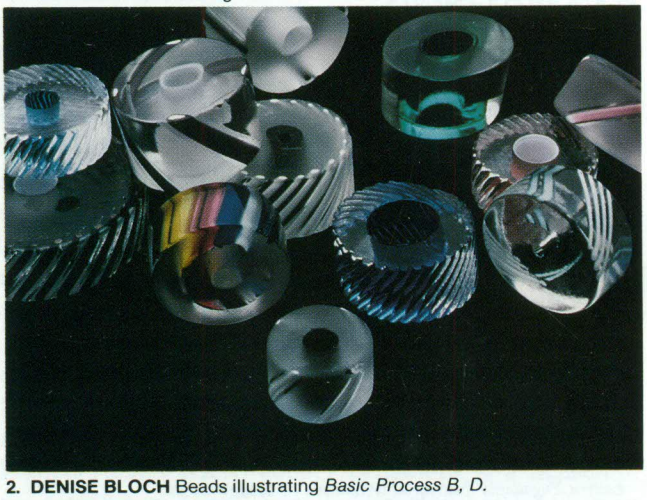
1. DENISE BLOCH: earrings.



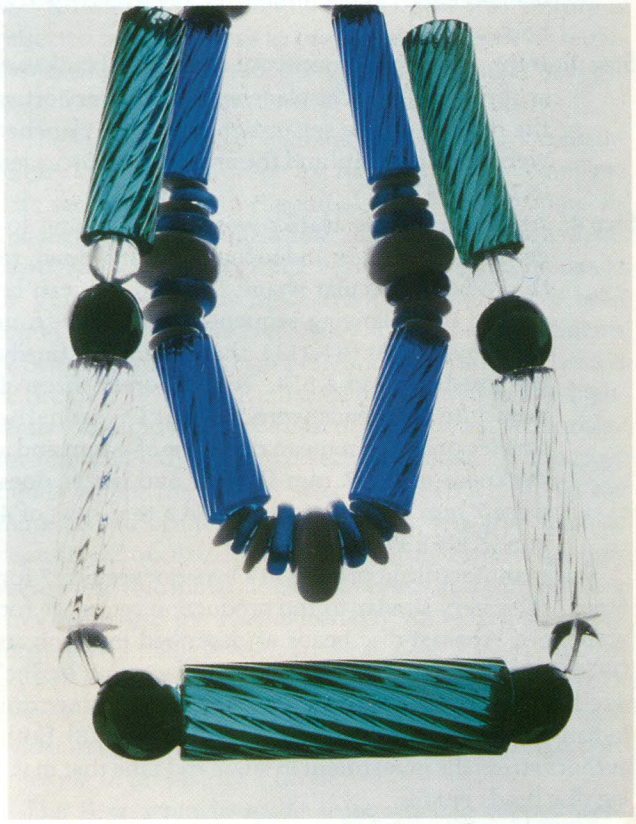
2. DENISE BLOCH Beads illustrating *Basic Process B, D.*

Contemporary Cane Beadmaking

Sylvia S.J. Kennedy and Robert K. Liu

Glass is enjoying a resurgence in contemporary jewelry. Many necklaces and earrings now utilize studio-made glass beads. Such beads are almost exclusively made from canes because this method permits for a wide variety of designs, patterns and colors; also canes are among the least labor intensive. Other jewelry may use pendants of slumped, molded or powder-glass, or pieces of glass set into metal. There is also a long tradition of cast and ground glass ornaments, especially among Czech artists, as exemplified by Svatopluk Kasaly (to be featured in a future issue of *Ornament*).

