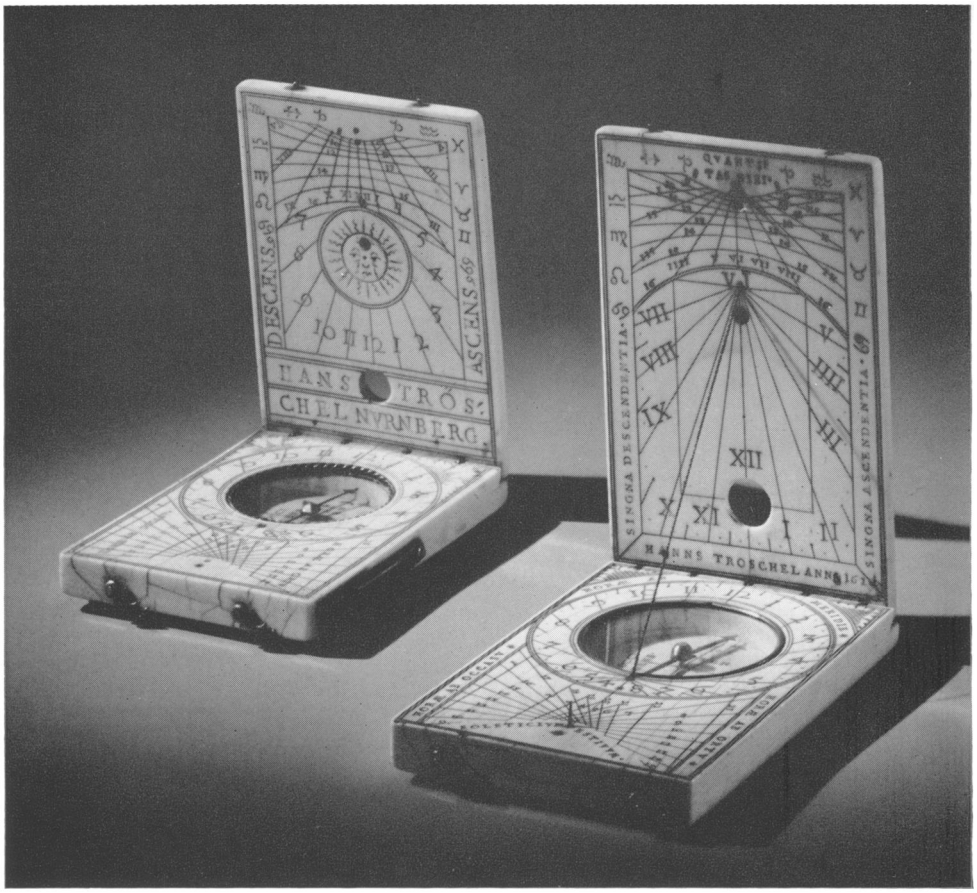
To know the time – the time of the year, the time of the day, the time of the night – has been of concern to man since his earliest history. For modern man the telling of time is marked by calendar and clock. These devices tend to obscure the relationship between the measurement of time and the motion of the celestial bodies upon which these measurements depend. Sixteenth- and seventeenth-century men, however, told time with instruments that made direct use of the motion of the sun, the moon, and the stars to fix the dates of important days in the year, such as Easter, and to find the hour of the day or night.

Easter is the most significant feast of the Christian liturgical year, for it is the celebration of the Resurrection of Christ, and the day upon which all the movable feasts of the Church depend. With the exhortation *Uno die et uno tempore per omnem orbem* ("On the same day and at the same time throughout the world") the Council of Arles in 314 sought to unify the celebration of this holy day in the Christian church. In 324 the Council of Nicaea finally defined Easter as the first Sunday after the first full moon after the vernal equinox. A difficulty arose, however, in trying to find the day of Easter in a calendar, the Julian, which depends, as does our modern Gregorian calendar, on the motion of the sun. Because the sun and the moon have different cycles, the date of Easter in the calendar changes from year to year. (A detailed explanation of how the date of Easter was determined is given in the Astronomical Explanations.) The elaborate table shown in Figure 1 (well known because it is the earliest dated Italian print) provides a succinct illustration of Easter's yearly variation. The outer two circles give the date of Easter and the inner two the first Sunday in Lent from 1429 to 1476. F stands for February, M for March, and A for April. Consecutive years do not appear next to each other but in every thirteenth wedge. Easter and Lent for 1461 are in the wedge to the right of the cross at the top of the print, the first occurrence of A 5 and F 15. Thirteen wedges counterclockwise will give the feasts as A 13 and F 24 for the year 1460; thirteen wedges clockwise will give the dates A 18 and F 28 for 1462. The BS around the circumference of the circle indicate leap years.

Several unusual instruments in the Metropolitan Museum's Tucker Collection illustrate how information such as that needed for the table in Figure 1 was obtained during

1. *The Resurrection of 1461, with a Table to Find Easter. Italian (Florence), 1461. Engraving, 14¼ x 7½ inches. Copyright Trustees of the British Museum*

ATROVARE·LAPASQVA·PERSEMPRE·SECONDO·CHELLA·VERRA·ANNO·PE
RAN O·ET·CONTA·INQVESTO·MODO·CELLANNO·1461·FIA·LAPASQVA·AD
V·DAPRILE·COME·VEDRETE·DISOPRA·APIE·+ ET·POI·ANNOVERATE·PELA
TRO·ANNO·LASCIANDO·LACHASELLA·DOVE·ISTATO·QVELANNO·INSINO·A·13
QVELLA·VIMOSTERA·INCHE·DI·ELLA·SARA·ET·CHOSI·DI·13·IN·17·PERSEMPRE
LACHASELLA DOVE ISTATA QVELO ANNO DAMANO DIRITTA·ET·GVARDATE·IN
QVELLA·CHASELLA·ET·VEDRETE·ACVNTI DI·ELA·DOMENICA·I·NAZI·ALCARNEVA
EDOVE·SARA·LALETERA·B·SIGNIFICA·CHE·I·QVELLANNO·SARA·IL·BISESTILE



2. *Two portable diptych sundials, calibrated in the same manner, for use around the latitude of Nuremberg. The dial on the left, which is missing its style and gnomons, is stamped* HANS TRÖS=/CHEL NVRNBERG; *it was made by Hans Troschel the Elder (working 1578-1612). German (Nuremberg), about 1598. Ivory, 3½ x 2⅜ inches. Gift of Mrs. Stephen D. Tucker, 03.21.38. The dial on the right, stamped* HANNS TROSCHEL ANNO 1620, *was made by Hans Troschel the Younger (working about 1616-1631). German (Nuremberg), 1620. Ivory, 3⅞ x 2⅝ inches. Gift of Mrs. Stephen D. Tucker, 03.21.53*

the Renaissance. The date of Easter could be calculated with the aid of two multipurpose diptych dials shown in Figure 2. Typical products of early seventeenth-century Nuremberg, both instruments are inscribed on the bottom with sets of numbers (Figures 3 and 4). The nineteen numbers that are found in the outer two circles of each dial give the number of days past the new moon on the first day of January in consecutive years of a nineteen-year cycle: the outer circle for the Julian calendar, and the inner for the Gregorian. Called epacts, these numbers, with a few calculations described in almanacs and popular treatises of the period, yield the date of the first full moon after the vernal equinox and thus the date of Easter. In fact the calculations give the number of days past the new moon on any day of the year.

More mundane applications of the epact numbers range from predicting the nights that would be illuminated by the moon to determining the ebbing and flowing of the tides. As Thomas Blundeville, an Elizabethan essayist on astronomical and navigational instruments, declared in his *New and Necessarie Treatise of Navigation* (London, 1594), "you must know the course of the Moone whereon dependeth the knowledge of the tydes in all places."

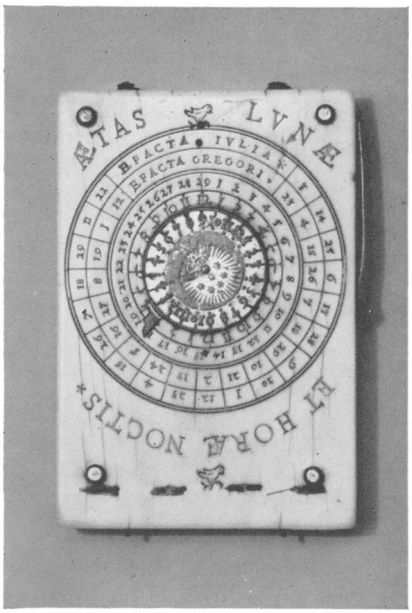
The epact numbers are even helpful in dating the instruments themselves. The little bird on the bottom leaf of the dial on the left in Figure 2 (shown in Figure 3) is the maker's mark of Hans Troschel the Elder, who worked in Nuremberg from 1578 until his death in 1612. Because the first epact numbers are three for the Julian calendar and twenty-three for the Gregorian calendar and because the epact numbers repeat themselves every nineteen years, the instrument must have been made around 1598, the only year with the epact numbers three and twenty-three during the working life of the maker (see Astronomical Explanations).

