

The MARGARETOLOGIST

The Beads of Bohemia

Timeline – Bohemian Beads: Outside Influences, Technology Export and Bead Types		
<u>Outside Bohemia</u>	<u>Within Bohemia</u>	<u>Bohemian beads</u>
	1359 glasshouse in Vimperk, S. Bohemia	
	1376 Sklanařice (glassmaking village)	
1490 Venice making drawn beads	1548 glasshouse at Mšeno (Jablonec)	
1650 "Roman pearls" in Paris	by 1680 red composition	by 1680 molded, faceted garnet imitations
	1737 glass cutters in Jablonec	
1750 lampworking in Venice	1764/74 "mandrel" tong molds	
1789 Klaproth discovers uranium	1782 First Czech seed beads	
1810 blown glass beads in Lauscha		1800 Atlas (satin) glass with cut corners
1815-1866 Bohemia and Venice united under Austria	1820 Anna (uranium) yellow and green	1820 "Vaseline" beads;" hexagonal blues with cut corners
1840 Prosser machine	1841 Altmüller records lampworking	1841 Venetian <i>rocailles</i> faceted as charlottes
	1845 blown glass beads in Bohemia	1850s-1900 beads imitating materials, objects, exotic beads, Venetian beads; beads for the Muslim market and others
1850 silver-lining at Lauscha		
1856 irising invented in Hungary	1856 lustering invented	
1864 Bapterosses makes "Prosser" beads in France	late 1800s Sample Men gather exotic beads to send home for copying	
	1866 outselling Venice	
	1876 Multiple mold for blown beads	
	1883 Riedl patents internal grooving for blown beads	
	1884 tong molds with straight holes	
	1887 Reidl improves drawing, tumbling of seed beads; <i>rocailles</i>	1897 Well-made seed beads
	1890 Redlhammers making "Prosser beads"	
1895 Swarovski to Austria		early 1900s snake, interlocking beads
1900? Blown beads made in Japan		1900 Art Nouveau and art beads
1941 lampwinding taught in India		1920s "Tut" beads
1945 Germans expelled	1945 Beadmaking goes into decline	
1970? India making blown beads		
	1992 Velvet revolution; revival	

The MARGARETOLOGIST is published twice a year with the most current information on bead research, primarily our own.

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Through the Eye of a Needle

Yes, this issue is late. Due to our heavy schedule it is the only one published in 2000. Your subscription is for four issues, not two years. It will be adjusted.

The Czech Bead Story (Francis 1979) was the first book on the history of Bohemian beads. The information was updated in *The Glass Trade Beads of Europe* (Francis 1988). We are due for a new examination.

It is a mark of success in bead research that the stories of the two major European industries [Venice was covered in 11(2) and 12(1)] need revision every decade. More information, new discoveries and new ideas come to light. This update benefits not only from my further research but also that of several European scholars.

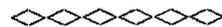
A note of clarification. *Bohemia* is a geographic term. Once an independent state, it is now in the Czech Republic (and was in Czechoslovakia). It is located on the Bohemian Plateau. *Czech* is a cultural and linguistic term referring to a branch of the Slavic language or its speakers, who inhabit Bohemia, Moravia and Silesia. Czech is a slightly larger term than Bohemian, but the bead industry may be called either, as it is centered in Bohemia with branches in other Czech-speaking regions. This is true even if individuals were ethnically German if they lived in the area. There is no word *Czecho*.

The region has a long, complex history, bearing wounds of many conflicts involving religious, ethnic and ideological differences. Beadmaking grew out of the larger industry of costume jewelry and "stones" (e.g. rhinestones) marketed to Europe, America and elsewhere. It is difficult, maybe impossible, to trace the precise makers of most Czech beads. The center of the industry is **Jablonec nad Nisou** (on the Nisou River).

I have taken a somewhat different approach in this issue to the history of Czech beadmaking than I had in my two earlier

books and with the recent Venetian update. The Czech bead story is tech-driven, with changes often related to the technology of glass or its working. This does not remove the people; they were the inventors. However, most Bohemian bead artists (unlike many Venetians) worked anonymously.