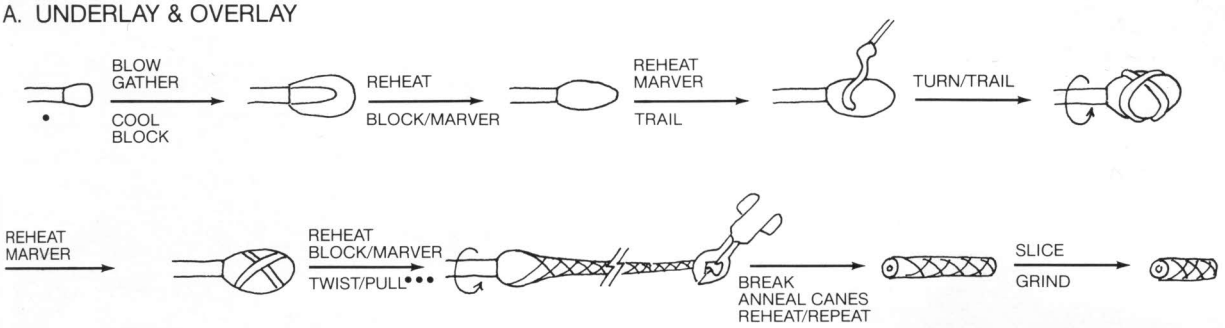
3. JUDITH WERICK: glass and silver necklace.



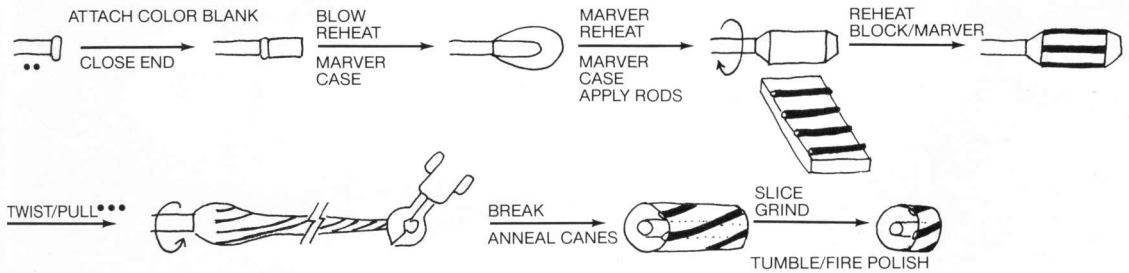
4. JUDITH WERICK: Beads illustrating *Basic Process C.*

