

OBSERVATIONS AND PROBLEMS IN RESEARCHING THE CONTEMPORARY GLASS-BEAD INDUSTRY OF NORTHERN CHINA

Roderick Sprague and An Jiayao

The status of glass-bead manufacturing in northern China is undergoing rapid change due to the development of the plastic-bead industry. Several manufacturing plants, including the large Beijing Glass Ware Factory, are no longer making beads and several other plants are contemplating changes. The variety of domestic glass beads available for purchase today would indicate a greater number of manufacturing sites than are mentioned in the popular literature.

INTRODUCTION

In October 1986,¹ while a visiting scholar at Inner Mongolia University, Sprague was able to visit the Beijing Glass Ware Factory and the Qianyang Brigade of the Taihu Commune with and through arrangements made by An who had previously observed work at these two facilities. The Beijing Glass Ware Factory, under the Beijing Arts and Crafts Corporation, is a large, three-story factory employing 700 workers and covering 16,000 m² in the Chongwen district of southeast Beijing. We were given an excellent tour of the glass-figure section by Sun Can Geng, an engineer in the factory complex. She explained that the factory no longer makes beads because plastic beads have replaced the glass ones in brilliance and cost. There can be no doubt about the cost factor, but the appearance argument is open to serious question.

Because we have no detailed description of post-liberation glass-beadmaking in China, it is our purpose here to describe the technology and social aspects of a large glass-object manufacturing plant that only a few years ago included glass-bead manufacturing as one process and still carries an inventory of glass beads in the sale's store. The processes and factory layout described below are

unchanged from when beads were manufactured here, as well as in the farm shops to be described later. The technology involved today in the manufacture of small glass objects as described here is an important source in reconstructing glass bead manufacture in post-liberation Beijing. For a brief but excellent overview with color plates of Chinese glass beads from all time periods see the recent article by Peter Francis, Jr. (1990).

BEIJING GLASS WARE FACTORY

Small glass figures, mostly animals, are made for domestic and tourist consumption in six large rooms with from 12-20 workers in each room (Fig. 1). The women in the jet rooms outnumber the men about three to one with no discernible difference in rank or tasks. The gas jets create a deafening roar and heat the rooms to well above normal room temperature with the men working in only the typical Chinese undershirt.

The objects are made from solid glass rods that vary in diameter from 1 to 30 mm. The rods are round (Fig. 2) unlike the flattened stock shown by Kan and Liu (1984: Fig. 13). During our first visit to the factory, a request was made to see the portion of the works where the glass rods are made. In spite of prior arrangements, this was denied because the director was "unavailable out of the country and he was the only one with whom the arrangements had been made." On a second visit this request was again denied without any explanation.

Manipulation of the glass is mainly with large tweezers used as tongs on the tweezer end and as a



Figure 1. Workers in one of the large glassworking rooms in the Beijing Glass Ware Factory (photo by R. Sprague).



Figure 2. Glass rods used in the manufacture of glass objects at the Beijing Glass Ware Factory (photo by R. Sprague).



Figure 3. The use of tweezers to manipulate a glass object at the Beijing Glass Ware Factory (photo by R. Sprague).



Figure 4. Gas-heated, glass-melting furnaces at the Beijing Glass Ware Factory (photo by R. Sprague).



Figure 5. Worker in the Beijing Glass Ware Factory making jade trees from glass components (photo by R. Sprague).

spatula or rod on the handle end (Fig. 3). Glass shears were observed being used by a few workers. Large objects are occasionally heated in gas furnaces (Fig. 4).

In addition to the figures, one specialty of the factory is glass plants, flowers, and fruit. These are made up in the same section of the factory by women (Fig. 5) who work with large bins full of glass leaves, petals, stamens, and fruit, all made at the jets or outside the factory as described below. The making of some of these parts is virtually identical to the making of wound beads. Wire holds the parts together; some have holes in them and others have a knob on one end for attachment. Jade plants are a traditional gift during marriage negotiations, hence the glass plants still have a clear cultural function.