Much information comes from my examination of the collection at the Museum in Jablonec in 1978 via the kindness of Vera Maternova. I have not included catalogue numbers here because they have undergone at least one and probably several revisions. Thanks are also due to Vladislav Chvalina, Vladamir Veseley and Peter Puš of Jablonex and Waltraud Neuwirth of Vienna.



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The Margret Carey "Gotcha" Award goes to the person who spots the most errors per issue. One point for a typo, two for an error of fact. The award has been extended to The Bead Site.

Cindy Schave has won the 2000 Gotcha Award for TheBeadSite. Congratulations.

The Beads of Bohemia

Glass beadmaking has been identified in southern Bohemia as early as the 8th or 7th century BC and was prominent during Celtic times by the second century (Venclová 1990). These early developments, however, seem to have no historic continuity with what came later.

The modern glass industry appeared first in south Bohemia near the German border. The first known glasshouse was at Vimperk in 1359 (Weiss 1971:334). By the early 17th century there were eight glasshouses there, four of them *Betelhütten* or "Bead-Houses" (Dillon 1907:292).

Our story takes place mostly in north Bohemia. In 1376 taxes were first levied on the Queysser factory in Sklanařice, a village named for glassworkers (*skla* is Czech for "glass"), some 25 km (16 miles) from Jablonec (Hejdová 1966; Hetteš 1958:6). The ruins of another factory in that village reveal low, domed furnaces, like those illustrating Sir John Manville's *Tales*, drawn in Bohemia around 1420 (Hejdová 1966).

The 16th century saw explosive growth in the industry. Jargstorf (1993:5-7) attributed this to the Wartenbergers rebuilding the area after the devastating Husite Wars (1419 to 1438). She says they attracted textile workers and glassmakers, the latter mostly from southern Germany, including the Schürer family.

It was either a long time after the Husite Wars that the Wartenburgers rebuilt the area or the Schürers and others arrived for other reasons. Their first glass factory was only opened in 1530 at Falknov. They built seven more factories during the century, including one at Mšeno, now a Jablonec suburb, in 1548 (Čenský 1966; Urban n.d.:1). A dozen or so families, mostly German, dominated glassmaking in the

region for the next several centuries. This is an important part of Bohemian glass history, though I don't find the continuity as "amazing" as Jargstorf (1993:7) does.

Summary of the Industry's Growth

As at Venice, Czech beadmaking was an outgrowth of stone cutting (see next section), but the two followed different trajectories. Venice began making drawn beads in the late 1400s and only around 1750 did lamp-wound beads become important. The Czechs began with molded beads in the late 1600s and did not introduce drawn or lamp beads until the 1800s.

Venice and Bohemia had similar origins, but took different paths.

By the mid-18th century Czech beads had become very popular. They were inferior to Venetian ones but sold for half the price (Morazzoni 1953:40). A leading family was the Riedl (Riedel), who opened their first glass factory in 1766, were making beads by 1786 and drawing tubes from 1810 (Urban 1966; n.d. 6-7).

During the 1800s Czech beads achieved worldwide fame and actually outsold Venetian ones. Improved productivity, new processes and new styles were their hallmarks. Developing glassmaking schools, global marketing genius and the strength of the Riedl Glass Works (at Polubny, not far from Jablonec) all contributed to the evolution of a large, cohesive industry.

The 20th century was not so kind. There was a downturn during World War I, but after the formation of Czechoslovakia in 1917 there was a surge in demand and new glass beadmaking centers emerged outside Jablonec. Then the Great Depression, World War II, Communist nationalization

and the expulsion of ethnic Germans beat the once-flourishing industry down to a nadir by the 1950s. Since the Velvet Revolution things have turned up and the Czech bead industry is again a world leader [*Margaretologist* 1996 9(2)].