BASIC PROCESSES OF CONTEMPORARY CANE BEADMAKING

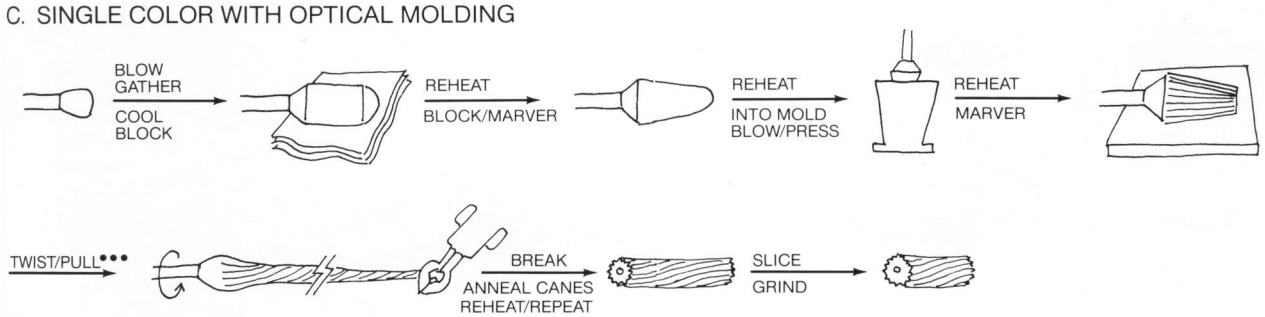
A. UNDERLAY & OVERLAY



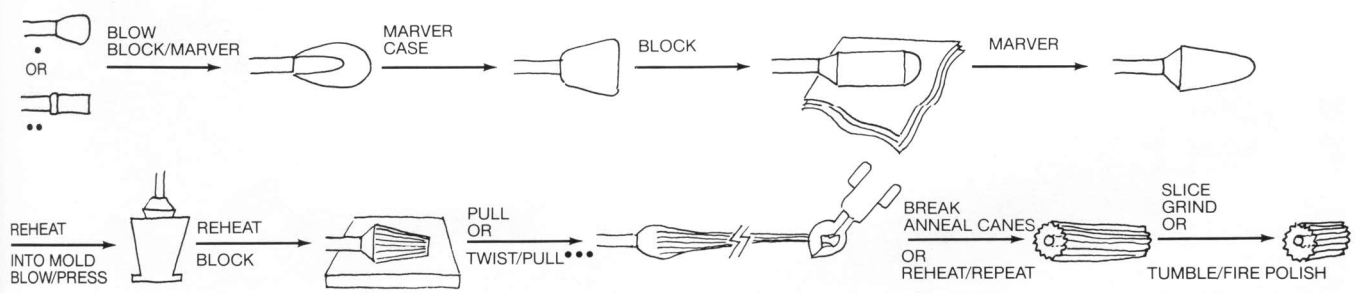
B. UNDERLAY, CASE & OVERLAY



C. SINGLE COLOR WITH OPTICAL MOLDING



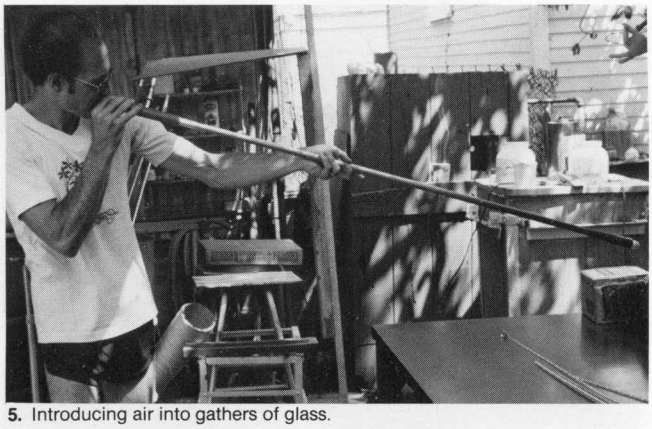
D. UNDERLAY & CASE WITH OPTICAL MOLDING



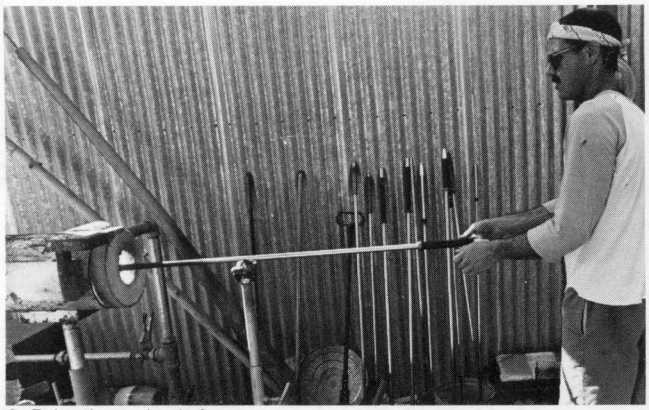
•CHIP ATTACHED TO PUNTIL ROD, TRANSFERRED TO BLOWPIPE AFTER MARVERING

••SMALL GATHER BLOWN, POPPED, WORKED WITH CALIPERS INTO ANNULAR SHAPE, ATTACHED TO COLOR BLANK FROM OVEN

•••END OF GATHER CLAMPED WITH COMBINATION SHEARS FOR CANE PULLING; SHEARS GRAB ONTO PREVIOUSLY SHAPED KNOB

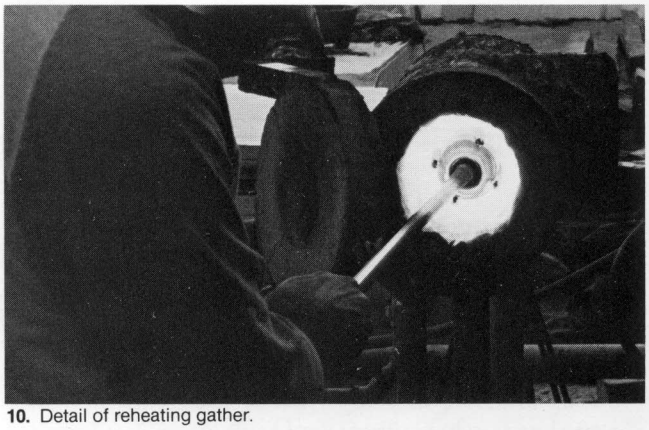


5. Introducing air into gathers of glass.



9. Reheating gather in furnace.

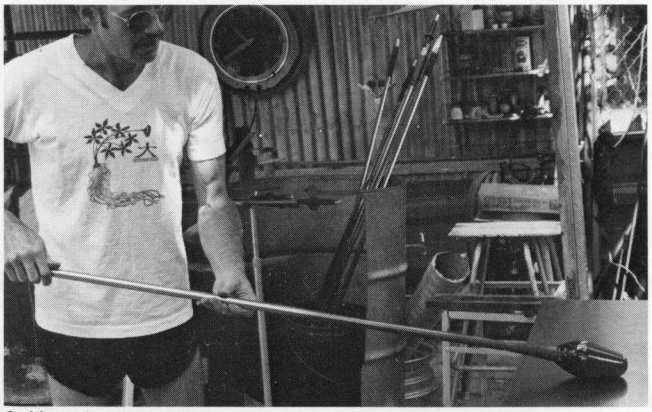
6. Gathering molten glass on blowpipe.



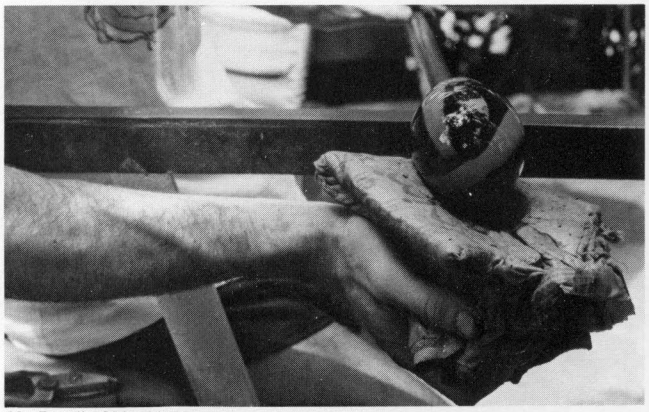
10. Detail of reheating gather.

7. Cooling pipe for easier handling.

11. Blocking gather with wet newspaper.



8. Marvering on steel table.



12. Detail of blocking.

Even though glass beads are among the oldest and most common of ornaments, pictorial information on their manufacture has been scarce, given the secrecy that surrounded the glassmaking craft and which to some degree prevails even today. For the three most prevalent beadmaking techniques — *mandrel winding, drawn or cane* and *molding*, there are few sources of information, especially those with adequate illustrations (*see Bibliography*). Here we show how contemporary cane beads are made by two different groups of glass artists.

BLOCH/FELDMAN AND WERICK/BLOOMBERG

