of cultural material which offers an excellent opportunity for the examination of social and economic relations in early feudal Poland. The material discussed comes from 17 habitation layers of a fortified urban settlement which existed from A.D. 980 to A.D. 1308, when it was burnt down by the Knights of the Order of St. Mary.

Of the glass objects, beads form the most numerous group, whereas rings and ring-settings rank second and fragments of glass vessels third. According to their external features, beads were divided into three groups: transparent beads, opaque beads, and glazed beads. The transparent beads were subdivided according to shape, whereas the basis for the classification of opaque beads was provided by their shape, ornament, and general character.

In contrast to Kruszwica and Wolin, Gdansk did not yield direct evidence for the local production of glass ornaments. Therefore their origin had to be established on the basis of technological analysis. In the early Middle Ages three principal types of glass were produced: soda glass in the east (identical glass was produced in the Rhenish land until the close of the 9th century), potash glass made particularly in the West since the 10th century, whereas in Old Russia glass composed mainly of lead and potash predominated.

Fourteen objects from Gdansk were subjected to chemical and spectroscopic analyses. The analysed relics consisted of transparent beads, opaque ornamented beads, rings, and fragments of glass vessels. Objects made of lead-potash glass predominated. This glass served principally for the production of transparent beads, rings, and opaque undecorated beads. On the other hand, analysis of the glass vessels revealed that one was made of potash-lime glass and another of soda-lime glass. A recovered glass lump was also of the soda-lime kind. The last mentioned objects may have been imported from foreign lands. The closest analogy for the lead-potash glass objects is furnished by Old Russian glassware. There is, however, an element which shows the peculiarity of Polish glass, namely tin. Neither Arabic nor Western European glass contains it. In Old Russia small quantities of tin occur in mosaic glass alone. Tin was probably used for the devitrification of glass. It was found in 7 of 11 examined beads and rings.

The examination of glass objects from Gdansk has revealed the following:

a) The predominant glass ornaments were chiefly made of lead-potash glass with an admixture of tin. Consequently it is possible that they were produced locally during the 320-year existence of the fortified urban settlement of Gdansk.

b) Glass objects differing from the former in chemical composition are probably of foreign origin.

c) Along with glass ornaments produced locally, the site yielded glass ornaments and vessels indicative of commercial contacts between Poland and other countries.

d) Of the glass ornaments, the most numerous are the transparent beads (81 specimens), next the opaque undecorated beads (48 specimens), then opaque decorated beads (33 specimens), while the glazed beads (20 specimens) are the least numerous.

The transparent beads of lead-potash glass may be of local origin. Probably also of local make are the opaque beads, irregular in shape and without ornamentation. The opaque beads decorated with coloured motifs seem to be the result of commercial relations between Poland and other countries.

e) Apart from foreign commerce, an internal trade in glass objects may have existed in early medieval Poland. For the present, however, we do not know which glass factories of Poland could have distributed their products on an extensive scale.

7. CZECH BEADS, by Vladislav Chvalina (1992, 21:5-8)

Jablonec Jewelry has contributed to the great tradition of Czech glass through its manufacture of glittering glass beads in numerous beautiful styles.

For almost two and a half centuries, the manufacturing center for Czech jewelry has been in the Jizera Mountains in Northern Bohemia, mainly in the vicinity of the picturesque town called Jablonec nad Nisou. The jewelry is, of course, closely related to the production of glass beads. Skilled glassmakers in the region used to make hundreds, perhaps thousands, of different kinds: various shapes, sizes, and colors of beads. The same type of bead production continues today.

The “seed” beads, most of all “rocailles” (a tiny, brightly colored round bead), and “two-cut” beads, have an interesting history and unforgettable charm. The exhibition called “Rocailles in the History of Nations,” held October-November, 1990, in St. Peterburg, Russia, revealed how important small glass beads were in the life of many nations. That is why we find Czech beads in the villages of native people in all corners of Africa, America, Canada, and the northern part of the former Soviet Union, as well as in the Far, Middle, and Near East. The traditional costumes of many European nationalities were richly decorated with seed-bead embroidery.