Ruby Red Glass

The first account of beadmaking in the area was published in 1786 by Leopold Wander in *Physical Description of the Mt. Boleslav District*.¹ It reads in part:

This invention [of *composition*] was a carefully guarded secret in Venice. Two persons from Turnov, the Fischer brothers, went to Venice and returned five years later in the belief that they had solved the secret. The work did not make progress but by constant trials they became acquainted with the material and by chance, in 1711, they made their first composition of sand, saltpetre and cinnabar with the addition of gold(?). (Vávra 1954:182; insertion mine)

Turnov is a village near Jablonec long famed for cutting the local deep red pyrope garnet. Venetian imitations were a threat, so Turnov undercut the imitations with what they called *composition*. The glasswork was kept secret. Garnet cutters worked at home but the glass was worked in basements, away from prying eyes. A pretense was maintained that this was not happening. The guild rules of 1792 spoke of hard and soft work, but only insiders knew that the former meant garnet and the latter glass (Vávra 1954:182-84).

> **Composition** – fine, strongly colored glass made with lead.

Red *composition* included saltpetre (saltpetre), either soda or potassium nitrate. Gold was the colorant, though either Wander or Vávra were uncertain about that. Cinnabar is a mercury ore. Mercury plays no role in gold ruby glass (Weyl 1959:384-87), but the term also loosely refers to any

red dyeing agent (Bailey and Bailey 1929:57). Vávra's (1954: 184) account of the beadmaker Anton Pacit refers to "lead...in the form of cinnabar." **Thus this is gold ruby glass made with lead.**

A rough recipe for making ruby red glass was published as early as 1612 by Antonio Neri (Mentasti 1980:108-09; LIX). In 1685 Andreas Cassius published *De Auro*, with a formula for the desirable, but elusive ruby red. *Unlike* that used by Neri and the Bohemians, it called for gold to be dissolved in a tincture of tin, known as "**Purple of Cassius**." Neri's work received scant attention until later in the century and Cassius' method became dominant for making ruby glass in Europe.

The Fisher (Fišer) Brothers Myth

Wander in 1786 attributed the beginning of Bohemian bead making to: 1.) A desire to imitate pyrope garnets that were the backbone of the Turnov industry and 2.) The brothers Fišer developing red glass in 1711 after a five years stay in Venice.

Virtually all histories of Bohemian glass (mine included) repeat the tale. However, it is now clear that it rests on the sands of myth rather than the rock of history.

The first crack was revealed in a glass conference in Prague in 1970 when the Venetian glass historian, Anton Gasparotto, cited a petition of 1709 asking for protection from Bohemian glass "similar to ours but more attractive" (Maternova 1991: 371). Maternova said that *composition* was "well developed" by 1711 (ibid.).

A second and even deeper crack comes from the archaeological record. The Spanish mission of *Santa Catarina de Guale* on St. Catherines Island GA has been excavated by David Hurst Thomas and his team from the American Museum of Natural History.

Lori Pendleton, his wife, and I are working on a volume devoted to the beads. Two beads were quite a surprise to me.

¹ Translated by the translator of Vávra.

They were molded faceted ruby red glass beads. My first reaction was that they were intrusions, as the abandonment date for St. Catherines was quite firm: 1680.

>Intrusion: a newer (or older) object excavated in an area with a different date. Being small, beads are common intrusions and many archaeological reports list modern beads as ancient because the writers knew nothing about beads of any date.

I bugged the staff to look up the circumstances of the find and it turns out it was excavated very carefully. The two beads were arranged symmetrically on a necklace in the cemetery. This one discovery pushes back the beginning of the Bohemian glass bead industry to the late 17th century, rather than the early 18th.

The Next Special Glasses: Uranium

Martin Heinrich Klaproth, the leading German chemist of his day, discovered the heaviest natural element in 1789. He named the new metal after the planet detected eight years before. Klaproth also first identified zirconium, titanium and cerium, though he did not isolate any of these elements in pure form (Trifonov and Trifonov 1982:71-73).

Klaproth extracted uranium from a sample of pitchblende, a heavy, compact mineral first reported in 1727 from Jáchymov, Bohemia. For over a century uranium remained an oddity until 1896 when it was recognized that it was radioactive (ibid.).

During the century of obscurity only one practical use was made of the new metal: to color glass. Klaproth suggested this use, though his formulations don't seem to work. With the pitchblende source nearby, the glassmakers of Bohemia developed uranium glass colors, a yellow being mentioned in 1820 and a green a few years later (Neuwirth 1993:277).