Denise Bloch and Judith Werick along with their glass artist husbands produce cane beads which are combined with commercial beads in their jewelry (1-4). Werick has always collected beads and began making jewelry from her bead collection. Her association with Joel Bloomberg, a glass artist, opened up ways for her to extend the use of her bead collection. Bloch's partnership with Keri Feldman resulted in her making jewelry from bits and pieces of glass left over from his work. These fragments were slumped together and fashioned into earrings and pendants. From there she branched into jewelry using beads.

Mastering the art of pulling cane glass depends on being able to recognize the look and judge the feel of glass in all stages; this is only gained from daily experience. As well as attending numerous workshops Feldman and Bloomberg studied glass, Feldman at the University of California, Los Angeles and Bloomberg at Chico State University. Both are independent glass artists, with their own studios — Feldman's *Fineline Studios* and Bloomberg's *Glass Experience*. Beadmaking is part of their production schedules. Bloch and Werick decide on the kinds of beads they need, do the preparatory work and assist in the process. They also do the final cutting, finishing and grading.

CANE GLASS BEADMAKING

Glass must be prepared for beadmaking either from the raw ingredients and/or from commercial color rods of glass. Heated in a furnace until it reaches the molten stage, the glass is then ready for working. An initial amount of molten glass is gathered on the end of a blow pipe (work iron). Molten glass has the consistency of thick honey. Therefore only a certain amount can adhere to the pipe in a single gather; it takes about three gathers to accumulate enough glass for a pull (6). By blowing into the pipe, a small air bubble is introduced into the gather (5). This bubble is very important because it eventually becomes the perforation of the bead. The beadmaker is constantly working to keep the bubble from collapsing or closing.