The second instrument (Figure 4) was made

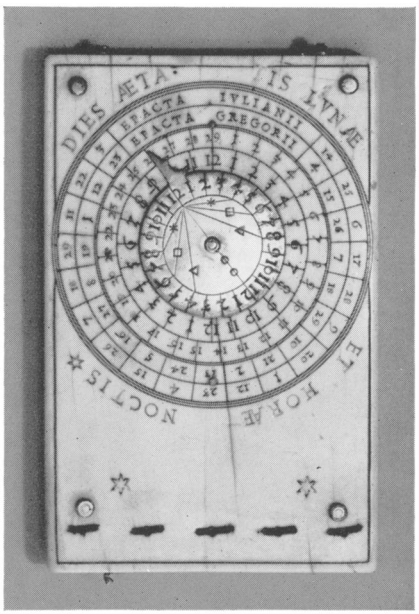
by Hans Troschel's son, and it is dated 1620. The epact numbers on this instrument, fourteen for the Julian calendar and four for the Gregorian, begin in the year 1618. It is clear that the first pair of epact numbers does not necessarily fix the precise date of the instrument's manufacture, but it does give an approximation.

The two instruments can also be used to find the hour of the day or night. Various kinds of sundials are laid out on the interior of each ivory leaf (Figure 2). The sundial gives the time of day by recording the movement of the shadow cast by a string or style in the sunlight. At night the dial records the shadow cast by the string in the moonlight. This shadow, however, does not immediately indicate the hour of the night. The dials were laid out to record the sun's apparent course across the sky, which is quite a bit different from that of the moon (see Astronomical Explanations). To convert the sundial hours to night hours, a rotating brass disk of the volvelle on the bottom side of the lower leaf (Figures 3, 4) is used. When the pointer is set at the number of days that have elapsed since the appearance of the new moon (1 to 29), the hour of the night appears on the innermost ivory ring opposite the sundial hour on the brass disk. In Figure 2, the sundial on the right reads about 3:20 P.M.; if this were a nighttime reading taken when the moon was twenty-six days old (indicated by the brass pointer in Figure 4), the hour of the night would be 1:00 A.M. (as shown on the ivory ring), assuming there was enough moonlight to cast a shadow on the dial at all. The moondial could be used only during the part of the month when the moon was shining, which is not the case on the twenty-sixth day of the cycle. It was really very inefficient.

For purposes of reckoning time, the apparent motion of the stars is more precise than the motion of the moon. The stars have been used to tell the nighttime hours since ancient times. The *Kalendrier des Bergers*, a book that went through many editions from the fifteenth to the seventeenth century, sets forth a traditional method for memorizing the position of the constellation Ursa Major,

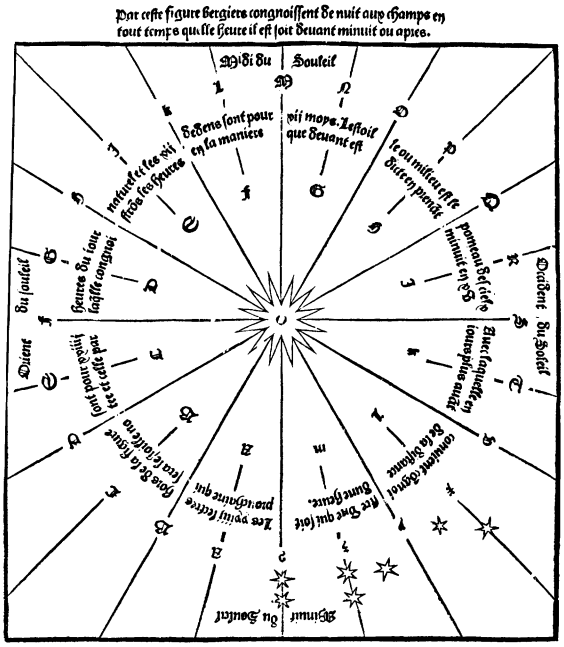


3. Reverse of the lower leaf of the sundial at the left of Figure 2. It is stamped AETAS LVNAE ET HORAE NOCTIS *(The age of the moon and night hours),* EPACTA IVLIA *and* EPACTA GREGORI, *and twice with the elder Troschel's maker's mark, a bird on a twig. The brass pointer here indicates the age of the moon, the number of days past the new moon, on Easter day in 1598*



4. Reverse of the lower leaf of the sundial at the right of Figure 2. It is stamped DIES AETA/TIS LUNAE ET HORAE NOCTIS *(The days of the age of the moon and night hours),* EPACTA IVLIANII *and* EPACTA GREGORII, *and twice with a six-pointed star, the maker's mark of the younger Hans Troschel. The inner two circles and the brass disk are used to calculate the night hours*

5. *Schematic diagram illustrating the position of Ursa Major with respect to the North Star. From Kalendrier des Bergers, Guy Marchant edition (Paris, 1500), folio l, p. v verso. Woodcut, 10⅝ x 7¼ inches. The New York Public Library, Astor, Lenox and Tilden Foundations, Spencer Collection*



6. *A shepherd aligning two ropes with the North Star. From Kalendrier des Bergers, Guy Marchant edition (Paris, 1500), folio l, p. vi recto. Woodcut, 5⅞ x 2¾ inches. The New York Public Library, Astor, Lenox and Tilden Foundations, Spencer Collection*

the Great Bear or Big Dipper, in the sky at midnight for each night of the year. The legend at the top of the schematic diagram in Figure 5 says, "By this figure shepherds in the fields at night can know at all times what hour it is, whether before midnight or after." The diagram illustrates the position of Ursa Major, the seven stars at the bottom, with respect to the North Star, Polaris (o), at midnight twice a month throughout the year. By memorizing the information contained in the diagram, the shepherd could estimate the hour of the night without using an instrument by observing the difference between the actual place of the constellation and the place it should occupy at midnight. To help him determine the position of Ursa Major with respect to Polaris at a certain time of the year, he could use the rope device in Figure 6. The *Kalendrier des Bergers* explains how to align the stars with this contrivance.

An instrument called a nocturnal accomplishes this time reckoning by the stars automatically. Descriptions of nocturnals abound in dialing books and navigational treatises of the sixteenth and early seventeenth centuries, when the instrument had its greatest vogue. No ship's complement was complete without a nocturnal "to know the hour of the night," according to Blundeville. Nocturnals continued to be made in the eighteenth century and were not unknown in the nineteenth.

The earliest instrument in the Tucker Collection is a sixteenth-century nocturnal and sundial (Figures 7 and 8). There are two sundials on the instrument. One, on the face of the nocturnal, is a horizontal dial (its style now missing) together with a compass for orientation. The compass is marked s (Septentrion), o (Orient), M (Midi), and o (Occident) for North, East, South, and West. The compass needle is lost. The sundial on the reverse (Figure 8) is used by placing the gnomon standing vertically on the arm marked PIGN[ON] on the appropriate date of the year on the left side of the instrument and reading off the hour at the point where the shadow is cast on the right side.

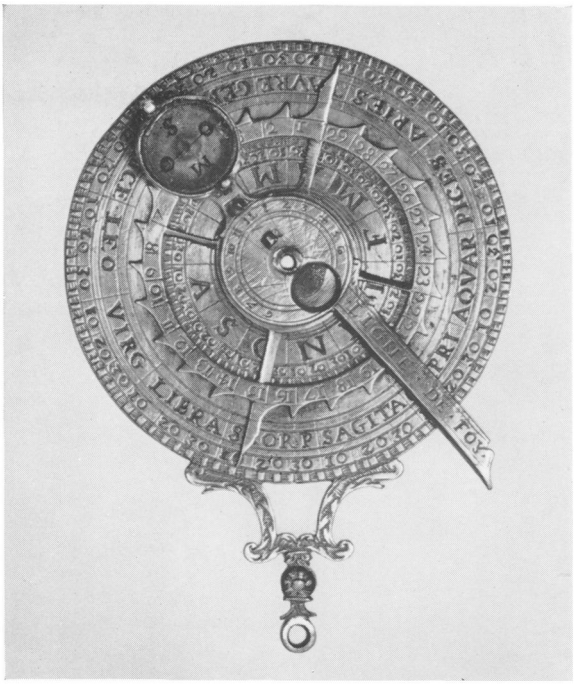
The nocturnal consists of three separate and concentric disks, fastened together at the center. The largest is calibrated from the center to the outer rim to show the months of

the year, the days of the month, the signs of the zodiac, and the degrees of the zodiac. On the outer rim is a handle.

The middle disk has twenty-four teeth to represent the hours. (The numbers 1 through 29 inscribed on this disk are not used for telling time at night, but have another function described below.) The smallest disk has a long pointer *(ligne de foy)* extending beyond the body of the instrument. In the center is a hole.