Uranium yellows and greens are distinctive in Czech glass. **Anna yellow** and

Anna green were supposedly named after Anna Riedl (ibid.). Uranium can produce a range of colors, depending upon other ingredients in the glass. Anna yellow, for example, is heavy in lead. Opaque colors, most notably orange, can also be produced with uranium (Weyl 1959:206-11).

The most popular bead of Anna yellow or green is called "Vaseline" by American collectors. They are biconical, faceted beads. Archaeologically they are first recorded on Wichita sites from 1820 to 1835 (Harris and Harris 1967:154). They were tong molded and underwent the changes in perforations and grinding as discussed in later sections.

Molding

As we shall see, the Czechs made beads by different methods, but most characteristic was the use of a tong mold. The history of this seminal device is as obscure as that of glassmaking in Bohemia. Its invention was once attributed to Václav Rybář, who lived from 1726 to 1790 (Vavra 1954:182; Urban n.d.:4). Before tong molds, unperforated glass "stones" for jewelry were molded in clay (Vavra 1954:182).

Jargstorf (1993:50) cites a treaty between the stonecutters' and glasscutters' guilds in 1764 as indicating that two-part molds were in use, though she does not reproduce the pertinent section. Tong molds were being marketed by 1786 (ibid.).

The first devices seem to have consisted of small metal molds mounted on wooden handles. Two workers were required to make a bead; the one who squeezed the mold to form a bead and a second one to push a pin through a hole in the mold to make the perforation (Neuwirth 1994:246).

In 1774 Count Zensendorf of Turnov reported, "Some years ago a certain Fischer [Fišer] has developed a tool which allows [workers] to produce the artificial jewelry much more easily and at much lower costs. The glass is drawn and squeezed into the

desired shape with the help of a tong including a mold." (Jargstorf 1993:50; insertions mine)

This mold leaves a distinctive feature in the bead. Because the tong closed onto the bead in an arc, the device in the mold that pierced the bead was *conical* in shape. Such molds were known as "mandrel" or "Dörnel" molds (Neuwirth 1994:246). The end of the bead at the tip of the molding cone was not penetrated and had to be punched out, leaving a second small cone, usually broken around the aperture (opening of the hole).

In 1884 Josef Heibel submitted a patent for a mold that made, "a cylindrical hole of the same width from beginning to end, pressed through the glass beads..." (ibid.: 247). It was ingenious. Instead of a conical mandrel, a straight rod pushed through the bead by means of a small arm mounted atop an arm carrying one half of the mold. Neuwirth (ibid.) said the patent was only "partially accepted" in 1889, so something like this may have existed earlier.

There were many variations on tong molds, but this information suggests a way of dating some Czech beads. It must be remembered that not every beadmaker would immediately replace his older tools for newer ones, but people in the region tend to be early technological adapters.

We might *tentatively* suggest that beads with **conical holes date from roughly 1750/60 to 1890/1900**. After that, holes are straight (more complex machines replaced tong molds later; the holes of their beads are also straight).

What about the earlier beads made by two people? They should also have straight holes. No beads in the Muzeum Skla a Bižutérie (Museum of Glass and Jewelry; hereafter MSB) in Jablonec are earlier than 1800. A few in our collection appear quite old and may be from this era. Their apertures and sometimes ends are

broken or fractured. This may be a function of age or of the perforating process.

Some time before World War II new molds were introduced. One type pressed six to eight beads at one time by inserting as many canes next to each other and closing a mold upon each by pulling down on a handle. Another pumps half a mold up and down against the heated end of a cane, quickly forming a "ribbon" of beads. In both cases the beads are tumbled to remove the flash and polish them.

Grinding Glass Beads

Keep in mind that Czech glass beadmaking developed from garnet cutters imitating their own work. It is no leap to understand how stonecutters applied their skill to glass. This happened early because as soon as red *compositon* could imitate the color of garnets the glass "stones" were faceted to make them look like the gems.

There is little history of this work. It began in Turnov, but by 1737 there were also glasscutters in Jablonec, using wheels driven by water, hand or foot. Those cutting beads worked mostly in small home-based shops (Jargstorf 1993:39).