Each time glass is gathered, it must be evenly distributed around the bubble. To do this the glass must be cooled to the proper working consistency. This cooling and shaping is done by marvering and blocking (8, 11, 12). Marvering is done by gently rolling the gather over a steel plate

13. Picking up rods of color.

14. Trailing color.

called a *marver* (blocks of carbon or stone are also used for marvers). Blocking is done by rotating the gather over a *block* or pad of wet newspapers. Besides evenly distributing the glass around the bubble, the gather is worked to keep the temperature consistent throughout the mass of glass, to insure an even pull. Reheating the gather inbetween marvering and blocking is part of the process of keeping the temperature consistent and high enough for working (9, 10).

When enough glass is gathered and shaped for the pull, a tool (combination shears) is clamped to the end of the gather (19). This allows two people to pull the gather into a long cane (19-22). Factors determining the size of the cane are the weight of the glass, the temperature of the glass and the speed and length of the pull. The diameter in the middle of a long continuous pull tends to be smaller than at either end of the pull, although this effect is not evident in our photos. Feldman uses the large canes not suitable for beads in his sculpture. Bloomberg prefers to use all the glass in the cane for beads and does a second pull if there is enough glass left to warrant it. The canes are snapped off into manageable lengths by thermal shock and annealed overnight to relieve stresses that may crack the beads. After the canes are annealed, they are then sliced on a diamond sawblade and finished by grinding, tumbling and/or fire polishing.

Several techniques are used to vary the look of cane beads, besides size and color. Ways of achieving a multicolored bead include primarily *layering* colors (underlay and case, C & D, 23) or *overlaying*, i.e. applying color in stripes or bands (A & B, 1, 2). There are also different ways of achieving these decorations. In the underlay process, Bloomberg started with a chip of color which was transfered to the blowpipe, blown and then cased (A). Feldman started with an open-ended cylinder of colored glass prepared beforehand which is attached to the blowpipe on a collar of glass (B & D). The cylinder is then pinched together, shaped and cased with glass. In overlaying color, Bloomberg trailed colored glass from a puntil rod onto the gather while Feldman rolled the gather over softened rods of colored glass (D, 13; B, 14).

Another way of achieving variety in beads is by altering the shape of the gather before pulling. By rolling the gather over a cool surface a round cross-section results. Square and triangular shapes are produced by shaping the gather with paddles. Corrugated surfaces can be achieved with aluminum optical molds, which are used by both groups (C & D; 1, 2, 4). While being molded a small puff is blown to keep the bubble from collapsing, as the gather is pressed into the mold. The gather is withdrawn, heated and marvered to compress the bubble and to push the mass away from the pipe (17, 18). Beads produced by such molds are also called opticated.

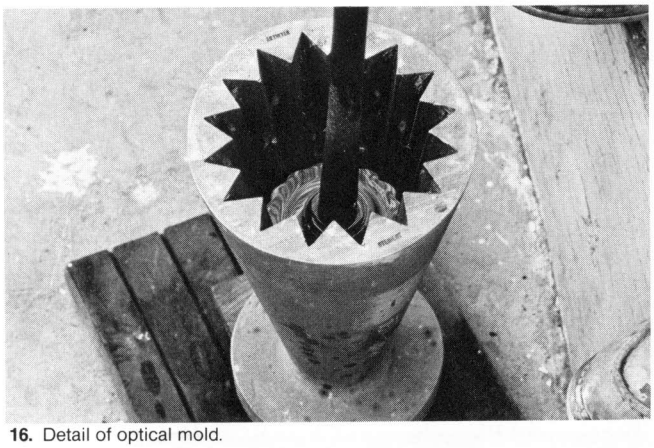
Still another way of altering the appearance of the surface of the cane occurs during cane drawing by either a twisted or straight pull (2, 4). The bead variations are endless with any combination of these techniques (2, 23). In order to aid comprehension of these rather complicated glassworking procedures, we have diagramatically summarized the basic processes of contemporary cane beadmaking on a chart (p. 19). The four main methods of beadmaking have been referred to by their alphabetical labels (A-D).

