




Among the wealth of sights in Zhejiang are a pearl farm in Zhuji (top right), cottage industry ornament-making at the Zhuji Pearl Market (middle left), and the catch of the day — freshwater pearls on the half-shell (below).



STORY BY PAUL E. HOLEWA

**PHOTOS BY LYNN Saelim
& PAUL E. HOLEWA**



The Chinese have always done things a little differently. Whether it's reading from the right or governing from the left, the world's oldest continuous nation plods on inexorably, often making up its model as it goes along.

As the last of the red banners from the People's Republic's 50th Anniversary parade are stuffed into the dust bin, it is worth noting that for all the Western derision of China's human rights record, political totalitarianism and software pirating, it remains the last standing communist state that still matters. Somehow they muddled through while the others gave in, tweaking their system with a touch of reform here and a Pizza Hut there. And they've more than survived — they've thrived, maintained order, developed nuclear weapons, and managed to consistently export more than they import.

This strange cocktail of heavily armed state control, a foot in the free market door, and massive output of inexpensive product appears to have applied well to the cultured pearl industry, which has grown in just a few decades from a shoddy Japanese knockoff to the world's largest supplier. And more importantly, as the rest of the industry grits its teeth, the Chinese flood is starting to work its way upmarket. The stuff is good, and getting better. The elite producers of Akoya, South Sea and Tahiti pearls can no longer dismiss what consumers are starting to notice.

The Chinese persistence hasn't stopped with mere market penetration, however, and with the new upgrades in quality, the sheer volume of the Chinese output threatens to flood the market like so many sweatshop shoes. Critics say Chinese producers are ►



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ignoring the stability needs of the industry, an accusation familiar to producers in textiles, clothing, and just about any other industry that's been hurt by the industrial giant. As always, however, the Chinese ignore the criticism, turn inward and keep producing. And along the plodding path a little bit of luck hasn't hurt either.

Steady pollution increases in Japan's Biwa Lake, the name synonymous with freshwater pearls, have been responsible for dramatic falls in pearl production. But the big break for China's freshwater pearl industry came in 1994 when Japanese pearl farms were hit hard with "red tide", a menacing and deadly toxin-producing micro-organism that killed over 150 million pearl-producing oysters in two years.

According to Chinese mythology, a great disaster indicates anger of the gods at the reigning regime, and foretells a shift in the hands of power. Mao died a year after the great Tangshan Earthquake that killed 240,000 people, and the Gang of Four that master-minded the Cultural Revolution were soon cast out. Akoya has ruled the pearl industries for years — can the Chinese take over the mantle?

THE ROAD LEAVING SHANGHAI

Our journey begins in Shanghai — or rather in trying to get out of it. What the former "Paris of the East" lost in opium-addled nightlife under Mao it has regained in urban sprawl under Deng Xiaoping and Jiang Zemin's market reforms. Getting out of town may be tough, but after a few hours the sprawl gives way to a bucolic landscape with uniform rows of what look like wide versions of gable houses, capped with the ubiquitous pagoda-style roof. The rurality is completed by domestic travelers actively participating in China's national sport of spitting.

Big cities like Shanghai have campaigned aggressively to curb spitting in public, but in rural areas the clearing of throats and parting with phlegm summoned from deep within is a quirk of Chinese culture that remains entrenched.



CASTING PEARLS AMONG BRINE

Zhejiang province is home to Shaoxing City, a light industrial town at the center of the province's northern plain waterway system, where many of China's cultured pearl farms are located. Shaoxing's many rivers are pock-marked with the signature round white buoys that keep pearl rafts at a uniform depth below the water's surface.

At 300 hectares, Shaoxing Pearl is the largest of Shaoxing's 30 farms, and a startlingly quiet place. The hushed environment is conducive to listening to Jiang Ji Lin, a soft-spoken, 30-year industry veteran who helped set up the Shaoxing Pearl Farm in 1963.

"At this time we were farming only natural pearls," Jiang says. "Three to five pearls were found a day by eight workers. As the technology has changed, so have the farms. Today we have over 362 farmers."