During a second trip to the factory on 20 March 1987, we were given a demonstration of wound-bead manufacture by worker Zhang Yuxia. She was 49 years old and had been working in the factory for 30 years. She has not made beads as a regular part of her job since before the Cultural Revolution (prior to 1966) and apologized for her technique and the

quality of the beads. The beads were made by the well-known technique of covering iron wire (18.5 - 20.5 cm long by 1.18 - 1.24 mm in diameter) with white clay-like material for approximately 5 cm on each end and winding viscous glass from rods onto the wire as it is turned one revolution (Fig. 6). The size of the bead is a product of the diameter of the glass rod, the degree of heating of the rod in the gas flame, and the speed with which the wire is turned. If, after being attached to the wire, the bead is irregular, it is further heated and the wire quickly turned to shape the bead through centrifugal force. The beads are removed from the wire after cooling. The samples, which we were kindly permitted to keep still on the wire (Pl. VIA), were not annealed, but this was a normal part of the process. All of the samples were slightly translucent with a high luster.

The factory sales shop sells "seed" beads (Pl. VIB) with an average range in size from 2.20 mm to 3.35 mm with exceptions from 1.65 mm to 3.50 mm. All the perforations are less than 1 mm in diameter. The surprising thing about these small beads is that they are wound, not drawn. No samples of these were



Figure 6. Zhang Yuxia of the Beijing Glass Ware Factory making wound beads (photo by R. Sprague).

seen elsewhere and, unfortunately, we did not ask about their place of manufacture but it was implied that they were local. These beads represent a refinement in wound-bead production that is difficult to match in the world today or very often in the past. Francis (1990: pers. comm.) indicates that beads of similar size and technology are currently being made in India and were made in China from the 9th to the 17th century, as well as being the dominant bead in Southeast Asia from the 13th to the 16th century.

QIANYANG BRIGADE

We next traveled well out of urban Beijing to the eastern rural outskirts. A brief taxi ride from the bus stop brought us to a farm commune, thoroughly involved in harvest. All of the men and most of the women in this 400-family operation were in the fields, but we found one young woman tending her infant niece. She proceeded to put on a demonstration of the manufacture of ear bobs, small flower stamens, large sunflower heads, and animal eyes. Until quite recently, beads were also manufactured here. Again,

as in the Beijing Glass Ware Factory, the procedures, the equipment, and the social structure associated with the work are identical to those employed for the making of glass beads, some of which we obtained.

The Beijing Glass Ware Factory provides the glass rods to these workers, referred to by the factory personnel, somewhat derogatorily, as the "farmers." One of the major problems in China today is the large rural population that the central government does not want to move into the cities but still desires to use as a large labor pool. Thus, in an effort to raise the rural standard of living and to help absorb this huge surplus of labor in the countryside, the government is promoting rural industries. In 1986, these enterprises accounted for 44% of the rural economic output. There is also encouragement of cooperation between state-owned and township industries by sending primary and semifinished products from the former to the latter for processing. Because of the success of the Beijing Washing Machine Factory in the production of its White Orchid machine this way, this process has become known as the "white orchid method" (Liang and Chen 1986: 26). This is exactly what has been