Both couples are constantly experimenting with ways to achieve unique beads. Bloomberg/Werick are now working on beads with angular surfaces while Feldman/Bloch are producing beads with more complex overlay designs. ■

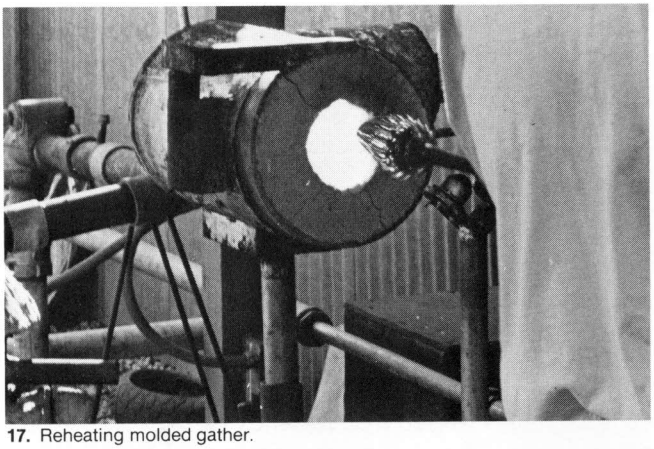
Denise Bloch and Keri Feldman may be contacted at (213) 827-862; Joel Bloomberg at (619) 942-5128 and Judith Werick at (619) 942-0298.

OPTICAL MOLDING PROCEDURES

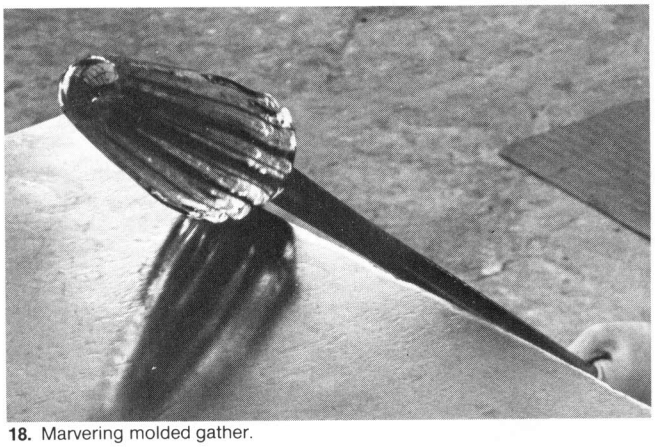
15. Inserting gather into mold.



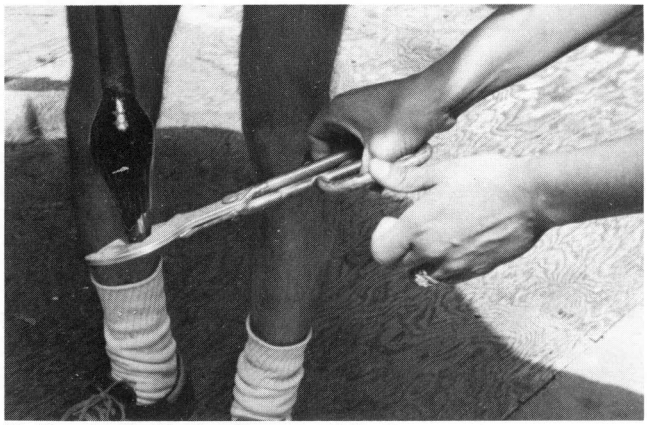
16. Detail of optical mold.