Shaoxing Pearl Farm's annual yield weighs in at 40 tons, a far cry from the former daily handfuls. As part of the

tour, Jiang pries open six mussels to demonstrate the potential yield of an average mussel, which is nucleated with 30 to 40 small pieces of tissue (a 10 cm mussel will be nucleated with tissue pieces no larger than 3.0 mm).

After four to five years, the mollusk is ready to reveal its hidden treasures — pearls averaging 7 to 8 mm in size. A mussel contains up to 30 pearls, typically an even split on each half of the shell.

Round yields remain low at 3 percent, with near round pearls at about 5 percent, and jewelry-quality oblong pearls around 15 percent. Oblong pearls with ridges and button-shaped pearls with no luster make up the remaining 77 percent.

In typical Chinese fashion nothing is wasted. Top-end round and oblong pearls are fashioned into jewelry, while the lowest range of marketable goods is used for ornaments. The most commonly seen are pearl renditions of the 12 Chinese astrological animals.

Unmarketable pearls are sold for scrap — ingredients in wine, medicine,

and cosmetics. The pristine water of Jianhu Lake is famous as a source of white pearl wine. Pearls are also made into youth tonics, relaxants and remedies to correct vision problems, as well as ground up for facial creams. Many Chinese, Jiang included, believe that ingesting a pearl each day is good for a person's overall health.

ZHUJI CITY: A MARKETING TALE

If Shanghai is China's answer to Paris, then Chen Fu Yew's pearl farm could easily be Zhuji's Venice. Long wooden boats, plastered together with a sheen of concrete, are the only way to complete a tour of the watery 20 hectares.

Chen fields phone calls on his cellular while paddling through row after row of pearl rafts. He pockets his portable phone and points out how the clams are bound in individual nets and then hung in small groups. Each group is secured to a long wooden rod that is supported by a buoy, or in Zhuji City's case, a Sprite bottle or two. The rod is like a hanger full of clams that are suspended slightly below the surface on a line. Chen grabs an end and pulls upward to see how his silent partners are doing.

As the owner of Zhuji City Pearl Farm, Chen embodies today's modern approach to marketing in rural China. From graciously welcoming foreign visitors and patiently answering questions about his pearl farming operations, to captaining a boat tour over the man-made lake, he is the consummate host.

Chen has buyers from India, the United States, Japan, South Korea and Hong Kong coming directly to his farm to purchase goods. He has a self-effacing nature, his quiet demeanor indicating a genuineness of spirit and willingness to listen rather than debate. Or maybe he just likes smoking cigarettes more than talking.

Only three years into the venture, Chen and his 15 workers, whom he calls managers, run their farm on the



Going to market (top) is part of the ritual for pearl folk like Chen Fu Yew, his wife and brother-in-law (smiling, upper left). Chang Ji Ling and Seng Chong Yong (middle left) get a progress report from their mussels, while on another farm (bottom left) workers prepare for harvest.



outskirts of Zhuji. The farm is small but has a rural charm — dogs and chickens dart along a dirt path leaving moon-like footprints in the thick dust generated by a nearby concrete factory.

Signs of frugality are rife, from the old instant coffee jars used to transport the ever-present green tea to the one-liter Sprite bottles used as buoys on the farm. Three mussels are selected for a demonstration before lunch. Since the technology does not vary much from farm to farm, Chen's yields are not much different than in Shaoxing with the exception of size. "Lake farms tend to produce larger pearls than river farms," Chen says. "We buy shells [mussels] that are about two years old and place them in the lake. After three years we can get pearls about 7 to 8 mm. If we wait four to five years sizes of 9 mm to 10 mm can be harvested."

The average size for Chen's pearls is 10 mm, with one monster measuring 19.96mm. (Chen has put a price tag of \$35,000 on this whopper but as of yet, no takers.) As we wait for lunch to be served Chen reviews the day's catch. The larger pearls in white, light purple, gold and pink have been placed in a jar of water. Soon they will be added to thousands of others in a large tub, from which the best will be selected.