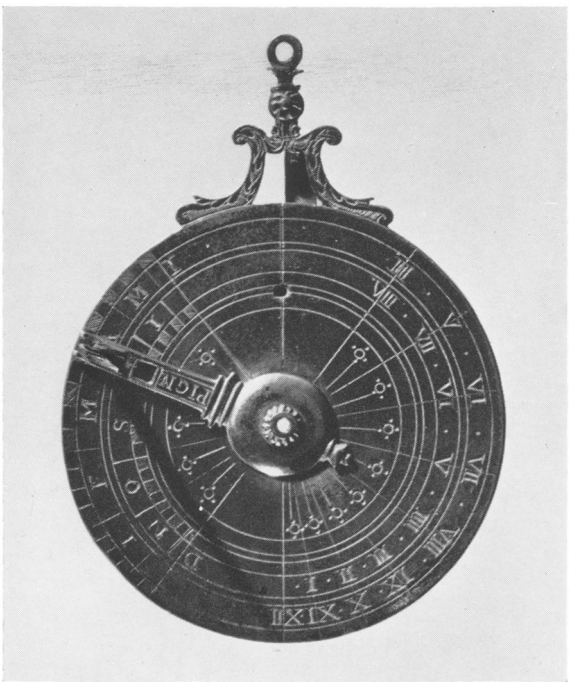
To find the time at night, either pointer on the middle ring is set for the day of the month (in Figure 7, April 12 or October 25). The instrument is held up by the handle until the North Star or Polaris, the star at the end of the tail of the constellation Ursa Minor, the Little Bear or, as it is now more commonly known, the Little Dipper (Figure 9), appears in the central hole. Next, the straight edge (ligne de foy) is rotated to align with the brightest star of the same constellation, the one nearest the head of the Little Bear. The hour may then be found by counting by sight or by touch the number of teeth between the pointer on the middle disk and the straight edge. The pointer on the date for which the reading is being taken denotes midnight. Counting clockwise from the pointer gives the number of hours past midnight, and counting counterclockwise gives the number of hours before midnight. In Figure 7 the instrument reads 8:00 P.M. on October 25. In Figure 11, the man is using Polaris and two stars from another constellation (see Astronomical Explanations).

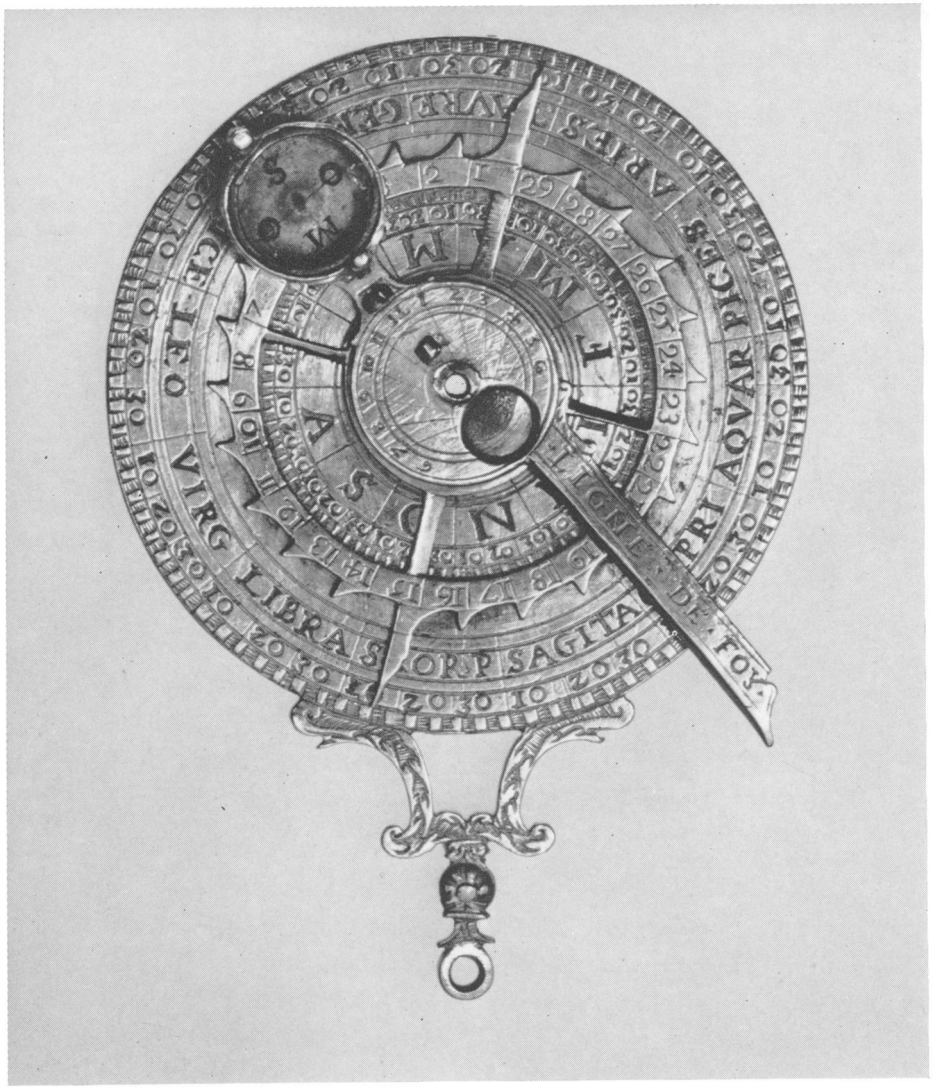
The Museum's nocturnal also has a device for finding the moon's phase and position in the zodiac (see Astronomical Explanations). In the words of the 1596 English edition of Martin Cortes's *Arte de Navegar* (see Figures 7 and 12), "To finde the place of the Moone we must holde the Index of the rundel of the Sunne [the pointer marked 1 on the middle disk of the nocturnal] fast upon that day of the moneth in which we desire to knowe the place of the Moone. And accompting in the rundel of the Sunne [the middle disk], the dayes that have passed from the day of the conjunction [the number of days after the new



7. Nocturnal and sundial. French, about 1550-1582. Water-gilt brass, with traces of blue and red enamel, diameter 2¼ inches. Gift of Mrs. Stephen D. Tucker, 03.21.69

8. Sundial on the reverse of the nocturnal in Figure 7





10. The nocturnal shown in Figure 7

moon, called the age of the moon] and where endeth that number of the dayes, if there we apply the index of the Moone [ligne de foy] it shall shewe in the circle of the signes, the place where she is. And so shall she appeare in the instrument [the off-center hole on the small disk] lightened, or darkened, more or lesse as in heaven."

If the new moon is on April 12, indicated by the upper pointer on the middle disk, and the age of the moon is nineteen, indicated by the ligne de foy, the moon will be found in two degrees of Capricorn. At the same time, its phase will be seen in the off-center hole in the top disk of the nocturnal.

The workmanship and the inscription on the nocturnal indicate that it was made in France not much earlier than the middle of the sixteenth century. Because the relationship of the days of the month to the signs of the zodiac is that of the Julian calendar, the instrument was probably made by 1582, the date when the Gregorian calendar was adopted in France.

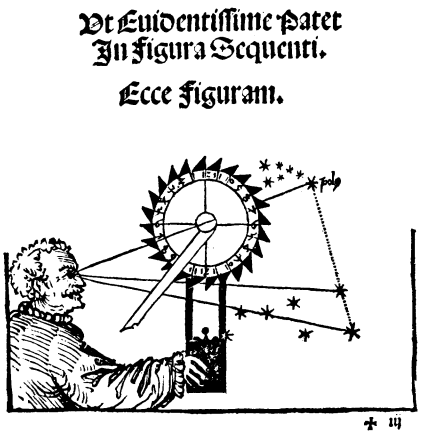
A clear picture of the three essential parts of a nocturnal can be found in the illustrations of the sixteenth-century French *Recueil d'Horlogiographie* by Jean Bullant (Figure 13). They show the three parts of a nocturnal separately and joined together ready for use. The day of the year is given in terms of the position of the sun in the zodiac. The middle ring, unlike the middle ring of the Museum's nocturnal, has the hours of the night inscribed on each tooth because the Bullant nocturnal has only one purpose, to tell time at night.

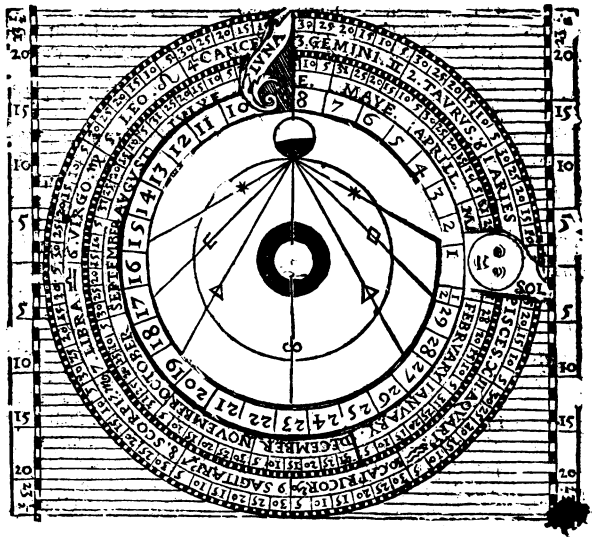
While the sundial is still in use today, however little we may depend on it, the nocturnal, which gives the night hours by measuring the apparent motions of certain stars, is all but forgotten. With the use of a telescope, the astronomer still tells time from the motion of the stars. In fact, until the invention of the atomic clock, the stars remained the most accurate timekeepers.