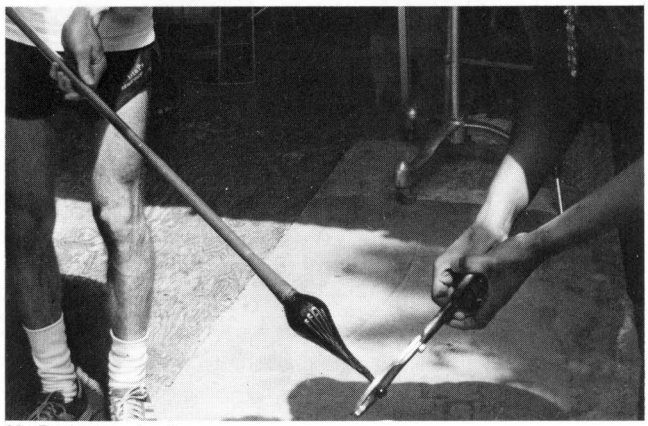
17. Reheating molded gather.



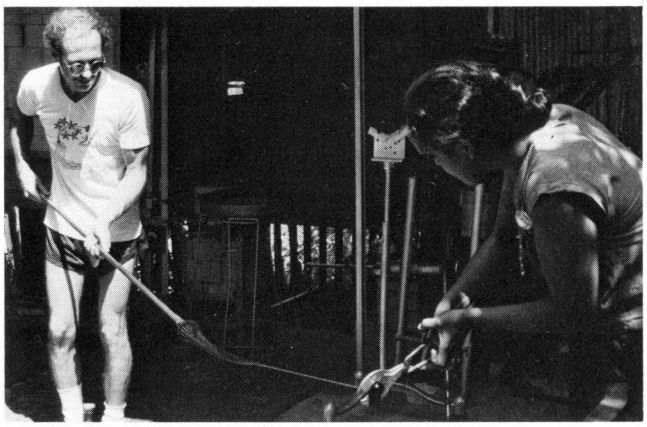
18. Marvering molded gather.



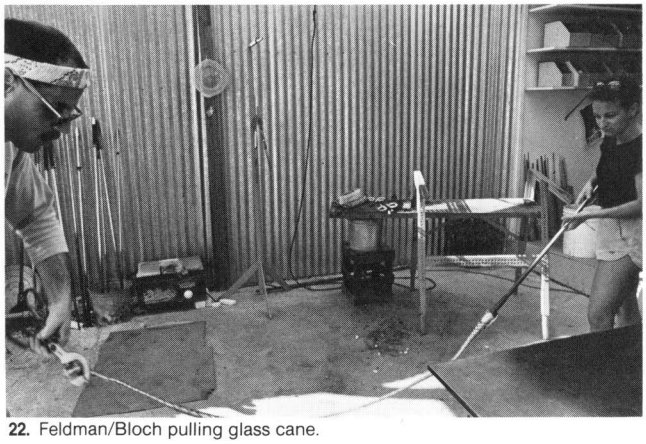
19. Clamping combination shears to end of gather.



20. Beginning of pull.



21. Bloomberg/Werick pulling glass cane.



22. Feldman/Bloch pulling glass cane.

ACKNOWLEDGEMENTS

Ornament thanks Denise Bloch, Joel Bloomberg, Keri Feldman and Judith Werick for generously demonstrating their techiques of glassworking. We also thank Patrick Fitzgerald for observations and sketches during the Bloomberg/Werick demonstration/interview.

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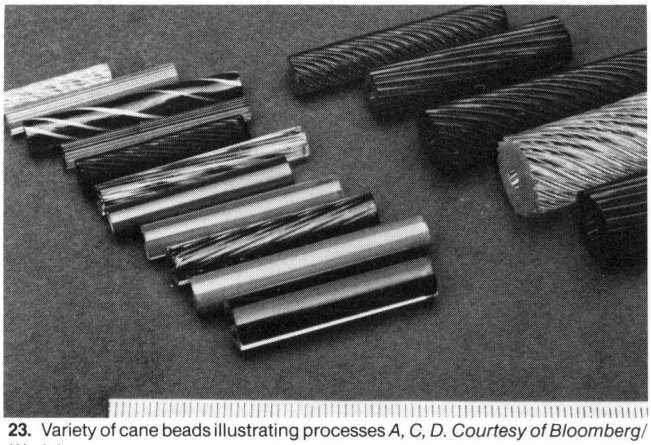

23. Variety of cane beads illustrating processes *A, C, D. Courtesy of Bloomberg/Werick.*