From the beginning of this century, seed beads became a very important part in all centers of fashion. We find skillfully embroidered bead creations in the collections of Haute Couture salons. Handbags and various kinds of jewelry made from seed beads now also play an important role as popular accessories.

The first record of the manufacture and export of seed cut beads in the Jablonec area dates to 1782. Production in the beginning was very primitive: thin tubes of glass were cut on vertically rotating wheels powered by a foot pedal. Since 1817, beads cut by this method were put in rotating drums with sand and heated in a furnace. By this operation, the seed beads became round. After removing the sand, the small beads were polished with a special powder and washed with water to make them shiny. Furthermore, the beads were cut or dyed in various ways or metal plated. In the Jablonec region, not only local material was used but also semi-finished products from Venice, the cradle of seed-bead manufacturing.

The Venetian beads were mostly cut in the Jablonec area. The significant change in the production of seed beads came about in the year 1890, when the cutting machine, similar to a guillotine, was introduced. This machine enabled a bunch of tubes to be cut at the same time.

The most important Bohemian makers of small glass beads before World War II were the companies of J. Riedel at Dolní Polubn, L. Breit at Luany, and V. Linka and Sons at Lounice. J. Riedel and L. Breit were the principal suppliers of glass tubes and unrefined kinds of seed beads; the Linka company had the important function of refining seed beads in the region of Zasada. The tradition of their production was closely connected with the initial development of the Jablonec jewelry industry.

Various "ceylons," silver-lined beads and "irises" were the most sought-after kinds for embroidery work in the fashion centers and the handbag industry. It is worth mentioning that the glass tubes in transparent colors for seed-bead manufacture have either a round or a square hole. Square holes help in the application of a silver solution to bring about a shiny gloss. The most famous iris finishes are gunmetal, red, blue, and green.

The tradition of manufacturing quality Bohemian beads is being kept alive by Jablonecké Sklárny at Desná in the Jizera Mountains. After the Second World War, the factory produced glass rods and tiny tubes both in the old traditional way and on modern equipment. From these rods and tubes, various beads, seed beads, glass stones, and glass accessories are being produced in different factories. There are nearly 400 colors and shades. The quality of this material and the wide variety of colors guarantee the quality of the final product; thus, the wider offering makes it possible to satisfy every customer.

Rocailles, bugles, two-cut beads, three-cut beads, pipes, tubes, and charlottes are all beads produced in the Jablonec region. The center for refining the beads and for stringing them into ready-made costume jewelry is the township of Zásada, in the vicinity of Jablonec nad Nisou. The inhabitants of this area were, no doubt, in touch with glass through the glassworks that were first built in the nearby village of Hu in 1558. Even Hu's translation in Czech means the general expression for a place where glass is smelted. First the people carried their small glass wares in baskets on their backs to nearby villages. Later carts were used to deliver various glass goods (glasses, perfume bottles, mugs, steins, etc.) to more distant places. At the end of the 18th century, many inhabitants of Zásada started to do this trade full-time. The most important product became the embroidered designs made from rocailles imported from Venice. The Venetian beads were expensive and therefore people tried to replace them with so-called *schmelz*; i.e., small beads cut from tubes. For some products, schmelz was not good enough. These beads were coarser than Venetian rocailles and not as polished as they were cut from tubes 4-7 mm in diameter.

These local "wordly" people started their selling trips at the beginning of spring. On the evening before their departure, they got together with their friends and families to say goodbye. They returned in the fall.

They were very respected citizens because they employed many local people during the winter.

These people

> ... prepared stringing of various ornaments for women, comb holders and brushes, cages with birds made from wax, small doilies to put under vases and bigger ones for tables, bracelets from schmelz and various brooches and hair pins. In addition there were many kinds of ties made from seed beads, and various beautiful belts from seed beads to beautify women in far away places.

This is the way the pioneer business trips are described in the village records of Zásada. Gradually the assortment of goods grew. Round rocailles made by the companies of Riedel and Breit were used for women's and children's handbags. These companies also made "pompadour" bags (a flat handbag with a lock), various necklaces, headbands, bracelets, brooches, etc. Their special items were Christmas ornaments. These were made from seed beads strung on wire.