9. Representation of the constellation Ursa Minor, the Little Bear. From Oronce Finé's De Solaribus Horologiis (Paris, Guillaume Cavellat, 1560), p. 85. The apparent rotation of the star marked B around the North Star, marked A, in the constellation is measured by the nocturnal in Figure 7. Woodcut, 1⅝ x 2½ inches. The New York Public Library, Rare Book Division

LEFT:

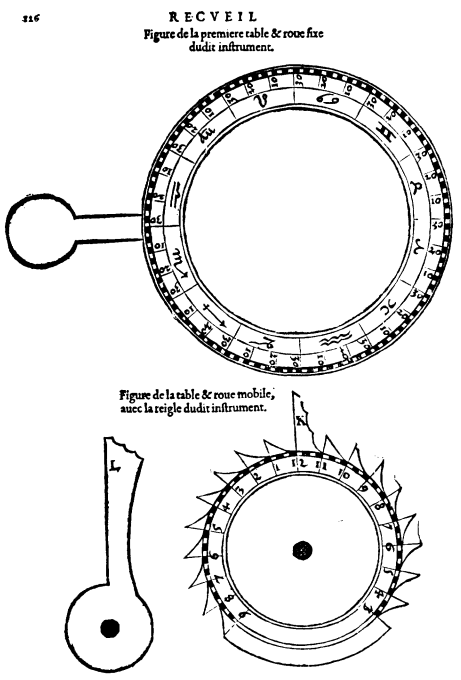
11. An illustration of the use of the nocturnal for sighting the North Star and the Guards of the constellation Ursa Major or the Great Bear. From the first edition of Petrus Apianus's Cosmographicus Liber (Landshut, 1524), sig. III recto. Woodcut, 4⅛ x 2½ inches. The New York Public Library, Rare Book Division

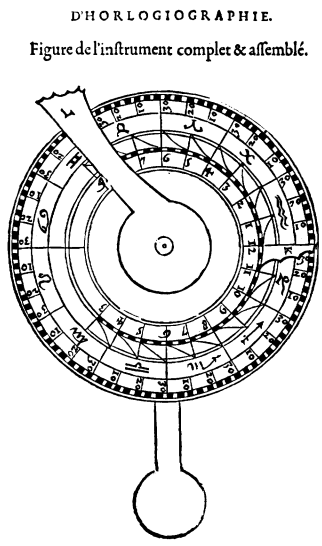




ABOVE:

12. An instrument "by which is found the place and declination of the Sunne with the dayes and place of the Moone." From Martin Cortes's The Arte of Navigation, translated into English by Richard Eden (London, Richard Watkins, 1596), folio 29 recto. Woodcut, 4½ x 4 inches. The New York Public Library, Rare Book Division

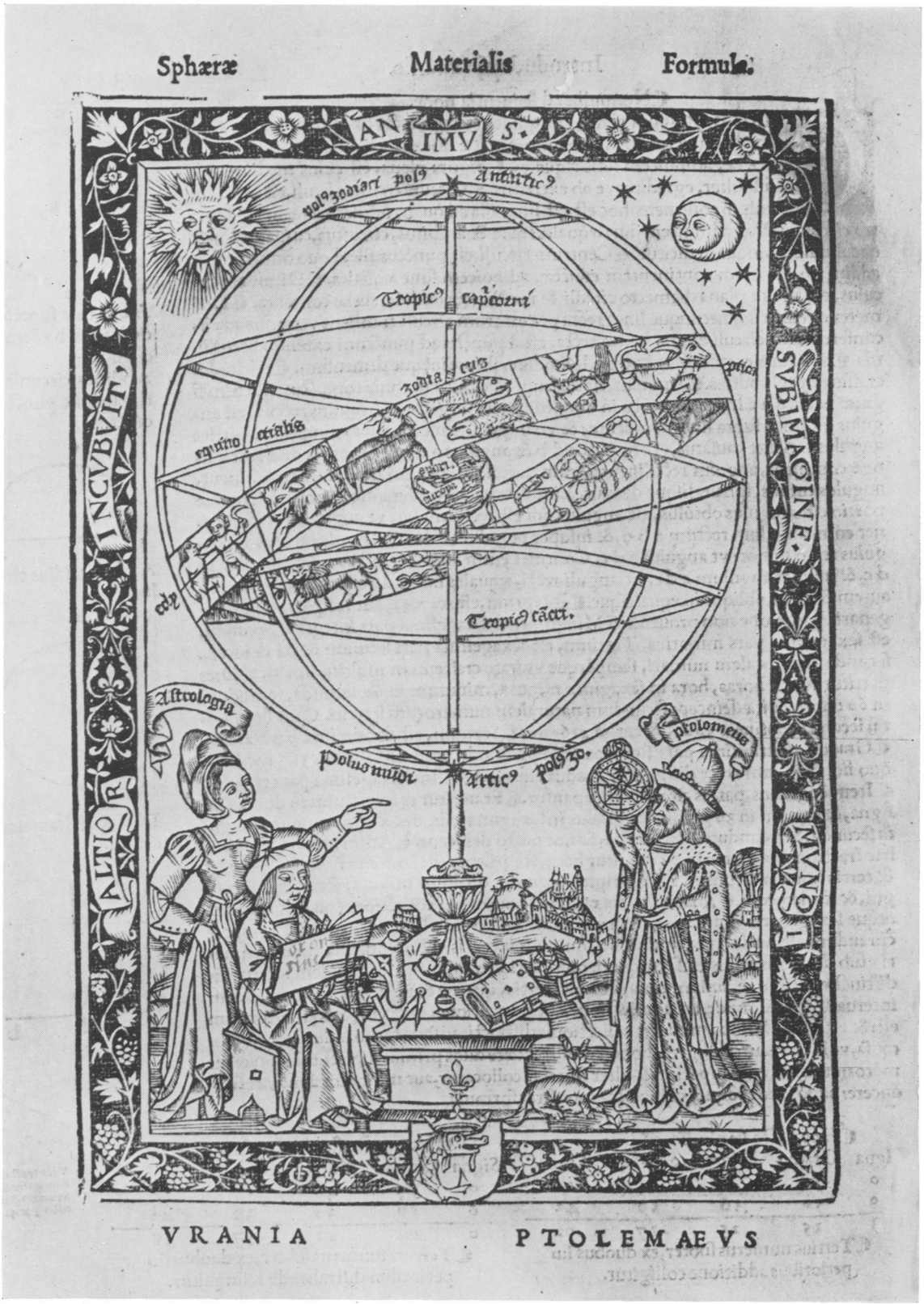




LEFT:

13. The components of a nocturnal. From Jean Bullant's Recueil d'Horlogiographie (Paris, Jean Bridier, 1561), pp. 126-127. Woodcuts, each 9½ x 6½ inches. Harris Brisbane Dick Fund, 28.46.2

Astronomical Explanations



14. *Armillary sphere. From Johannus de Sacrobosco's Textus de Sphaera (Paris, Simon de Colines, 1538), p. 3 verso. This print is the work of Oronce Finé, mathematician and author of the Solaribus Horologiis from which the illustration of Ursa Minor in Figure 9 was taken. Woodcut, 7½ x 5 inches. Harris Brisbane Dick Fund, 34.99*

The Date of Easter

The Council of Arles did not succeed in unifying the Church's celebration of Easter. There were two questions to be settled in order that Easter might fall on the same day throughout the world. The first, the theological problem, was one of definition, and the second, the astronomical one, was to reconcile the motions of the moon and the sun to the calendar.

The theological problem consisted in the main of a dispute between two factions. The Quartodecimans, who celebrated Easter on the fourteenth day of the new moon of the first month, actually the day of Passover as given in the Old Testament (Exodus XII:18 and Numbers XXVIII:17), were overruled by those who insisted that because the Resurrection took place on Sunday, Easter should fall on Sunday. The Council of Nicaea, called by the Emperor Constantine in 324, decreed that Easter should be the first Sunday after the first full moon after the vernal equinox. Easter would always fall on a Sunday, but never on Passover, for as Constantine explained in a letter to the bishops supporting the edict, Christians never "should follow the custom of the Jews in the celebration of the most holy solemnity."

Although the Council of Nicaea settled the theological dispute, the astronomical problems resulting from this definition of the day of Easter were far from settled. The understanding of these problems requires some knowledge of the motions of the moon and sun in relation to the earth.

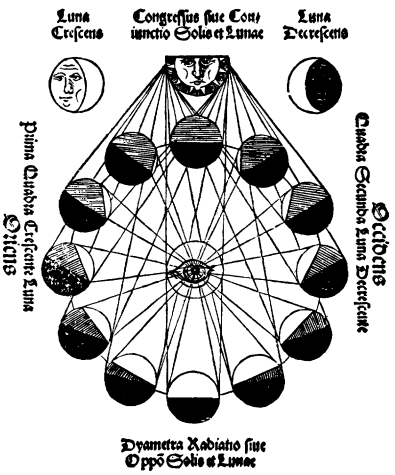
A simple picture of the world, according to the Ptolemaic system that was in use when the Metropolitan Museum's instruments were made, can be seen in Figure 14. The earth is a sphere at the center of a larger sphere of fixed stars. The south pole is at the top of the picture and the north pole at the bottom. The sun and the moon travel in an earth-centered orbit between the sphere of the earth and the sphere of the fixed stars. As seen from the earth, they seem to rotate through a circle of fixed stars called the circle of the zodiac (*zodiacus* in Figure 14). The zodiac circle is tilted at a 23½-degree angle to the earth's equatorial plane *(equinoctalis)* and is divided into twelve equal parts, each named for the constellation of stars within its boundaries. These are the twelve signs of the zodiac. The apparent motion of the sun and the moon through the zodiac would be from Aries, the Ram, at the vernal equinox, to Gemini, the Twins, on the far left, through the back half of the circle, and then back through Sagittarius, the Archer, on the right to return to Pisces, the Fish.

In an Elizabethan translation of the *Arte de Navegar*, Martin Cortes explains that "The Sunne and the Moone are mooved under the Zodiacke with divers motions. The Moone with a swifter motion then the Sunne followeth him, overtaketh him, and goeth before him, until she place herself in Diameter with him. And when shee hath thus overtaken him, so that they are both in one self same degree of the Zodiacke, then is the conjunction. Then departing from him, and being in equall degrees of the signes opposite according to the Diameter, is the opposition." The new moon occurs at conjunction, and the full moon at opposition (see Figure 15).