Cigarettes are passed around the table as the next stop on our trip is discussed — the Zhuji Pearl Market, the largest of its kind in China. Chen has offered to accompany us.

SOFT GEMSTONE, HARD SELL

Chinese streets are a chaotic jumble of bicycles, cars and pedestrians. The

A drilling table at a small shop in Zhuji (left) is testimony to the underdeveloped finishing industry, while sorting (middle) is the only support activity of note. And it's not just high-end material that's used: every pearl finds a home eventually.

function of the brake to avoid collisions and the horn as absolute final recourse have been reversed.

The market is less life-threatening but no less frenzied. All pearl products are on sale here, from potions to jewelry grade gems. Seven days a week, 365 days a year, 80 stalls housing over 900 sellers are open for business, selling over 1.4 million yuan (\$170,000) worth of pearls per day.

He Qiao Jiang, operator of the Zhuji Pearl Market, has been a fixture since its inception in 1979. "In the beginning there was only about 20 sellers," he recalls. "It has grown because foreign markets are demanding more Chinese pearls. With improvements in production there are more farmers coming to the market."

Jewelry and ornaments make up about half of the wares on offer, with unprocessed pearls the other half. Cosmetics and medicine account for a negligible amount by comparison. A survey of stalls over a two-day period revealed only three vendors stocked such goods in small amounts, usually mixed in with other merchandise.

Buying in Zhuji's infamous pearl market is more of a contact sport than a shopping excursion. Undeterred by the oppressive September heat, sales people jostle for a prime shot at a new

buyer — even if it's only to sell a small pearl tiger or dragon for a few dollars.

Standard equipment for the market is simple: A dark display cloth, (preferably in dark blue, black or red), tea, and of course, the shiny offerings themselves. Advances in farming and production are evident in the volume and variety of the pearls set out.

FINISHING IN THE RAW

Although China's pearl production is thriving, there is little in the way of grinding, polishing or drilling factories. Zhuji's cottage-sized factories are the closest thing to a local finishing industry, and almost all pearls are exported as raw material. The main support industry for the pearl farms appear to be sorting facilities. One such outfit near the Zhuji market employs about 25 to 30 women who sort through huge bags of pearls, scooping prime candidates into bowls positioned in their laps.

Each metal workstation's tabletop is covered with a strong contrasting colored swath of material — again red, black or dark blue. Six workers are situated at each sorting table, hunched over their own mound of pearls under fluorescent lights.

Not far from the sorting facility is a small-sized drilling operation. Proprietor Pen Ping Chian's modest facility is set up for low-level production, filling a small but necessary niche. Pen's machines are fitted with crude foot-pedals used to open and close the clamping device that holds the pearl in place for drilling — a low-tech operation that nonetheless supplies the limited local market for fin-

SECRETS OF THE TRADE

MOST FRESHWATER PEARLS in China come from three different species of mussels. *Hyriopsis Cumingii* (Shaoxing Farm uses these) usually yield the best quality round pearls with high luster, but take a long time to grow. Most use the *Cristaria Plicata* because it produces quickly. Pearls from this species are oblong in white or pink. Another is the *Lamprotula Rochechouarti*, often found in streams or shoals.

Water condition is the key to mussel growth, with an ideal temperature between 18 and 25 degrees Celsius. After implanting, it takes five to seven days for a mussel to cover an irritant with its tissue and 10 days later it begins producing concentric layers of nacre. Generally, farms in the Southern region of China plant between March and May and September and October. After two to three years, it's time to harvest, usually between October and February, since during the fall and winter seasons mussels produce nacre layers more slowly, resulting in a smoother surface and higher luster.