Toward the end of the 19th century and in the first half of the 20th century, the export of all Jablonec goods, including seed beads, was taken over by export houses. The majority of these houses specialized in the export of certain goods. Some, on the other hand, dealt only with chosen markets. In the second half of this century, Jablonex became the sole exporter of Bohemian beads. Jablonex works with customers in all parts of the world. Jablonex is determined not only to keep the good name of Bohemian beads but also to improve it.

The exhibition "Beads in Czechoslovakia" which was held in 1988 in Jablonec nad Nisou in the local museum showed that seed beads have always been useful and popular in the life of man. The exhibition "Beads in the Culture of Nations" held in St. Petersburg at the Museum of Ethnography of the Nations of the former USSR revealed how man combines fantasy and skill to create beauty from tiny beads.

Ed. note: The above article is a slightly abbreviated translation of the *"Cheshkiy biser"* section of the exhibition catalogue *Biser v kulture norodov mira* (Beads in the Culture of the Peoples of the World), ed. by N. Sosnina and V. Chvalina, 1990, pp. 11-12 (*see Bead Forum* No. 19, p. 15).

8. LONDON CORRESPONDENCE, by Gloria Dale (1986, 8:4-7)

The report of the SBR dinner and subsequent informal meeting in Long Beach, California, was of interest (*Bead Forum* 7:1). As a member who lives a continent away from most other members I should like to comment on certain conclusions that were reached.

The present form of the SBR newsletter strikes me as satisfactory as it is for the moment. It is nicely printed on good quality paper. Photographs, if of very good quality, would be welcomed although clear, detailed drawings of beads are often more useful. Good color photography must be very expensive.

The Committee is correct in stating that what is needed is more original research but it is vital that the material included is well-researched and accurate if it is to be useful to scholars.

Archaeologists have long been concerned with the problem of a standardized system of bead nomenclature. Of course, Beck made a considerable contribution to this subject. Johan Callmer , in "Trade Beads and Bead Trade in Scandinavia ca. 800-1000 A.D.," 1977, attempted another system which is cumbersome and too complicated.

There are built-in problems in trying to give an exact description of a type of bead–to get agreement on terminology is nigh impossible. Even a basic globular bead is referred to as "spherical" or "round." If there were a limited number of perfect shapes the situation would be different, but in my collection of over 40,000 beads I find that there are numerous variations of biconical, barrel, cylindrical, faceted, disc, etc., beads. It would be impossible to name all of these shapes accurately and coding them, e.g. IXb1c, as Beck does is not practical.

What bead researchers need are documented material and excavation reports with detailed drawings of all the types of beads found in that particular site with an accurate description pertaining to material, size, color, type of perforation, and parallels for dating purposes. What you call the shape is unimportant and I should be sorry to see the limited membership of the SBR spending its energy on semantics.

As for color, there are color charts that one can already refer to. However, color is subjective and there can be varying opinions as to whether a piece of glass is bluish-green or greenish-blue.

Too many errors are made in identifying bead material. This is really the work of a mineralogist and/or gemologist. Excavation reports often contain misinformation because those cataloging the materials are not familiar with a variety of materials.

A case in point is to be found in the Jericho report, volume I, where Early Bronze Age-Middle Bronze Age disc beads are described as orange and red glass. Glass beads dating from the mid- to late 3rd millennium would indeed be a dramatic find as the first glass artifacts are dated by Donald Harden to circa 1500 B.C. I strongly suspect that these disc beads are transparent reddish-orange carnelian. Unfortunately the Jericho material has been dispersed and it has been difficult to track these beads down.

A mineralogist told me that in order to give exact information on the nature of a stone (bead) it is necessary to take a slice of it to be examined under a microscope. It is often difficult to judge a stone once it has been transformed into an artifact. There is also confusion about the names of stones. Chalcedony, agate, and carnelian are often used interchangeably and this causes confusion.

Dr. Schienerl's article on "Cornerless Cube Stone Beads in Egypt and Palestine" (*Bead Forum* 7:8-9) is evidence of the problem of material identification. Without seeing the green stone beads to which he refers it is impossible to ascertain what the stone is. However, I am familiar with beads of this type which are associated with the "heart" pendants (Islamic