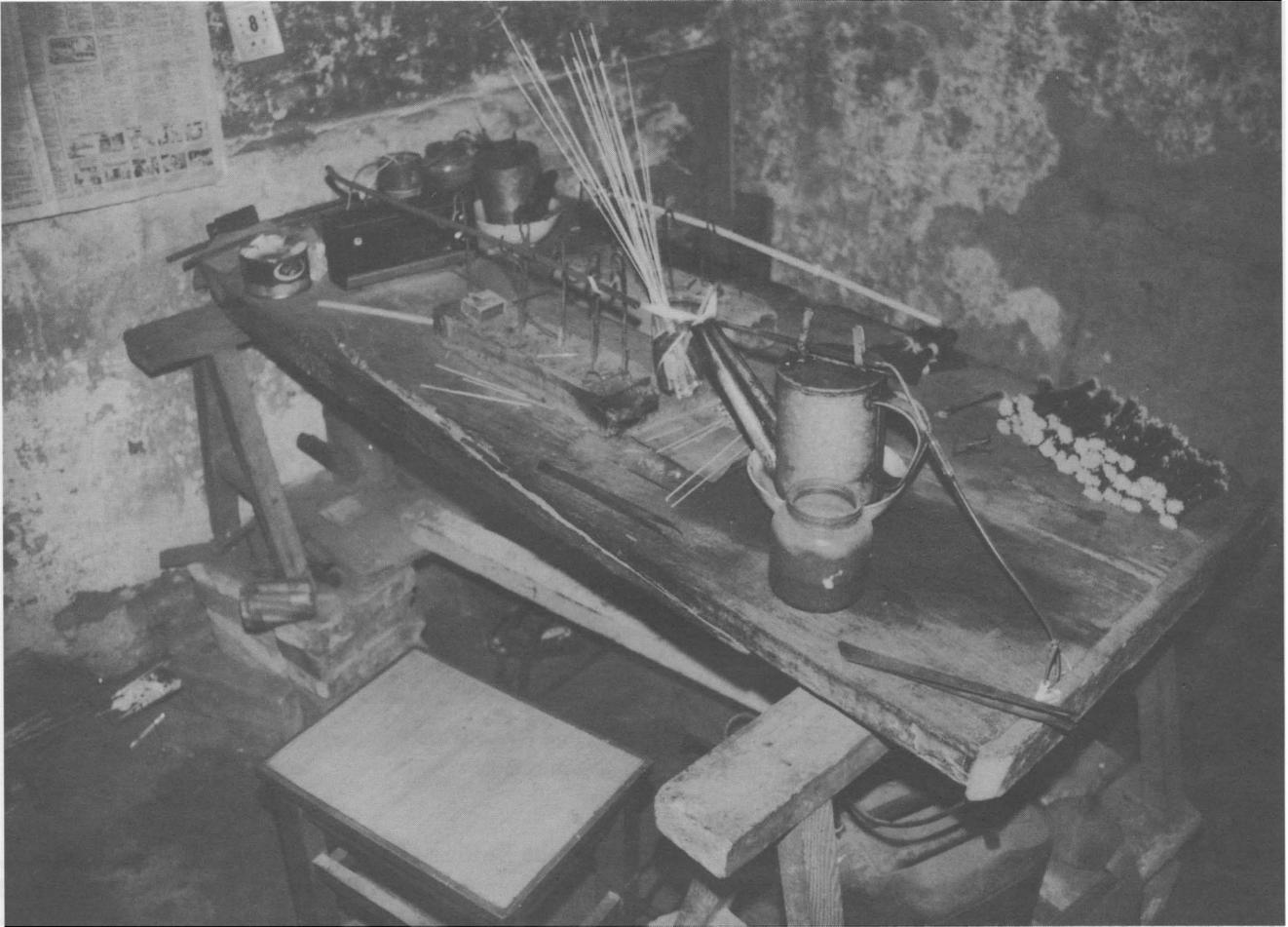


Figure 7. Workbench at Taihu Commune showing pump under the bench near the stool, jerry can to the right under the bench with the hose going up to the glass blow tube on top of the diesel fuel can, and red-glass rod in holder to the left. On the lower right corner are the tweezers and a jar of water. Bundles of finished small, yellow flower stamens are stacked in the upper right corner (photo by R. Sprague).

done between the Beijing Glass Ware Factory and the Qianyang Brigade.

Because the Beijing glass is high in lead oxide, it melts at a relatively low temperature. For this reason it is possible for the farm workers to use diesel fuel for working the glass rods (Fig. 7). The fuel is contained in a sheet-metal can about 15 cm high and 12 cm in diameter with a wick spout. A glass tube crosses the can and rests on the wick. This blow tube is connected by a rubber hose to a jerry can serving as a reservoir for the compressed air. The can is pressured by a foot-operated bicycle-tire pump that is worked only as needed to keep the diesel-fuel jet operating. The glass rod is held at the proper height on a series of three or four wire supports imbedded in

holes drilled in a board. A wire hook held tight by a rubber band attached to the board keeps tension on the rod while it is cradled in the wire supports (Fig. 7).

Because beads are currently not being made in these shops, we have chosen to describe in some detail the obvious ability, of even a young worker, to deftly manipulate the glass in the making of a small and delicate object. The demonstration was of the making of a small, teardrop-shaped ear bob. This item is made without a wire insert from a clear-glass rod that turns ruby red when heated. First, the rod is heated to working temperature. With large tweezers, a round ball of glass is pinched from the end of the rod which is then returned to the support. A small glass rod is attached to the large end of the ball to serve as a pontil

and the object is broken from the large rod with a sharp tap from the end of the tweezers. As the small end of the teardrop is heated, it is pulled out with the tweezers to form the attachment loop. The loop is fire-polished after the free end is firmly attached. Next, the small rod is broken off, again with a tap from the tweezer handle, and the bob is fire polished. The final shape is checked and corrected where needed and the finished product is dropped into a metal pan to cool. The tweezers are occasionally cooled in a jar of water and defective objects or rejects are also dropped in the water.