PEARL FARMING AREAS

Most mussels can grow in lakes, ponds, rivers and large basins. The water should be peaceful, well-circulated, contain plenty of bacteria, have no pollution, and a depth of 2 to 2.5 meters (definitely not more than 4 m). If the water is too shallow, the temperature will shift too rapidly and the mussels will die. The flow speed should be about 6 meters per minute. In this quality of water, a mussel will produce high luster pearls in large quantities. Ideal acid-alkali concentration is 7 to 8 ph. If it's too acidic, the pearls will be small; too much alkali and the pearls come out yellowish. Water visibility should be 25 to 40 cm with plenty of bacteria. The farms should not be in polluted areas.

PEARL PLANTING

Suspended: The mussel is strung through a hole in the shell and suspended in the water either individually or in clusters, depending on the depth of water.

In Baskets or Nets: Five or six mussels are placed in a bamboo basket or nylon net and hung at 0.5 to 1-meter intervals from strong wooden poles, joined together in floated rows.

STAGES IN FARMING

Selecting Mussels: The mussels are divided into two groups: those providing implantable tissue and mussels to be implanted. The selected mussels soak in a basin for a few days, are cleaned and put in a wooden basin with water level slightly lower than the mussels so they can breathe.

Preparing Tissue Implants: Tissue is cut from the mussels into one or two long pieces on each side of the shell 0.4 to 0.5 cm wide and then cut into rectangles of 4X5 mm. The whole process from shell opening to tissue preparation and implanting should take less than 15 minutes.

Implanting: The mussel is opened only 1 to 1.2 cm wide to avoid injury. A piece of tissue is placed in the triangular scalpel slit and shaped into a round using a needle. It is crucial that the tissue not make contact with the shell. The trian-



A farmer flexes his mussels — one of the most peaceful occupations on earth.

gular slit runs from top to bottom 1 to 1.2 cm wide and 0.6 cm deep. The implanted tissues are placed 1 to 1.5 cm apart with three rows in each shell 1 cm apart. The number of tissues implanted depends on the size and health of a given mussel. For example, a 10 to 15 cm long mussel could be implanted with 30 to 40 pieces of tissue, with 15 to 20 pieces on each side.

NUCLEATED CULTURED PEARL

The process for nucleated pearls is similar to that of tissue implanting, but the shell beads have to be prepared beforehand. The size and number of implants vary with the size of the mussel. For example, *Hyriopsis Cumingii*, which is 15 to 18 cm long, can accommodate no more than eight beads of 4 to 6 mm. In addition, 10 to 20 pieces of tissue without beads can be inserted.

SPECIALTY SHAPED PEARLS

This method yields unique pearl shapes by inserting shell beads that have been carved into such shapes as dragons, pagodas, Buddha images, etc. The bead size is 1/4 to 1/3 the size of the host tissue area, 0.3 to 0.5 cm thick, and must have very well-defined edges.

HARVESTING

Harvested pearls are cleaned immediately in fresh water, then left in salt water for five to 10 minutes. The pearls are scrubbed, then washed in warm water followed by several more soap and fresh water washings. They are then dried and polished. If the mussels are returned to the water immediately after harvesting, they can produce new pearls within 1 to 1 1/2 years, though of lower quality.

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THE ODYSSEY AND ODDITY OF PEARLS

Pearls have a history full of ironies. They were not formed by geological occurrences millions of years ago, yet they are the oldest gemstone known to man. If religious references are any measure of time there's the Hindu legend of Krishna taking a pearl from the sea for his daughter's wedding gift.

"Don't cast your pearl before swine" is the oft-quoted wisdom from the Book of Matthew regarding pearls, and yet the bizarre, oddly sentimental Roman emperor Caligula found it perfectly acceptable to give a pearl necklace to his horse as a congratulatory gift after appointing the animal an Imperial Consul.

The gemstone's close ties to Aphrodite, the ancient Greek goddess of love, make it a symbol of affection — however, according to Egyptian fables Cleopatra showed unbridled scorn toward Marc Antony when she crushed a large pearl and drank it in a glass of wine to win a bet over who could throw the most expensive soiree. The popular notion that her pearl-trick was an act of seduction is probably a Hollywood invention.