The sun moves through the zodiac roughly once in 365¼ days. This period defines the year in the Julian calendar. Introduced by Julius Caesar in 46 B.C. and used until 1582, when it was replaced by the Gregorian in certain parts of Europe, the Julian calendar had three consecutive years of 365 days each and a fourth, the leap year, of 366 days. (The modern Gregorian calendar skips one leap year in every century that is not a multiple of 400.)

The moon moves through the zodiac in roughly 29½ days so that twelve revolutions of the moon occur in 354 days, eleven days short of the regular year and twelve days short of the leap year. It is clear that if the new moon occurs on January 1 of one year, it will not occur on January 1 of the next. The epact number gives the moon's age on the first day of January. The epact numbers repeat after nineteen years because the moon and the sun

15. *Diagram illustrating the phases of the moon. From the first edition of Petrus Apianus's Cosmographicus Liber (Landshut, 1524). This diagram shows why certain portions of the moon are visible from the earth at certain times of the month. The eye is that of an observer on earth. The new moon or the conjunction of the moon and sun is shown at the top of the circle; the full moon or opposition of the moon and sun is at the bottom. Woodcut, 5¾ x 7⅛ inches. The New York Public Library, Rare Book Division*



assume almost the same relative positions in the zodiac after this interval. For example, if the epact number is 1 in 1606, it will be 12 or 1 + 11 in 1607, and 1 again in 1625. Using the epact number and the old prescription "Thirty days hath September . . . ," it is a simple matter to calculate the age of the moon on the first day of any month and consequently the dates of the full moon during the course of the year.

The definition of Easter requires the knowledge of the date of the first full moon after the vernal equinox, that is, the day when the sun in its travels around the zodiac ushers in the spring by crossing the equatorial plane (at the sign of the Ram in Figure 14). In the Julian calendar used by the Christian church the vernal equinox was assigned to the twenty-first day of March every year. To find the day of Easter the Sunday after the first full moon after March 21 also had to be found, and this required further calculation. To facilitate the calculation a system of letters was introduced. The first seven days of the year were assigned the letters A through G, and these letters were repeated in the same order throughout the year. Thus every day of the year had a letter. The letter assigned to the day upon which the first Sunday of the year fell was called the Dominical or Sunday Letter. Except in leap years every day assigned this letter was a Sunday. In England, a rhyme was often used to remember the letters assigned to the first day of each month: "At Dover Dwells George Brown Esquire, Good Christopher Finch, And David Frier," the first of January being A, the first of February D, and so on. For example, if the first Sunday of the year happened to be on the fifth of January, the Dominical Letter would be E. Using the rhyme, Sunday would fall on February 2, March 2, April 6, and so on. The other Sundays during each month could then be determined easily.

In the case of a leap year the above convention applied until February 28, which was always a C in the day-letter system. The extra leap-year day, February 29 (in the sample year mentioned above it would be a Saturday), did not receive a letter of its own. Consequently, March 1, always D, advanced a day in the week (in the sample year from Saturday to Sunday), in essence moving all the day letters backward by one. This meant that the Dominical Letter used through February would be replaced by a new one indicating the first Sunday in March and determining Sundays for the remainder of the year. Thus, if our example year were a leap year the new Dominical Letter would be D, and according to the rhyme Sundays would fall on March 1, April 5, and so on.

All these calculations rested on the suppositions that the year was exactly 365¼ days long and the period of the moon was 29½ days. Both these assumptions were not quite accurate. Furthermore, no account was taken in the Julian calendar of the procession of the equinoxes, the change in the position of the sun in the zodiac as it crosses the equatorial plane, caused by the wobble in the earth's axis. By the sixteenth century, the errors were so great that the vernal equinox occurred ten days before March 21. Reform was absolutely necessary, and in the year 1582 the new Gregorian calendar was adopted, though not universally. The English authorized its adoption as late as 1750. In Germany, the Catholic states adopted the reformed calendar in 1582, while the Protestant states used the Julian calendar until 1700. Epact numbers on German instruments of the seventeenth century are often given for both the Gregorian and Julian calendars.

16. Celestial Map, Northern Hemisphere, by Albrecht Dürer, with the nocturnal from Figure 7 seen against a portion of the map. The relative positions of Ursa Major and Ursa Minor can be seen to the left of the instrument. The Guards of Ursa Major, stars 16 and 17, are on a line with the North Star in the tail of Ursa Minor. While many nocturnals measure the apparent motion of the Guards around the North Star, this nocturnal makes use of the star marked 6 in Ursa Minor and the North Star in order to tell time at night. Woodcut, detail 9¾ x 7¼ inches. German (Nuremberg), 1515. Harris Brisbane Dick Fund, 51.537.1

The Night Hours

While our year is defined by the apparent motion of the sun and the lunar month by the motion of the moon, the day is determined by the rotation of the earth about its axis. The sundial, for example either in Figure 2, measures the earth's rotation by dividing into equal hours the period during which the shadow cast by the style twice falls on the line marked twelve. The sundial day is thus defined as lasting from noon to noon.

The way in which the dial can be used to record the hours of the night with the help of the volvelle is best illustrated on the night of the full moon, when the age of the moon


Hercules
Ophiuchus
Cepheus
Corona
Anguis
Draco
Lyra
Cassiopeia
Ursa minor
Ursa maior
Virgo
Gemini
Cancer
Leo

is 14¼ days. On this night, the moon is in opposition to the sun (see Figure 15), that is, directly opposite the sun in the circle of the zodiac. At midnight, when the earth has completed half its daily rotation, the moon is in the same relative position to the earth as was the sun at noon at the beginning of the sundial day. The shadow cast in moonlight will then fall on the line marked twelve. The other equal hours before and after midnight for this particular night will be the same as the sundial hours.

If the volvelle in Figure 3 is set at 14¼, the hours on the brass and the ivory circles will coincide. For the other nights of the month, the moon's orientation to the earth at midnight will be different from the sun's orientation to the earth at midday. In order to compensate for this difference, the volvelle is rotated to the appropriate night of the lunar month and the corrected hour is read off. Because the lunar month is roughly 29½ days long the compensation necessary for each night is approximately 1/29 of a circle.

The period recorded by the shadow between noon and noon, a sundial day, does not quite correspond to one revolution of the earth around its axis. The day is a little less than one complete revolution, because the sun will have moved approximately 1/365 of its yearly course through the zodiac in the time the earth has made a single revolution, and the two motions are in opposite directions.

For every complete revolution of the earth, an observer would see the sphere of the fixed stars rotate once around a north-south axis (see Figure 14). The star Polaris, the North Star, is very close to the celestial north pole, so that the stars in the northern hemisphere seem to rotate around Polaris. The time at night was measured historically by the motions of Ursa Minor (the Little Bear or Little Dipper) and Ursa Major (the Great Bear or Big Dipper) around the North Star, because the first constellation contains the North Star in its tail (the star labeled 1 of Ursa Minor in Figure 16) and the second constellation contains two stars called the Guards (the stars labeled 16 and 17 of Ursa Major), which lie on a line with the North Star and are especially easy to find in the night sky (see Figure 16). Nocturnals were built to measure the motion of either of these constellations or both.

In order to compensate for the difference between the day measured by the sun and the time it takes the earth to make one complete revolution, the hour dial of the nocturnal has to be moved ahead approximately 1/365 of a circle (or about 1°) every day. Because of the phenomenon of the procession of the equinoxes caused by the wobble of the earth's axis, a nocturnal cannot be used over a period of very many years. For example, in four centuries the distance from the North Star to the pole has shifted about two degrees.

REFERENCES

Further material concerning the calendar and the date of Easter can be found in the entries for those subjects in the eleventh edition of the *Encyclopaedia Britannica*, Vols. IV and VIII (New York, 1910), and in Sir S. H. Jones's chapter (21) in Vol. III, *A History of Technology*, ed. by Charles Singer (Oxford, 1957). An interesting discussion of the problem of determining the date of Easter in the early Church can be found in Louis Gougaud's *Christianity in Celtic Lands* (London, 1932). The English translation of the letter from the Emperor Constantine to the bishops was taken from pp. 51-54 of Isaac Boyle's *Historical View of the Council of Nice with a Translation of Documents* (New York, 1842).

A good description of the construction of a moon dial and a nocturnal can be found in Book VIII, Chapter 6, of the English translation of Nicolas Bion's *The Construction and Principal Uses of Mathematical Instruments* (London, 1723). D. W. Waters's essay "Science and the Techniques of Navigation in the Renaissance," an excellent discussion of the use of the circumpolar stars and the moon's phases by sixteenth-century navigators, can be found in *Art, Science and History in the Renaissance*, ed. by Charles S. Singleton (Baltimore, 1967), pp. 189-237.

For information concerning the Troschels see Ernst Zinner's *Astronomische Instrumente des 11. bis 18. Jahrhunderts* (Munich, 1956) and "Three Nürnberg 'Kompassmacher'" by Bruce Chandler and Clare Vincent to be published in the *Metropolitan Museum Journal*, Vol. II (New York, 1969). For the way in which sundials work see the authors' article "A Sure Reckoning" in *The Metropolitan Museum of Art Bulletin*, 26 (1967), pp. 154-169.