Grinding glass beads is a distinctive Bohemian trait. It was chiefly used to remove the flash and conceal the seam left from the molding process. In many cases (including the original "garnets") this was extended to faceting the bead.

> **Flash** - material that seeps out between two halves of a mold.

> **Seam** - a mark on a finished product indicating where the two mold halves met.

An important faceted ground glass is known as **French Jet**. The French pioneered the use of black glass in mourning, but the real fashion caught on after the death of Prince Albert in England. Most of this imitation jet, including complex ready-made jewelry pieces, is Bohemian.

Grinding done against the *face* of a rotating wheel leaves *flat areas* on the bead. Putting a bead against the *edge* of a wheel would leave a *line with a round profile*. Beads decorated with lines are much rarer than those with facets or flat areas. They also seem to be older. Jargstorf (1993: 40) points out that for crystal (for rhinestones or chandeliers) flat cutters were mostly in the Desse Valley and those cutting lines in the Kamnitz Valley, but it seems doubtful that this division can be applied to beads.

Drawn Beads

Neuwirth (1994:201) wrestled with the various terms used in German for beads made from tubes, as they each indicated how beads were detached from the tubes. In the end, she opted for the English term "drawn beads" as the best one to describe the whole manufacturing method.

>**Sprengperle (broken bead)** – large tube scored and broken off into a bead.
>**Hackebissel (cut bead)** – small tube chopped into segments for seed beads.

The distinction in German between *Sprengperle* (broken bead) and *Hackebissel* (cut or chopped bead) is important even though the two words came to be interchangeable. The former describes beads made from large tubes that were scored with a file or diamond and snapped off, usually with tongs. This was used for special types of beads. The latter term is used for the separating of seed beads from a tube using a variety of devices.

Two types of *Sprengperle* are distinctive, and both are widespread. One is made of Atlas glass (satin glass), with numerous air holes running through it to give it sheen. These beads were drawn as *pentagonal tubes*, scored and snapped and then the ten corners *ground flat*. The earliest ones in the MSB in Jablonec date to *ca.* 1800. Long, thin ones were called *coulants* and often used in rosaries (Chvalina 1994).

The other type is even better known. It is made from a *hexagonal* (also seven- or eight-sided) tube, most commonly in blue. Again, the tube was scored and snapped and the twelve corners ground off. Erroneously called "Russian"² beads from the mistaken impression that they were made by or traded by the Russians to Alaska, they were exported all around the world. They are found in a variety of colors, with or without cores and in several sizes. The oldest may be small blue ones with white cores, reported in 1780-1820 levels in Wichita sites, while large plain blue ones and small green and black ones are found after 1820 (Harris and Harris 1967:151-3).

Hackebissel are seed beads. They are first recorded being made in Bohemia in 1782. They are also called *šmelc* (*schmelz* in German) to distinguish them from better quality Venetian *rocailles* (Chvalina 1994). Early Czech seed beads were made of an inferior glass, cut indifferently and were often not rounded off.

An interesting cooperation developed between Venice and Bohemia in the 19th century. Beginning with the Peace of Campoformino in 1797 and ratified by the Peace of Vienna in 1815, Venice came under the control of Austria, which also ruled Bohemia. Until Venice joined a unified Italy in 1866 the two beadmaking areas were under the same regime.

Venice and Bohemia were joined from 1815 to 1866.

Altmüller in 1841 noted a form of cooperation during this time: "Venetian beads frequently go to Bohemia to be ground and faceted, this is even done with the finest knitting beads which also acquire their facets this way (even though, with their small

² A better alternate name is the old American trade term "cut beads" or "cut blues."

size, the facets are not completely uniform) and then become a new commercial article the two distant countries both have a part in." (Neuwirth 1994: 212) As discussed in *The Seed Bead Issue* [1997 10(2)], these are **charlottes**, the most expensive of all seed beads. How early this cooperation was in effect is not known, but there are significant numbers of charlottes at St. Catherines before 1680.