Filial piety is another trait associated with the pearl. The Roman general Vitellius wasn't having any of that, however, when he pinched one of his mother's earrings to finance a war. While the poor woman went through life with one earring, other Roman dames apparently collected enough baubles to upholster couches and hem gowns. And such decadence didn't come cheap, if you go by Pliny the Elder's market monitor. According to the "Father of Gemology" two pearls were the same price as 1.8 million ounces of fine silver.

As the years progressed so did the inconsistencies in the myths that grew up around pearls. Kokichi Mikimoto is widely regarded as the originator of the "man-made" pearl, but by the time he sparked the Japanese cultured revolution in the early 1900s, the Chinese had already been inserting Buddha images into mollusks to create nacre-covered amulets for seven hundred years.



After two to three years of growing inside a mussel, it's no wonder these freshwater pearls are naced.

ished goods.

The expansion of Chinese freshwater pearl production has led to complementary development in marketing methods. The message is simple — China is opening up, and there's a cache of good pearls inside. Shaoxing's pearl farmers and producers are looking to form alliances not only for pearl processing but sales. The US and Japanese markets are China's top targets.

"Now we are concentrating on improving the quality and size of our pearls," says Jiang. "Although our [processing] technology is gradually improving to keep up with accepted quality standards, additional investments would mean importing grinding, polishing and drilling machines which are too costly now. It is more important to improve the quality and size of raw material and export these goods more directly to countries using current technology."

CUTTING OUT THE MIDDLEMEN

More direct routes are also seen as a way to combat dropping prices for Chinese pearls, according to Jiang. "With more direct connections to foreign markets the final costs will be lower for Chinese pearls. Right now, raw materials are sent to countries like Thailand and India for processing and then sent to selling centers like Hong Kong and Japan. We'd like to reduce the number of steps." This reduction would include bypassing the middlemen in the Zhuji market.

The Internet is also helping establish more direct links to foreign buyers. Under the jurisdiction of the agricultural department more information about Chinese freshwater pearls is now on the Net, according to Jiang. "Many [foreign buyers] are inquiring about prices [over the Internet] and we're finding new buyers from France and other countries."

The Administration Commission of Shaoxing's Economic Development Zone, a typically long-named Chinese government office (www.investment-sx.org), is recognizing the local pearl industry's ability to attract much needed foreign investment money. Bian Shao Jia, an official from the

Commission, says his organization is willing to assist in facilitating joint venture opportunities in Shaoxing, emphasizing that pearl production is "growing in stature with the area's other industries."

Bian's comments are typically vague — do the pearl farms represent an exceptional growth industry, or are they merely par with other, unnamed Shaoxing industries? Or does he just want us to think that? Either way, it's a gentle reminder that the Party is still in control, and that the reforms Deng Xiaoping initiated in 1979 were economic and not political.

Whether or not free-market wealth flourishing in a Maoist environment is an ideological contradiction doesn't seem to concern the government, who also found it perfectly logical to commemorate their revolution with a huge parade that no one was allowed to attend. Certainly the contradiction doesn't bother the pearl producers of Shaoxing, whose day to day pursuits reflect a rugged capitalistic spirit that isn't being discouraged officially.

FROM TRINKETS TO TREASURES

As for the place of Chinese pearls in the world market, it should be remembered that the Chinese have been artificially nucleating pearls for centuries — placing small Buddha images in freshwater mussels to create nacre coated icons.

And while the first awkward steps into mass production 30 years ago yielded very inferior product — dubbed "rice crispie" pearls by the industry — it may have well been hubris to have dismissed the Chinese producers completely, who worked tenaciously to attain pearl quality that rivals their Akoya and South Seas cousins.

Poetic justice is small comfort to the industry. "Although these goods make pearls more available to consumers, the Chinese are overproducing,"

insists Devin Macnow of the Cultured Pearl Information Center. "It's a free for all over there with no real official agency dealing with world pearl associations. If they're going to overproduce there should be a marketing strategy behind it. I don't see this happening."

