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## PEARLS ON PURPOSE

MR. BOSTWICK'S pet pearl is a \$3000 gem, egg-shaped, pink, weighing forty-three-and-a-half grains—almost eleven carats. It was grown inside the grotesque spiral of a Florida queen-conch shell, five years ago, and the animal which produced it was Mr. Bostwick's patient for twenty-four months in a fenced half acre of shallow water off the coast of Key West. Mr. Bostwick has been a pearl buyer, a dealer, since 1903, but this \$3000 pearl is his pet. He is in no hurry to sell it.

Whether in Iowa City, Amsterdam or Sarawak, the average pearl man has a pet. Body warmth and contact with the human body improve the luster, depth and orient of pearls, and sustain life in them. Pearls deteriorate if they are not worn. In India, still the standard market of the pearl trade and the home of the world's most fabulous fortunes in pearls, the raja or maharajah will maintain a staff of pearl wearers—brown girls who sit passively in the sun, wearing ropes of pearls. The average pearl man will hoard his best pearls for

a year or two before selling them, and he will make it a point to handle them daily, rubbing them between his palms—"petting" them. The petting of a pearl actually increases the gem's value. The pet pearl is a standard item of the pearl trade.

But this pet pearl of Mr. Bostwick's is unique—unique among pets and unique among pearls. There is no other gem like it in all the world today, and no record of its like in all history.

Mr. Bostwick, margaritologist, is the only man who has ever grown a gem pearl purposely, scientifically, under controlled conditions.

I am not talking about culture pearls. In our own time, Baron Kokichi Mikimoto, of Japan, has founded a great industry and a great fortune on mass production of culture pearls. Your jeweler sells imitation pearls, culture pearls and pearls, but each is distinct as to source, price range and the structure of the product itself, and each is utterly distinct as to the market which handles it. It

would be fraudulent to represent an imitation pearl as a culture pearl. It would be fraudulent to sell a culture pearl as simply "a pearl"—although technically it is one. And the pearl trade, still active in markets older than history, does not concern itself with culture pearls any more than it does with imitation or manufactured pearls. It deals in pearls.

In sketching La Place Bostwick's curious career, I want to make it plain that his field is not at all the same as Mikimoto's.

Today Mr. Bostwick is a gray and sunburned man, sixty-nine years old, who walks with a gymnast's easy motion. He has expended nearly fifty years in mastering margaritology.

Bostwick began his experiments with pearls on purpose in 1893, using fresh-water mussels in pools of the old river bed around Muscatine Island, Iowa. He was then twenty-four years old, and he had been an adventurer all his life. He entered the University of Iowa in 1888 or 1889 as a "special," taking every laboratory course he could get. He worked there for three years. He paid his way by teaching acrobatics to the gymnastic teams. He has never sought

either a Ph.D. or a fortune, but he has always valued adventure.

Since the early 80's, the pearl-button factories around Iowa City and near-by Muscatine had been taking fresh-water mussels by the ton, and occasionally some worker in the shell camps would find a pearl of commercial value. In 1893 a pearl boom excited the district, and the treasure hunt fired young Bostwick's imagination. He had long since realized that not even his university instructors knew much about the conditions governing pearl growth.

The pearl was an accident of nature, and the details of its growth were a mystery. The one clue was a matter of common knowledge—the pearl resulted from an irritant accidentally implanted in the mollusk's body, but neither conchology nor experimental biology had explored the minutiae of the process itself. Young Mr. Bostwick roved through the shell camps, talked with sellers and buyers, examined pearls and enjoyed the thrill of the pearl rush. But privately he staked out experimental plantings in isolated streams and pools, and began to check developments. To this private project of his, he brought a

capacity for exact observation, a restless curiosity, great energy and an intensive training in laboratory method. Above all, though, he was endowed with that boylike, imaginative craving for unusual achievement.

It was fifteen years later that he built his first laboratory; and it was forty-one years later, in 1934, that he obtained the forty-three-and-a-half grain pearl which is now his pet. This touch of chronology is essential.

The root words of "margaritology" are "mere"—the sea—and "greet"—sand or grit. The proper name, Margaret, signifies a pearl. The species *margaritifera* of the genus *Pinctada* is a pearl-bearing oyster—the one used by Baron Mikimoto in his mass production of culture pearls. And the "sea-grit" word combination goes back into classic Greek—derived, Webster says, from the still older languages of the Orient. It proves that the basic clue to pearl growth was common knowledge, embodied in language, at least three thousand years ago.

Yet no one had ever grown a gem pearl by intent. Necromancers, philosophers, great naturalists, and prehistoric savages had tried it, and a legend had grown up

around their failures. Philostratus, Aristotle, Albertus Magnus, and many another learned ancient had contributed to the legend. Because pearls were known and valued before gold was, the quest was older than alchemy; and archaeology, not history, recorded the earliest known effort to perform the miracle. The clue was obvious. But after thirty centuries of trial and error and incantation, the mystery remained.

Bostwick sought a solution for fifteen years. "Fifteen years" is only a brief spot of print, but by 1908 the young naturalist of 1893 had become a middle-aged businessman. By then Bostwick had been successively a jewelry designer, a pearl buyer, and a manufacturing and merchant jeweler.

In 1908 he quit business to grow pearls. He picked a site on the river at Iowa City, and invested \$25,000 of capital in his first laboratory—the first of its kind in history.

"I had a craving to do what other boys couldn't."