The Venetian-Czech combination does not seem to have expanded the Czech seed bead industry. Not until the end of the century were improvements made in this branch, Josef Riedl leading the way. He obtained a patent on an improved tumbling machine in 1887 and began advertising *rocallies* (Neuwirth 1994: 205). He also invented an automatic tube-drawing machine (I believe this is still used for beads with non-round holes) in 1896 (*ibid.*:107). Two other major seed bead makers were Ludwig Breit and Linka & Sons.

Blown Beads

Heating a thin tube and blowing into it to form a bulge to be turned into a bead was pioneered by the "Roman pearl" industry of Paris that began in the mid 17th century. Engravings of the process were published in Diderot's *Encyclopédie* in 1765 (Gillispie 1959: pl. 427-8). Soon the work was being done all over Europe

Lauscha, Germany, which had been making glass since 1597, took to blowing beads by the early 1800s under the leadership of Hans Greiner, a member of one of its leading glass families. They made a poorer imitation pearl and began lining the beads with silver to produce a new product. He and his descendants developed several inventions to make their work more productive (Rogers and Hawkins 1977:7-8; Jargstorf 1995:83).

Initially these beads were made one at a time at a small lamp powered by a bellows under a table. The technique reached Bo-

hemia about 1845 (Rogers and Hawkins 1977:8). It was greatly expanded in 1876 when a worker, whose name has been lost, invented a two part mold that snapped over a heated tube to make a series of connected blown beads (Neuwirth 1994:271).

The Bohemians applied their usual ingenuity to blown beads. Some were made with several layers of glass, silvered inside and then ground with facets to form exquisite designs. In 1883 Joseph Riedl patented a method to make tubes that were ribbed *internally* so they were less likely to catch dirt in the ribbing (Neuwirth 1995:46, 178). By the beginning of the 20th century Bohemia was the leader in this industry, having out-produced and out-sold all its rivals (Rogers and Hawkins 1977:8).

Lampwinding

In this process a solid glass cane held in one hand is heated at a lamp and the glass made to drip onto a wire held in the other hand. The bead built up can be shaped or decorated in various ways. This method came into its own in mid 18th century Venice. Within a century it had displaced drawn beads as the principal technique there, except for seed beads and chevrons.

Lamp beads, so important at Venice, were less so in Bohemia.

The story in Bohemia was different but has yet to be completely assembled. Altmüller in 1841 recorded two kinds of lampworking. In one, a segment of a glass tube was mounted on a wire and held in a lamp to round it (similar to the Venetian *a speo* method of rounding drawn tubes). In the other a solid cane was worked as described above (Neuwirth 1994:266-7).

Czech lamp beads are – and apparently always were – a small part of total output, estimated to be only 5% today (Chvalina 1995, personal communication). However,

some interesting Czech beads, including the misnamed **Hubble** (imitation turquoise) and the recent imitation (and also misnamed) **Lewis and Clark** and **French Ambassador** beads are wound. The Czechs made the beads more regular by twisting them in a metal half-mold to give them perfectly circular sections.

One problem in identification is the old Czech trick of imitating other people's beads. Two sample cards in our collection obtained in Jablonec in 1978 contain beads that one would swear were late 19th century Venetian, complete with typical foil, floral patterns and combing. However, they are marked "Made in Austria" and are no doubt Bohemian predating 1918.

Beads on recent sample cards, such as those in the "Bead Room" at the trading company Jablonex in Jablonec, look like Japanese lamp beads of the 1970s. Absent the technological markers of the beads discussed above, it is difficult to tell a Czech lamp bead from those made elsewhere. Powdery white perforation deposits distinguish them from Venetian beads, but this is little help if they had been worn, as the powder rubs out. It may be that many beads otherwise identified as Venetian or Japanese were actually made in Bohemia.

Sintered Glass

"Sintered" refers to a ceramic product consisting of tiny particles joined where they touch. In the 1840s the brothers **Prosser** took out rival patents in the US and UK for a machine to make buttons by shaping a powdery "frit" under pressure and firing it (R. Prosser 1840; T. Prosser 1841). J.-F. Bapterosses of Braire, France improved upon their machine, taking out patents in the 1870s and 1880s. He was also the first to use it to make beads in 1864 (Sprague 1983; Oppen and Oppen n.d.:55-62).