The Lady with the Primroses

JOHN GOLDSMITH PHILLIPS *Chairman, Western European Arts*

Now that the furor that attended the purchase of the bust known as The Lady with the Primroses (Figure 2) has to a great extent died down, it seems time to place on record our thoughts about it. This sculpture, as item 82 from the collection of Mrs. A. Hamilton Rice, was purchased at a New York auction on Friday, October 22, 1965, for the sum of $225. We mention the price not only since it is on public record, but because it was one of the factors that made our acquisition of the piece a story that quickly swept around the world. For the sale was hardly over when word leaked out (not through us) that its actual worth was in the neighborhood of half a million dollars. Rumors were also rife that the Museum had bought a fake.

On the Monday morning after the sale it was on the front page of *The New York Times*. On Tuesday morning, the sculpture was removed to the Museum from the auction house; it was carried out in a box labeled by chance "musical instruments," in this manner passing unnoticed through a group of reporters who were gathered there.

On its arrival at the Museum it was hastily examined in the Director's office by a small group of the staff. Present, in addition to James J. Rorimer, the Director, were Joseph V. Noble, then Operating Administrator, Kate C. Lefferts of the Conservation Department, Olga Raggio of the Western European Arts Department, and myself. The five of us had only fifteen or twenty minutes to ourselves before reporters, photographers, and radio and TV people swarmed in. The conference that followed was, to put it simply, quite wild. Mr. Rorimer and I, who spoke for the piece, found

1. Detail of Figure 2

2. *The Lady with the Primroses, after the marble in the Bargello here attributed to Leonardo da Vinci (1452-1519), Italian. Executed in Verrocchio's workshop about 1475 or shortly thereafter. Plaster with a stucco surface, painted and gilded, height 25½ inches (including base). Rogers Fund, 65.177*

ourselves short on facts: we simply had not had time to get to know the object. Both of us had seen it briefly some years before in the residence of Mrs. Rice; we looked at it again, briefly, at the auction galleries. Mr. Rorimer's vivid account of his difficulties in examining it there made diverting reading; according to *Time* magazine, our Director said, "I just kind of moseyed along, looking casually here and there. When I noticed a man near by watching me examine the statue, I quickly refocused [my lens] on the tapestry behind."

We then had no clear answers to many questions. Did our new acquisition have any history of its own? Of what material was it made? Was it an authentic work of art? Or was it a fake, as many believed? What, if it was authentic, was its relation to the marble of the same subject, attributed to Verrocchio, in the Bargello at Florence (Figure 3)? Could it be by or after Verrocchio? And what about Leonardo da Vinci – Verrocchio's pupil – whose name had been brought in, further to complicate the story? Despite our lack of information, we were pleased with our purchase, and we did not conceal that pleasure. In retrospect it was a moment for coolness, and for many "no comments," but the climate in the Director's office that mad morning hardly favored such restraint on our part.

Now, four years later, considerably more is known about the sculpture. As early as 1920 it belonged to the Roman art dealer Alfredo Barsanti, who had purchased it in Florence from another dealer. It was said at that time to have come from a Florentine church, although there is no proof that this is so. Even then the authenticity of the piece was being questioned by some of Barsanti's friends and enemies. But there were those who believed in it, among them Wilhelm von Bode, Director of the Kaiser-Friedrich-Museum and the foremost scholar of his day in the field of Renaissance sculpture, who examined it in 1920, and Giacomo de Nicola, Director of the Bargello, who examined it in 1923.

It was in 1923 that Duveen Brothers purchased it. Soon thereafter the bust was sold to the first Mrs. A. Hamilton Rice; upon her death it passed to her husband. Dr. Rice left the sculpture to the second Mrs. Rice, from whose collection it came to us. During the period of Rice ownership it was illustrated and flatteringly described in Augusto Jandolo's *Le Memorie di un Antiquario* (Milan, 1938). These were the gossipy recollections of a Roman art dealer, of limited currency, and the Rices, ensconced in their New York palazzo, may never have heard of them. It seems, therefore, that after forty years of ownership by three members of the Rice family, its his-

tory, brief though it was, had been forgotten. It is possibly for this reason that in the sale catalogue the sculpture was given no pedigree at all.

It is now easy to name the material of which the sculpture is made. It is not terracotta as we first thought, nor stucco as described in the sale catalogue, but plaster with a thin stucco surface. It is to be noted, however, that the terms plaster and stucco have long been used interchangeably by scholars (including, as we shall see, Bode) in describing Renaissance sculptures, even though the materials are really not alike, plaster being calcium sulphate, and stucco, calcium carbonate. Plaster is an admirable casting agent, and our sculpture is a cast, one surely taken from the marble in the Bargello (compare Figures 2 and 3).

The two sculptures, however, differ in several respects. Ours is unlike the marble in that a base had been cast as part of it. The marble lacks a base and has been without one at least since it was acquired for the Bargello – then the Reale Galleria – in 1825 from the heirs of the art dealer Francesco Ceccherini, who had purchased it from "a noble Italian family." The base of our sculpture is oval, about three inches high, and slightly tapered toward the top, with an S-curve molding along the upper edge.

Another point of difference, perhaps more basic, arises from the fact that a thin stucco surface was applied to the plaster after completion of the casting process. Since the stucco seems to have been sensitively modeled, this may be said to be a significant, although minor, mark of differentiation.

The application of paint and gilding to our cast offers a further example of differentiation. The colors are applied in a subtle and perceptive performance; they give our piece a soft, entrancing character that makes it seem far more dissimilar from the rather austere unpainted marble head in the Bargello than it actually is. Our sculpture, in a word, is a long way from being a prosaic copy.

It is from the nature of the painted surface that we can best determine the age of our piece. This is not, however, a simple problem, for the surface has undergone several revisions, and these have led to doubts about the bust's validity. According to Bode, who wrote about it in a letter to Barsanti of October 15, 1920:

> . . . it seems to me impossible that your stucco [sic] has been judged to be modern. From the remains of the paint that you have left in some places, one recognizes very well the different times at which it has been repainted: in the past century, in the XVII, and in the XVI century. The colors as well as the *craquelé* of the colors have the character of those times. The quattrocento color that you have found beneath these later colors looks to be very typical and fine. The very fine plaster [sic] that covers the stucco [sic] cannot be imitated by any artist of today. And the colors also have a very special tone that is not found in modern colors.

3. The Lady with the Primroses, here attributed to Leonardo. About 1474-1475. Marble, height 24 inches. Museo Nazionale (Bargello), Florence. Photograph: Brogi

4. St. Anne, the Virgin, and Child. One of the few Renaissance sculptures with its original base. Italian (Florence), early XVI century. Painted terracotta, height 16 inches. Lent by Paul E. Manheim, L 68.140.6

Bode's letter (which, incidentally, came to our attention well after the auction sale) makes it clear that Barsanti had some layers of paint removed from the sculpture's surface. Jandolo in his memoirs also refers to Barsanti's removal of paint. According to Edward Fowles, who acted for Duveen Brothers in the purchase of this bust, his firm sent the object from Rome to Paris, where the restorer Léon André worked further on the task of removing the repaint of later centuries. It is probable that the Rices left the surface of the sculpture as it was when the first Mrs. Rice bought it.

Since its arrival at the Museum, its painted surface has been carefully examined by Hubert F. von Sonnenburg, the Museum's Conservator of Paintings, and by Mario Modestini, the well-known specialist in the restoration of Italian paintings. These examinations were made independently of one another; however, there is agreement that the remaining paint is essentially old and is entirely consistent with pigment on surfaces found on panel paintings and painted sculptures of the late fifteenth century in Florence. Both experts observed that there are indications of later repaint and of more recent "fill." Their findings, therefore, may be said to agree with the findings of Bode.

The fact that the base is an integral part of our cast, while the base for the Bargello marble has been lost at least since 1825, seems significant to us. It did, also, to Bode. In 1919, before he saw the Barsanti bust, Bode had published an article on the development of the base in busts of the Italian Renaissance. Noting that there are no surviving examples of bases in portraits that show the half figure, down to the waistline, he observed that

> . . . in the two badly damaged marble portraits of ladies by Desiderio now in American private ownership and in the terracotta of a lady in the Morgan Collection and the so-called Piero de'Medici in the Bargello – both attributed to Verrocchio – the arms stand a little apart from the body, an arrangement that produces two disturbing convex profiles that are even further underlined by the addition of a thin base, of the type used in the terracotta bust of the young St. John from Verrocchio's workshop.

He then noted:

> It was perhaps the recognition of this shortcoming that led Verrocchio to create a bust showing both hands, as we see in the most beautiful feminine bust of the XV century [The Lady with the Primroses in the Bargello], a work the execution of which in Verrocchio's workshop could be attributed to the young Leonardo. How original must also have been the base that he devised for it!

The last paragraph of Bode's letter of 1920 to Barsanti reads as follows:

> A little thing has interested me very much in your stucco. It still has the base that is missing in the marble. And this base, in its profile, its low proportion, its gilding, is a further and irrefutable proof that your very fine stucco is a work of the second half of the XV century.

Bode promised to send Barsanti a copy of his 1919 article.

So far, we have looked into the history of the bust and have reported on its physical characteristics. Its history goes back only to 1920, but its physical characteristics offer us a cloudy chart of its entire career. Since the original paint that remains may be said to be of the period of the Florentine Renaissance, the sculpture itself can have been cast at no later age; the nature of the base reinforces such a conclusion. It would seem, therefore, that we have acquired a contemporary version of the marble in the Bargello, and indeed, the only one that has so far appeared.