Decorative dangles, glass-flower stamens, and eyes for soft toys and novelties are made on wires thus eliminating the need for the pontil-like glass rods. Eyes, the larger flower centers (such as for sun-flowers), and large beads are given a final shaping in a depression in a stone form. Objects made on wires are usually made on each end of the wire. Very small yellow flower stamens are bundled in bunches often as much as 3 cm in diameter at the midpoint of the wires (Fig. 7).

Several other young women tending infants joined the discussion and various other products made in the past were brought out and donated to the project. Included in this collection were beads that are no longer being made due to the competition of plastic products. One former beadmaker gave us a string of reject beads that had been saved (Pl. VIC).

The Beijing Glass Ware Factory presented us with a sample of wound necklace beads ranging in size from 8.20 mm to 11.05 mm. The perforations are highly variable, from 1.2 mm to 1.9 mm in diameter, and not well-correlated with the bead size. These former sale items are identical to beads formerly made by the farm craftsmen.

BOSHAN

On 13 June 1987, Sprague traveled to the municipality of Zibu in Shandong Province, to visit the ostensibly only active bead factory still in operation in China. The Boshan (Poshan) District, formerly a separate city, is now one section of modern Zibu, a large center of ceramic and glass manufacture. Extensive correspondence carried on by An with researchers and the Zibu Municipal Foreign Affairs

Office did not reveal at any time the situation described below in the Boshan bead factory.

Sprague was met and accompanied by interpreter Fu Jun and driver Zheng Shaoxing. First visited was the Boshan Glass Factory, the factory described by Kan and Liu (1984). The fact that it was the same factory was verified by several workers from copies of the photos contained in the original article. The first information received, which was apparently a surprise to the interpreter as well, was that they had "stopped making beads about three years ago." What was even more distressing was the information that they kept no samples of the beads and had discarded all of the beadmaking equipment. Paddy Kan, on the other hand, reported later that there are about five glass workers still making beads at the Boshan Glass Factory and that at least one other factory in the area still makes glass beads (Robert K. Liu 1987: pers. comm.). The reason for this discrepancy in information can only be speculated upon, but one anonymous informant in China suggested that the methods used are so primitive that they are an embarrassment to the factory. Another necessarily- anonymous informant in China, speaking only to Sprague, went so far as to say "they lied to you," an unusually harsh evaluation from a native informant.

Comparing the equipment at Beijing to that illustrated by Kan and Liu (1984) reveals that the Boshan process is indeed much less advanced, but also had some differing equipment such as a grooved marvering ramp. The factory public-relations director reported plans to import Czechoslovakian equipment to renew the glass-bead industry of Boshan. The limited discussion implied that a mold-pressed or Prosser-manufacturing process was being considered. The confusion that this may cause to future researchers is interesting to contemplate.

The market on Xi Yie Jie (Xi Yie Street) in Boshan had numerous stalls selling what are probably bead seconds. Prices were very low, even when compared to Beijing standards. In an hour, ¥ 13.20 (\$3.57) purchased 18 necklaces and 14 specialized beads (Pl. VID, VIE). It is interesting to note that Yang (1987: 74) states that "During the Qianlong reign [1736-1795], glass shops concentrated on Xiye Street."

On a previous trip in 1983, Sprague purchased, in a small town on the grasslands of Inner Mongolia, a sample of buttons made from glass beads identical to ones later found in Boshan in 1987. Also, friends purchased for Sprague in 1984, a string of beads being worn by a native woman in Tibet that are also identical to beads seen in Boshan in 1987. All of the bead types definitively known to be from Boshan were found in shops during Sprague's visit.

OTHER LOCATIONS

One type of bead found in four basic colors (Pl. VIF) with a sunburst design was purchased in Huhhot, Inner Mongolia, purportedly with Boshan labels on the shipping crates, according to Sprague's informant. The sunburst design was not seen in the shops of Boshan. Sun Can Geng, engineer at the Beijing Glass Ware Factory, suggested that elaborate sunburst beads shown to her in pictures (supplied by Elizabeth Harris) were probably from Hong Kong. Thus, they may have been made in Guangzhou (Canton) or a more-southerly manufacturing center instead of Boshan.

These beads were strung on elastic to be used as infant-girl bracelets, a specialty item prepared for sale and, thus, like the buttons in the grasslands, may have a wider distribution than simple strings of beads. At no time did we observe any specific type of decorated beads outside of a specific city area except for one case. In Beijing, a single small string of beads was purchased in an antique shop that included six modern Boshan-like decorated beads strung with several plain beads. The price was vastly inflated at a markup from Boshan of over 200%.