> **Prosser bead attributes** - opaque, uniform, thin hidden seams, one smooth and one pitted end.

These beads were also made elsewhere (Germany, Holland and Italy), whether under license or not. In Bohemia, Eduard and Albert Redhammer, after a false start believing some one who claimed to know the process, taught themselves enough chemistry to start making these beads around 1890. By the turn of the century, the five European beadmakers formed a cartel, allotting production quotas; the Redhammers were in third place (Neuwirth 1994:301-4). The Redhammers devised new processes and designs. It was they who patented the "snake" bead, one of the best known sintered beads (ibid.:474). They may have been responsible for other **interlocking** beads as well.

Surface Treatments

The Bohemians often took the lead in surface-treating glass beads, including but not limited to, seed beads. These were discussed in *The Seed Bead Issue* [1997 10(2)] and are only summarized here.

Internal decoration (lined beads) with a silver compound was perfected around 1850 in Lauscha and soon taken up by the Czechs. Color lining was not successful until the advent of aniline dyes, the first invented in 1853 in England, but by 1877 largely in German hands.

The treatment known as lustering is recorded in Bohemia by 1856 and applied to beads at least by 1873. The thicker irising was a Hungarian invention also in 1856 and used on Czech beads by 1873.

Other techniques, including dyeing the glass surface, the use of special glasses (satin, alabaster, opal) and combinations of these have been employed to great success. Many have also been used in Venice and Japan, though not so enthusiastically.

The Designs of Beads

The earliest Czech beads were molded and ground (e.g. Vaseline beads). Next came beads scored from a tube and ground on

the corners (Atlas glass beads and "cut blues"). By the mid 19th century a new line was coming into its own.

Europe was experiencing fundamental changes. The scramble for global mastery, aided by steam power and telegraphy, fostered an interest in "colonized people." At its worse it made sideshow mockeries of other people and at its best developed into the fields of ethnography or anthropology.

Bohemia saw an opportunity. Natives, especially of Africa, but also elsewhere, were often lovers of beads and held certain types in high esteem. A remarkable system developed in which **Sample Men** traveled the globe, penetrated remote villages, obtained beloved beads and sent them home to be copied. By 1875 they had registered 343 drawings and 322 samples of such beads (Urban n.d.:18).

The Czechs believed in the flattery of imitation, and it paid off.

Some imitated materials, harking back to mock garnets and jet – carnelian (with both conical and straight holes), lapis lazuli, turquoise, tortoise shell, agate, bloodstone, onyx, amber, jade and coral. More prosaic substances – shell, bone, teeth and bauxite – were also imitated in glass. Specific shell types, including *Conus* top discs, Arca beads ("hippo teeth" and others), cowries and columella of the sacred conch (*sankh*) were produced, sometimes on demand by colonial powers.

Specific beads were copied, even African powder-glass beads. The Chinese glass color repertoire was duplicated and the beads (better made than the originals) sold on knotted silk, often graduated, unlike the originals. A copy of the darkened chalcedony/whitened alkali-etched dZi bead in Tibet evoked the comment:

Here is another instance, among several that I have recently come across, of the extreme astuteness of the Central European manufacturers, who seem to control this trade.... Their knowledge of anthropology is, perhaps, a little one sided, but it is obviously detailed as far as it goes (Codrington 1932:128).

Beads were designed to capture shares of specific markets. Perhaps the largest was the Islamic world for which beads incised with stars and crescents or holy phrases in Arabic were made, as well as glass charm cases. These were sold singly or as prayer strands to Muslim countries, especially the great bead mart at Mecca. Beads were made for Buddhists, for India and many other groups. When Carter opened King Tut's tomb in 1922, it set off wave of beadmaking with ancient Egyptian motifs.

The Czechs followed Venetian styles as well. Lamp-worked beads were mentioned above. They still make white hearts in a variety of colors. They learned to make aventurine, mosaic canes and chevrons.

The industry was highly innovative. A great variety of toggles (that project above a string as much as hang down), pendants and spacers were made. Natural objects were also copied (corncocks, berries, seeds, strawberries, beans, fish, flowers, etc.).