According to Macnow, Chinese farmers need to produce at current levels (between 600 to 1,200 tons) to generate enough top-notch goods to sustain profitability. Unfortunately the lesser-quality pearls generated in the process are flooding the world market.

Oversupplies have "cheapened" the image of pearls as the Chinese take to fashioning toys and gowns out of pearls, says Macnow. That costume jewelry producers are switching from imitation pearls to real freshwater pearls hasn't helped matters.

"On QVC [television home shopping network] I've seen panda bears made from pearls and costume jewelry made with Chinese goods," Macnow said. "Current Chinese production

practices aren't consistent with those of the world's pearl market, which includes preserving saltwater pearl profit margins."

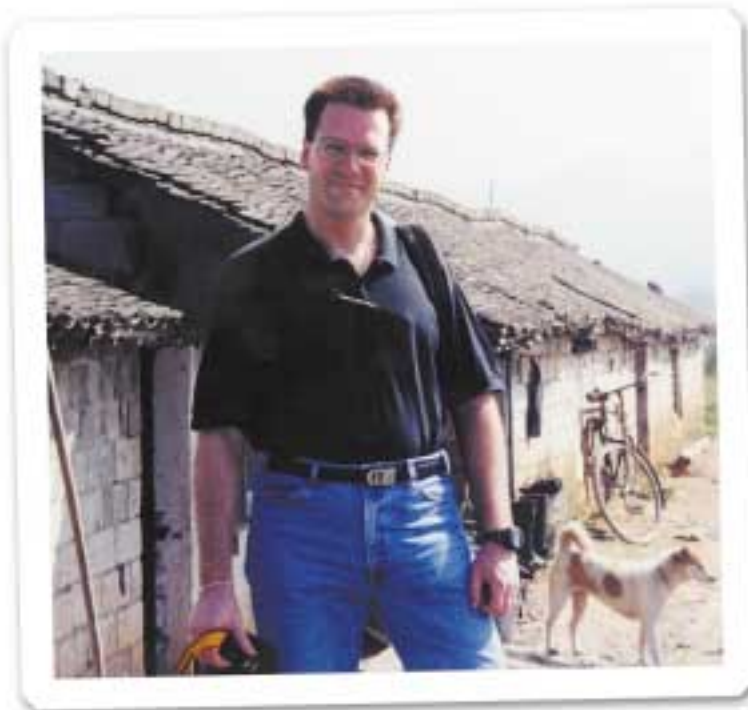
CHINA: THE RISING TIDE

Nobody who's watched China's rise from a nation of peasants growing rice to a nation of, well, peasants wiring together the world's transistor radios should be surprised by this. Large multinational corporations discovered long ago that there were cheap labor opportunities in communist China, and that consumers wouldn't care where a pair of cross-trainers was stitched, so long as it was packaged with neon colors and some slick marketing. Profits weren't exactly shared back then, and market opportunism works both ways. It probably won't be long before at least some dealers start sourcing directly from the likes of Jiang and Chen.

It should also be remembered that prior to the Japanese development of culturing pearls, the natural pearl market was centered in the Persian Gulf, where pearl necklaces could cost a small fortune.

Marketplace conditions are dynamic, just like the governments and cultures that sustain them. No one has the right to expect eternal trade protection. That may be no consolation to any producers facing a potential Chinese steamroller, but perhaps it should be noted that in the end it's a steamroller made up of simple farmers, men who enjoy a good smoke on a slow boat ride.

Or even more fundamentally, it's all a bunch of mollusks, slowly trying to reduce an annoyance that they can't spit out. And today's Chinese know how that feels.



AUTHOR'S NOTE

After four years as a trade journalist **PAUL HOLEWA** is convinced pearl farms are the quietest gem-bearing places on earth — and his sidekick, Spot (pictured) agrees. **GemKey Magazine** would like to extend sincere thanks to the proprietors of the Shaoxing Pearl and Zhuji City Pearl farms for their kind cooperation and, of course, to Lynn Saelim for her unwavering translation work and excellent photography.