Hence it is that the marble sculpture known as The Lady of the Primroses looms large in our accounts, for what we can determine about the marble permits us to describe more completely our stucco version. It may be said at once that no one questions that the Bargello's marble issued from Verrocchio's shop, and we may add that the same conclusion inferentially applies to our painted and gilded cast of it. But the problem still remains: is the marble by the master of the shop, Verrocchio himself? Or can the design and execution of it be credited to an assistant? The fact that Leonardo received his early training in Verrocchio's shop has given rise to much speculation as to the course of his development as

an artist and to Verrocchio's role as master. I myself have been especially concerned with this problem for a number of years. Hence, much of the following discussion is based directly on my researches.

Let us examine the question of the marble bust's authorship, beginning with a brief description of what we believe to be the character of Verrocchio's workshop. This, in the late 1460s and the 1470s, was an unusually busy and successful *bottega*, and the master employed a number of assistants. Among these, in addition to men such as Lorenzo di Credi and Perugino, who were in time to make names for themselves, was Leonardo, who began working there probably about 1467, was enrolled in the Guild of Painters in 1472, when he was twenty, and apparently stayed on with Verrocchio through 1477.

There are no documents to connect Leonardo's name with any work in painting or sculpture during the years he spent with Verrocchio, yet we may be sure that he was far from idle. A variety of commissions were then coming to his master, who on more than one occasion, when a painting was ordered, seems to have assigned the job to Leonardo. The Uffizi's Annunciation and the Ginevra de'Benci recently acquired by the National Gallery of Art in Washington (Figure 7) – both years ago believed to be by Verrocchio! – are surely works executed by Leonardo under such circumstances; at the time of issuance from the shop these may have gone under the name of Verrocchio, who almost certainly received payment for them. On another occasion the master called upon Leonardo to complete what was to be his most celebrated painting, the Baptism of Christ in the Uffizi (Figure 15). In view of such a working arrangement, Kenneth Clark has suggested "Verrocchio & Co." as a fitting name for the shop.

Verrocchio was an established sculptor before becoming a painter, and documents attest to this. In one that has to do with the Orsanmichele monument and is dated January 14, 1467 (New Style), he was called *intagliatore* (carver). In another, concerned with the bronze candlestick for the Palazzo Vecchio and dated June 29, 1468, he was again called *intagliatore*. On December 21, 1469, as *scultor*, he received payment for a drawing of a Virtue (a painting). Still later, in his *Catasto* report – a tax declaration – for 1470, Verrocchio described himself as *iscarpelatore* (stonecutter). It was not until 1472, when he was a member of the Guild of Painters, that he was referred to as *dipintore e'ntagliatore* (painter and carver).

Upon Leonardo's arrival in the Verrocchio workshop, he most likely found his master busy with plans for the Orsanmichele monument (about 1467-1470), and with his commission to execute the tall candlestick for the Palazzo Vecchio (completed in 1468). By 1467, Verrocchio may already have begun work on the lavabo for the Church of San Lorenzo; and the funeral monument to Giovanni and Piero de'Medici was in the immediate offing (begun in 1469 and completed in 1472). It is hard to believe that in a shop so definitely oriented toward sculpture Leonardo would not have received solid training as a sculptor; his own words, written in the early 1480s when he was seeking employment in Milan, indicate that he did: "I am prepared to make anything that can be made in sculpture, whether in marble, bronze, or clay, and I can do in painting whatever may be done, as well as any man, be he who he may." Later in his life, in commenting on the relative merits of sculpture and painting, he began a sentence with this phrase: "I, myself, having exercised myself no less in sculpture than in painting, and doing both one and the other in the same degree. . . ." It seems, therefore, that Leonardo must have produced a variety of sculptures to have been justified in so writing, and, moreover, since they were by him, that they were not inconsequential.

I believe that The Lady with the Primroses in the Bargello is one of Leonardo's sculptures. To discuss this assumption thoroughly would require far more space than is allowed for in the confines of a short account such as this; our argument here has then to be summary, and has to leave out much evidence.

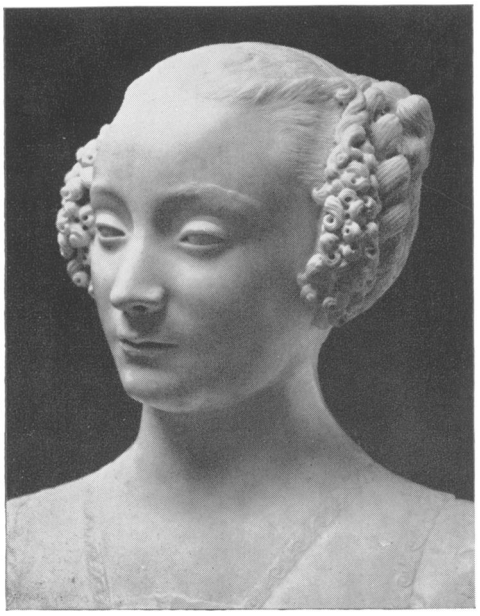
As I see it, the keys to the solution of this problem are to be found in the painted likeness of Ginevra de'Benci in Washington, and in the marble bust of a lady belonging to the Frick Collection (Figures 6, 8) and presently

5. Another view of the Museum's Lady with the Primroses

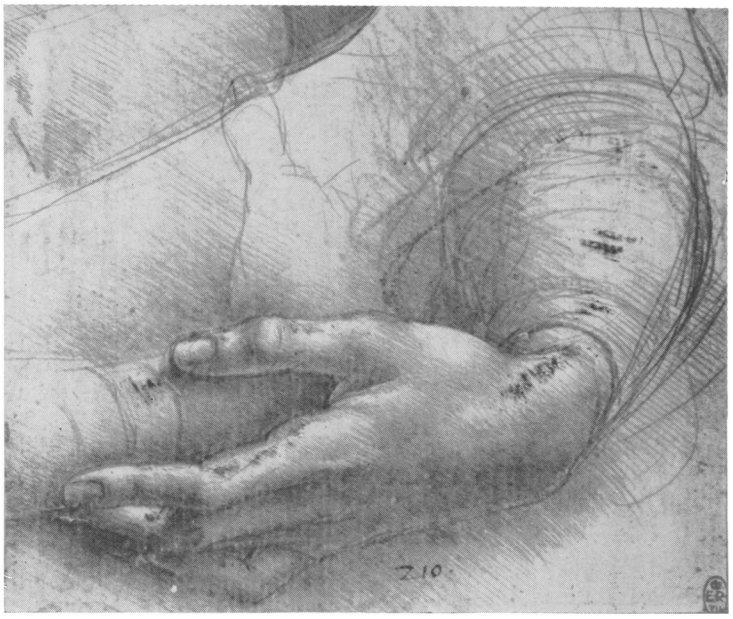
6. *Marble bust of a lady (detail), here attributed to Leonardo. About 1473-1474. The Frick Collection*

7. *Ginevra de' Benci, by Leonardo. 1474. Oil on wood, 15½ x 14½ inches. The National Gallery of Art, Washington, D. C., Ailsa Mellon Bruce Fund, 1967*

8. *Another view of the bust of a lady in The Frick Collection*



9. *Another view of the marble Lady with the Primroses in the Bargello. Photograph: Alinari*



ABOVE:

10, 11. Drawings of hands (details), by Leonardo. Royal Library, Windsor Castle, Nos. 12616 and 12558. Reproduced by gracious permission of H. M. the Queen

RIGHT:

12. The right hand of the marble Lady with the Primroses in the Bargello. Photograph: Brogi

on loan to the Princeton Art Museum. For the evidence that is to be found in the Ginevra de'Benci, now generally accepted as a work by Leonardo, indicates that the marble bust of the Frick Collection is also by him; and in a like manner the evidence to be found in the Frick's marble indicates that The Lady with the Primroses is by Leonardo (see Figures 5-9). Let us look at this evidence, which, it is to be noted, is entirely that of style.

In both the Frick bust and in the Ginevra de'Benci there is a marked resemblance of mood and an equally marked similarity in the manner of representing features. Both portraits are of very feminine women, each with an inner life of her own into which no observer is permitted fully to enter; others of Leonardo's likenesses of women may be similarly described. The heads in the sculpture and in the painting are similarly turned, and the hair is arranged in the same fashionable manner, with masses of ringlets framing the sides of the face. In both portraits, also, the eyes are almond-shaped and heavy-lidded, the eyebrows delicately modeled, and the mouth is a thing of extraordinary sensitivity. The relationship that exists between these two pieces is hardly accidental. A single author, one with a highly developed painterly instinct, is manifestly indicated.

A corresponding relationship in mood is also to be observed between the Frick marble and The Lady with the Primroses, which is surely the latest and most developed of the three works being compared here. In both sculptures, the eyebrows are carved in very low and delicate relief, the eyes are similarly set into the head, and just above the upper lids are two finely incised lines representing creases – a detail as indicative in its way as handwriting. As in the Ginevra de'Benci panel, both upper and lower eyelids of the two marble portraits are emphatically modeled. The mouth is also similarly shaped in both sculptures – the lower line of the upper lips forming a particularly lovely curve – and the arrangement of the hair is much the same. The tiny ringlets in clusters that frame the sides of the faces may be said to be interchangeable parts that could fit with equal ease into either of the two coiffures.