Prosperous and artistic, Jablonec was an early center of Art Nouveau, with many outstanding buildings decorated in the style and an outpouring of beads and jewelry to match (Maternova n.d.). Later it embraced the Art Deco movement.

In the early 20th century the Czechs stopped imitating exotic beads and moved toward a more artistic esthetic. The impoverishment of colonized lands and oversaturation of their markets may have played a role in this. Imitative beads (e.g. the "Tut craze") and beads for specific markets (e.g. the Muslim world) were still made, but the emphasis was away from

imitative beads toward those more acceptable to European and American tastes.

Other Products

While northern Bohemia is best known for its glass beads, it must be remembered that it was a center of glass and metal artistry in general. Its products included costume jewelry, small glass items such as paperweights and perfume bottles, Christmas tree ornaments built mostly of blown beads and bugles (Neuwirth 1995), buttons, medals and coins.

Bohemian beadmakers do not live by glass alone.

Not all beads were glass. Wooden bead production began in the 19th century. In the early 20th century Schowabek (Shovanak), dominated the craft and also made wooden toys and beads of celluloid and casein (Francis 1979:15; Jargstorf 1993:105-7). The current producer is Detoa, (Tofa before 1989). An interesting marriage between the glass and wood bead industries was the use of tiny glass balls, *ballottini*, made by Breit glued to the surfaces of wooden beads; a style begun in the 1920s (Jargstorf 1993:107). Plastic amber imitations have a long pedigree.

In 1844 Charles Goodyear patented a way to vulcanize rubber, giving it more stability. I don't know when Bohemia started making it into disc beads, but **Vulcanic** beads in the Sachse collection in the MGJ, are no later than the 1920s and perhaps much earlier. For a while celluloid was used for similar beads, the owners said to be pleased with the camphor smell they emitted. These, however, were flammable and were replaced with vinyl. These beads are called **yard beads** for the West African market, as that was the unit of length in which they were sold (Chvalina 1994).

Czech jewelers worked different metals (Jargstorf 1993:77-104). Most metal beads were fairly unimaginative, but an interesting type is called **Sea Foam**, hollow base metal beads with filigree-like surfaces.

Exporting Czech Techniques

A major contribution of Czech beadmaking was spreading the technique abroad. This happened both through emigration and instruction.

By the time he was 33 in 1895, Daniel Swarovski left his home near Jablonec to set up a precision faceting machine he had newly invented in tiny Wattens, Austria so to avoid other cutters copying his idea. Beginning with "Tryolean cut stones," he formulated a better glass in 1911, and assured that no worker knew the whole process. Swarovski beads (**Austrian cut crystals**) and other products make the company one of the largest in Austria [see *Margaretologist* 6(1) 1993].

Daniel was still alive when Communist Czechoslovakia expelled all ethnic Germans, including beadmakers and jewelers. At first they went to at least six places in Germany (Jargstorf 1993: 158), but with Swarovski's help settled in **Neu Gablonz** (New Jablonec), a suburb of **Kaufbeuren**, and now the heart of the German glass bead industry. Exiles also went to Vienna, where they set up a company called **Neu Gablonz** and to **Krimsmünster**, Austria.

Sakubei Oi, father of the modern Japanese bead industry, learned to make blown beads in Bohemia, later taking the technique to India (Blair 1973:298). The Indians adopted the method and now make these popular beads in Firozabad.

Also in India in the early 1940s a Czech couple, the Hendricks, set up a glass beadmaking school in Varanasi teaching the Czech lampwinding method using molds. Their most successful pupil was Kanhalya Lal Gupta, founder of Banaras Beads Ltd, which claims, with some justi-

fication, to be the largest single beadmaking company in the world.

Some Final Thoughts

It is tempting to think that beads are made by isolated, discreet groups and can be recognized as such, but life is more complex than that. This is perhaps never more obvious than in the Czech industry.

Czech beadmakers have always been quick to adapt new ideas, processes and techniques. They improved upon other people's inventions and they are inventive themselves. Willingly or not, they have been responsible for the establishment of bead industries in several other countries.

The history of Czech beads was virtually unknown two decades ago. It now reveals one of the world's most vibrant industries, a story that reflects the history of beadmaking, marketing and use.

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