The \$25,000 built and equipped a plant forty by sixty feet in area and one story high. The windows were of star glass, opaque, and cement-walled "rivers" flowed along its floors, forced by a pumping

plant that worked night and day. The rivers had rippling waterfalls and artificial rapids. There was a central fountain, and automatic dump tanks freshened the water in reservoirs lined with mud, gravel, and rock. There was an office at one end, and a flood-lighted operating room. Bostwick screened this cubicle with a front of semi-tropical plants, to make the place resemble an ordinary greenhouse. But workmen had already circulated rumors of the laboratory's queer construction, and sight-seers came to gape at it. Town talk named it the House of Mystery.

Here, in August of 1908, Bostwick laid out a set of selected mollusks in a two-inch flow of water across his work table, and began his first pearl-growing operation.

This is the dramatic moment in the record. When the margaritologist touched his delicate probes and scalpels to the first of the anodonta on his table, he stacked his \$25,000 investment and his fifteen-year preparation against the riddle that had baffled adventurous minds a thousand years before Aristotle's. He undertook to reproduce exactly, in minute detail and over a period of years, the course of one of Nature's most complicated accidents.

Consider for a moment the detail involved. A margaritiferous mollusk builds up its own shell by spreading a slow flow of nacre over the inner surface, layer by layer. Nacre is about 92 per cent calcium carbonate, 6 per cent organic matter — conchiolin — and about 2 per cent water, and its obvious function is to provide a comfortable surface for the shelter in which the mollusk lives. When an irritant enters—a bit of shell, the hardened body of some dead parasite, or perhaps a spot of "sea grit"—the animal's automatic remedy is to coat the irritant with that same comfortable surface. It begins to form a pearl.

The flow of nacre is automatic, but the animal also exerts its tiny, spasmodic muscular pressures in an effort to get rid of the irritant altogether. And each reaction—each muscle spasm, each movement, each mutation or mishap—during all the four to eight years of growing time is recorded in a minute patch of nacre on the nucleus. The pearl is the sum of these patches. Occasionally—in about one out of a thousand mollusks, by the pearl trade's traditional estimate—the patches add up into a symmetrical, flawless total. The result is a pearl of commercial value.

In detail, then, what Bostwick undertook on that August morning of 1908, was: First, to implant the nucleus in exactly the proper spot; second, to perform that operation with a minimum of shock to the animal; and, third, then to control the patient's reactions over about four years of time, so that the total—as recorded, patch by patch, on the nucleus—would conform to specifications.

Hence the odd equipment of the House of Mystery. The “rivers” were carefully regulated to duplicate flow, temperature and other conditions in specific streams. The fountain, the waterfalls and the dump tanks were timed to aerate streams and reservoirs in exact accordance with Bostwick's demands. The river-bottom materials were prepared as carefully as a pharmacist compounds a prescription. The operation, like a delicate procedure in eye surgery, had to be incredibly exact, but any lapse in absolute control of the patient's reactions over the four-year growing period might still flaw or malform the pearl. And although the freshwater mussel can hardly be called an active or high-spirited animal, this control was the crux of the problem.

In the fall of 1912, Mr. Bostwick obtained round, free pearls of good quality, weighing up to ten grains each, and attached pearls weighing up to forty grains, or ten carats. Except for souvenir specimens, those first pearls were shipped through ordinary channels, like thousands of other pearls that Bostwick had handled as a buyer. But when they were accepted, appraised, paid for by the dealer and put on the market, the miracle became authentic.

The trade calculates a pearl's value as the square of the grain, multiplied by a base price. A twenty-grain pearl, for example, at a base price of \$2.50, would bring  $20 \times 20 \times \$2.50$ , or \$1000. Size and weight are factors in the calculation, obviously, but the base price is fixed by expert judgment of the pearl's quality. Quality—the sum total of the tiny laminae of nacre that make up the structure of the pearl—is the basic factor of the pearl trade, and this quality-structure complex is the experts' one concern. When the pearl trade accepted Bostwick's pearls on purpose, and appraised on the standard basis, it meant that the experts recognized his products as natural pearls, normal in structure.

No other man has ever grown a pearl.

Mr. Bostwick spent nearly six more years in the House of Mystery, working for size and control of color in fresh-water pearls. He went to Florida, then—spent sixteen years there, with side trips to Maine, Texas, Vancouver, Vera Cruz and way points. In April of 1934, a month after producing his forty-three-and-a-half-grain prize, he pulled stakes for California.

The culture-pearl industry, in Japan and along the Persian Gulf, supposedly plants about 5,000,000 oysters a year, and Baron Mikimoto himself is said to hold a surplus of 10,000,000 culture pearls. The mollusks treated by his process are sunk in cages, inspected twice a year, and about 40 per cent of them die of the operation. At Gokasho Bay, Mikimoto has raised a monument to the millions of deceased oysters which gave their lives to his industry. But since he perfected his process in 1913, hundreds of technicians have been trained in his methods. Other Japanese firms compete with him now, and Armenian producers have begun to cut prices on the Japanese. Where ten years ago the cheapest Mikimoto string

brought \$150, it now sells for twenty-five dollars; and the Armenians offer a strand of pink pearls, with nucleuses dyed red, to retail at nine dollars. A firm in Kobe has countered with an imitation culture pearl, duly centered with a shell-ball nucleus, at less than three dollars a strand. Overproduction, cut-rating, trick processes and changing standards affect the culture pearl as they would the commerce in a manufactured article.

But the American margaritologist produces a pearl. The process can be modified to produce culture pearls in quantity, but Boswick is not interested..

From 1912 to 1918, in Iowa City, Bostwick was producing ten-grain pearls consistently, in color, but when the process was perfected he moved on. In 1934, in Florida, he achieved the finest gem of his career—a forty-three-and-a-half-grain pearl—in only about two years of growing time. But California offered him the chance to experiment with a different mollusk, new conditions and a difficult problem. He went to California.—*Eddy Orcutt, from The Saturday Evening Post.*