The hands in the Bargello sculpture have already led some scholars to think, if only in passing, of Leonardo. Among the Windsor Castle drawings are two studies of hands by Leonardo, one of which is very well known (Figure 11); the other is quite discolored and faded, but shows up with greater clarity under ultraviolet light (Figure 10). It is of significance to us that an extraordinarily expressive hand in each of these two drawings closely resembles the right hand of The Lady with the Primroses (Figure 12).

We could present additional evidence in the form of correspondences of details in the sculpture with details in other paintings and drawings by Leonardo. But these would only be ancillary to the evidence offered here. For the moment, therefore, we rest our case, and offer as our findings the theory that the Bargello's bust *is* by Leonardo, and that the Metropolitan Museum's sculpture is a contemporary workshop version of it, the workshop being that of Verrocchio.

At this point you may say: this is all well and good, but cannot the evidence as here presented be interpreted as indicating that Verrocchio and Leonardo, as workshop colleagues, were following a similar style? We are sure that this is not what occurred. Style is always an individual affair, the revelation of an artist's essential nature. The degree to which the styles of our two masters differ is clearly seen in their works.

Let us, for example, compare the three hands by Leonardo cited above with two hands by Verrocchio – one, the left hand of the small bronze Judith in Detroit (Figure 13), the other, the right hand of St. Thomas in the great Orsanmichele monument in Florence (Figure 14). In his *Treatise on Painting* Leonardo had declared that "the hands and the arms must, whenever possible, display in all their actions the intention of the mind that moves them, because by means of them whoever has feeling and understanding can follow the mind's intent in all movements." How

TOP:

13. Hand of Judith. Detail of the bronze sculpture by Verrocchio (1435-1488). About 1474-1477. Detroit Institute of Arts

BOTTOM:

14. Hand of St. Thomas. Detail of the bronze group of the Incredulity of St. Thomas, by Verrocchio. About 1478-1483. Orsanmichele, Florence. Photograph: Gabinetto Fotografico della Soprintendenza alle Gallerie

15. *Detail of The Baptism of Christ. The head of the angel on the right is by Verrocchio, about 1474-1475; that of the angel on the left by Leonardo, about 1475-1477. Uffizi, Florence. Photograph: Anderson*

communicative are the hands by Leonardo! All three have the same loose-jointed fingers, alive with an intense and almost feline awareness. In comparison the hands executed by Verrocchio must be described as casual and pedestrian.

Consider also that singular performance in which Verrocchio's and Leonardo's work appears side by side. We refer to the two heads of angels who kneel next to each other in the Uffizi's painting of the Baptism (Figure 15). Verrocchio's head is an honest and uninspired creation, almost like a carved relief, a sculptor's answer to the problem at hand. Leonardo's head seems to exist in a sea of atmosphere that caresses the features and softens the tresses. It is impressionistic and painterly, and recalls another passage in the *Treatise* in which Leonardo advised artists to "depict hair which an imaginary wind causes to play about youthful faces and adorn heads you paint with curling locks of various kinds."

The two heads, although contemporary, may even be said to represent successive moments in the history of art: Verrocchio's is a standard product of the early Renaissance; Leonardo's, like the Bargello's Lady with the Primroses, is a harbinger of the High Renaissance. The differences between these two heads are in fact fundamental, an unbridgeable gap existing between them in form and content. The nature of this gap is suggested by Vasari, who wrote of Verrocchio that

> . . . in the arts of sculpture and painting, to tell the truth, he had a manner somewhat hard and crude, as one who acquired it rather by infinite study than by the facility of a natural gift . . . but study will do a great deal, and thus Andrea, who had it in greater abundance than any other craftsman whatsoever, is counted among the rare and excellent masters of our art.

Of Leonardo, Vasari had this to say:

> The heavens . . . sometimes with lavish abundance bestow upon a single individual beauty, grace and ability, so that whatever he does, every action is so divine that he outdistances all other men, and clearly displays how his genius is the gift of God and not an acquirement of human art. Men saw this in Leonardo da Vinci.

NOTES:

The earliest evidence for the whereabouts of our sculpture is in Bode's letter of October 15, 1920, in which he thanks Barsanti for photographs of the bust, then in Barsanti's possession. A copy of the letter, written in Italian, is in the Museum's archives. The provenance of the marble in the Bargello is given in *Guida . . . del R. Museo Nazionale . . . in Firenze* (Florence, 1884), p. 146.

REFERENCES:

Bode's article on bases of portrait busts: W. von Bode, "Die Ausbildung des Sockels bei den Büsten der Italienischen Renaissance" in *Amtliche Berichte aus den Königlichen Kunstsammlungen* 40 (1919), pp. 100-120.

Documents referring to Verrocchio: Giovanni W. Gaye, *Carteggio inedito d'artisti dei secoli* XIV, XV, XVI (Florence, 1839) I, p. 370 and p. 569; and Günter Passavant, *Andrea del Verrocchio als Maler* (Düsseldorf, 1959), p. 230, Dokument XXVI; p. 217, Dokument IV; p. 219, Dokument VI.

Leonardo on his work as a sculptor: "Jtē cōndurro ī scultura di marmore, di bronzo e di terra: similter: pictura ciò che si possa fare a paragone di ogni altro a sia chi vuole" and "Adoperādomi io nō meno in iscultura che ī pittura e faciēdo l'una e l'altra in vn medesimo grado . . ." as given in Jean Paul Richter, *The Literary Works of Leonardo da Vinci* (2nd ed., London, 1939), II, p. 326, and I, p. 369.

Leonardo drawings of hands: Kenneth Clark, *A Catalogue of the Drawings of Leonardo da Vinci, in the Collection of His Majesty the King at Windsor Castle* (New York and Cambridge, 1935), I, Nos. 12558 and 12616. It is of interest to record here what Clark had to say about drawing No. 12558 (our Figure 11): "Recent criticism has connected it with two Leonardesque works: the marble bust of a lady, usually attributed to Verrocchio, in the Bargello; and the so-called portrait of Ginevra dei Benci in the Liechtenstein Gallery, Vienna. The first hypothesis is supported by the obvious similarity in the movement and character of the hands, but this is not sufficient reason to question Verrocchio's authorship of the marble. We have no evidence that Leonardo ever executed a marble, and the hands of Verrocchio's other works, for example the hands of the David in the Bargello, are of precisely the same character." It need only be noted here that we have Leonardo's own statement that he was practiced in the execution of sculpture in marble. In my opinion the Bargello David is also unquestionably by Leonardo.

Leonardo on painting: *Treatise on Painting (Codex Urbanus Latinus 1270) by Leonardo da Vinci*, translated and annotated by A. Philip McMahon (Princeton, 1956), I (Translation), p. 149 and p. 164.

Vasari on Verrocchio and Leonardo: Giorgio Vasari, *Lives of the Most Eminent Painters, Sculptors & Architects*, translated by Gaston Du C. De Vere (London, 1912-1914).

Florentine Baroque Art from American Collections

Between April 17 and June 15 The Metropolitan Museum of Art will be host to an exhibition of Florentine baroque art from American collections, organized by members of the Department of Art History and Archaeology of Columbia University. Including a selection of drawings and sculptures, the show is focused on thirty-seven oil paintings of this little-known period of Florentine art. It begins with a few late mannerist works, of which we may single out a little portable altar by Jacopo Ligozzi with a precious frame of marble mosaic (lent by the Allen Memorial Art Museum, Oberlin College). The greatest Florentine artist of the years around 1600 was undoubtedly Ludovico Cigoli, the counterpart in Tuscany to Caravaggio in Rome and the Carracci in Bologna. Cigoli participated actively in the rebirth of a newly expressive religious imagery based on the precepts of the Counter Reformation; this aspect of his art is represented by St. Francis in Ecstasy, one of a number of paintings lent by Governor Luis Ferré's Museo de Arte de Ponce, Puerto Rico.

Allegory of Charity, by Cesare Dandini (about 1595-1658), Italian (Florence). Oil on canvas, 59 x 52 inches (including frame). Anonymous loan, L 68.162

The exhibition concentrates on works produced by artists born around 1600. Among them, the Allegory of Charity by Cesare Dandini, recently lent to the Museum, represents the gaily colorful, self-conscious, slightly mocking character of some of these attractive pictures. Dandini's painting is a kind of secular Madonna; other paintings in the exhibition, although ostensibly religious, are redolent with coloristic and even worldly effects. Artists like Francesco Furini and Cecco Bravo painted in a mystical, magical, and sensuous manner that seems to characterize this school. Sharp contrasts between the pietistic and the profane are common, paralleling the better-known Spanish works of this period, and seem to characterize the decadent, repressive, and somewhat isolated court of the later Medici.

One of the few Florentine artists of the seventeenth century still enjoying an uneasy fame is Carlo Dolci, whose slick icons have made him an almost notorious symbol of disreputable religiosity. The exhibition reveals him as a brilliant colorist whose amazingly detailed images have their own contemporary appeal. The show closes, chronologically, with a few virtuoso examples of Florentine bronze casting of the later baroque period by the outstanding masters of the genre, G. B. Foggini and the medalist Massimiliano Soldani.

HOWARD HIBBARD
Professor of Art History, Columbia University

Exhibition catalogue: *Florentine Baroque Art from American Collections*, by Howard Hibbard and Joan Nissman. 136 pages. 42 black-and-white illustrations, color cover. 9½ x 6½ inches. Paper, $2.50.

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