Bead types purchased six months earlier in Xi'an, Luoyang, and Chengde (Pl. VIG, VIH) were not observed in Boshan or Beijing. Chengde, northeast of Beijing, should not be confused with Chengdu, the capitol of Sichuan Province.

The major glass product of Luoyang is flat glass, yet during the New Year's celebration, glass noise makers purchased on the street were said to be locally made. These noise makers, which look like a long-stemmed bulbous vase with a thin glass bottom that "twangs" in and out with a person's breath,

represent an obvious local glass-blowing industry that surely could include beads. No one would clearly state that beads were made locally, but neither did anyone deny that they were. In the same class, but from Xi'an, were crude pipe mouthpieces made by winding and still containing red clay in the bore. Again the technology was extremely close to that used for beadmaking.

CONCLUSIONS

Our impression from these several experiences -- one that has also been expressed by Francis (1986: 29, 31, 36; 1990: 127) -- is that there are many more local beadmaking operations in China today than we are led to believe from the literature both from inside and outside the country.

The complexity and the workmanship of the fancy beads from Boshan will be difficult to replace. Also, the small size of the wound "seed" beads of Beijing represents a refinement of the art of wound beads that is exceptional. We have lost glass beadmaking in Beijing, both in the city and the surrounding countryside, and the future of Boshan is questionable. Let us hope that the craftsmen of the lesser-known areas will keep alive their bead technology until the plastic-bead phenomenon has run its course and glass beads are again properly appreciated for their beauty and as examples of a long tradition of excellence in craftsmanship.

Thus far the research on beads in China has posed more questions than have been answered. To answer some of these questions and to find out more about southern manufacturing centers we need more research in China, more publishing of the experiences of travelers in China concerning beads, more perusal of the original Chinese sources, and more sharing of data. We know far too little to hoard what few data we have.

ACKNOWLEDGEMENTS

Many people have helped to make this research possible. Support for An's participation was generously granted by Zhang Ziming, Deputy Director, Institute of Archaeology, Chinese Academy of Social Sciences, Beijing.

Inner Mongolia University was very helpful with the October trip with Wang Yung providing the interpretive expertise. Mei Chongyuan smoothed the way on several occasions with his uniquely clear understanding of bureaucracy. Professors Yekeminghadi Irinchen and Xu Bingxun supported Sprague's visit to Inner Mongolia.

Sun Can Geng and other staff members of the Beijing Glass Ware Factory aided our research in many ways, including donating samples for later photography. Zhang Yuxia kindly permitted the viewing and photographing of her beadmaking talents.

The manuscript was read and many helpful suggestions made by James E. Ayres, Peter Francis, Jr., Elizabeth Harris, Karlis Karklins, Robert K. Liu, Lester A. Ross, Linda F. Sprague, and Priscilla S. Wegars. Gabrielle Liese kindly provided a copy of the Phoenix Art Museum item on Qing Dynasty glass.

The final thanks must go to the members of the Qianyang Brigade of the Taihu Commune, especially the young women, for the free and open demonstration of their art. Their willingness to share their knowledge with others is refreshingly pleasant.

ENDNOTE

1. This work has been delayed an extra year in publication due to the inexplicable withdrawal of a firm commitment for publication in another outlet.

REFERENCES CITED

Francis, Peter, Jr.

1986 Chinese Glass Beads: A Review of the Evidence. *Occasional Papers of the Center for Bead Research* 2.

1990 Glass Beads of China. *Arts of Asia* 20(5):118-127.

Kan, Paddy and Robert K. Liu

1984 Chinese Glass Beadmaking. *Ornament* 8(2):38-40, 67.

Liang Xianqgi and Chen Lie

1986 Rural Industries -- Transforming the Countryside. *China Reconstructs* 35(10):24-26 (October).

Yang Boda

1987 A Brief Account of Qing Dynasty Glass. In *The Robert H. Clague Collection, Chinese Glass of the Qing Dynasty 1644-1911*, edited by Claudia Brown and Donald Rabiner, pp. 69-86. Phoenix Art Museum, Phoenix.

Roderick Sprague
Laboratory of Anthropology
University of Idaho
Moscow, Idaho 83843

An Jiayao
Institute of Archaeology
Chinese Academy of
Social Sciences
27 Wangfujing Dajie
Beijing, People's Republic
of China