A close-up view of a North Bali farm

Professor Henry Hanni of SSEF Swiss Gemmological Institute in Basel, Switzerland visited a pearl farm of North Bali Pearls, a division of PT Cendana Indopearls of Australia-based Atlas South Sea Pearl Ltd, in Penyabangan earlier this year. Impressed by the huge amount of science and technology involved in North Bali's pearl farming, he shares with *Jewellery News Asia* his observations.

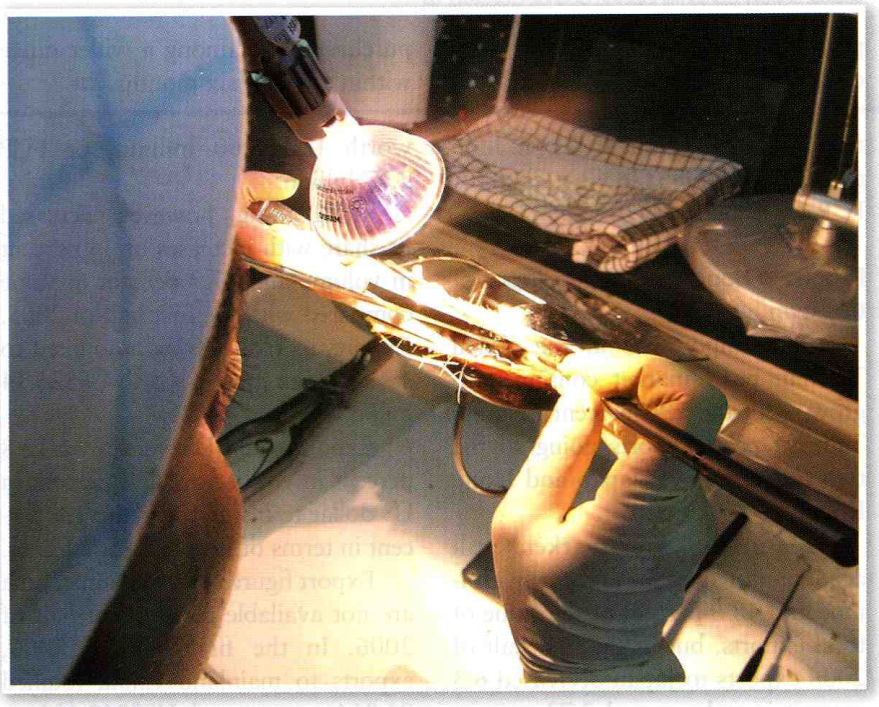
Raising young oysters from fertilised eggs had been a problem for many years. In North Bali I encountered a hatchery where the young oysters are raised using aquaculture.

At the farm, all the oysters used are the product of careful selection for excellent characteristics from among earlier generations. To minimise the chance of disease or parasitic infection, cleaned seawater is used. Since the seawater is filtered and thus free of plankton, suitable algae must be produced to provide food for the oysters.

Fertilised eggs grow into larvae and later into spats under favourable conditions in the tanks of the hatchery. The baby oysters, at a few millimetres across, are placed on frames, or collectors, where they continue to grow. At the age of one month they are transferred to a nursery site located in the open ocean fronting the hatchery complex. At this age the spats are between 1cm and 2cm in size. The number of spats per collector varies enormously but is generally in excess of 500. The nursery may contain several million spats at any one time.

Henry Hanni, SSEF Swiss Gemmological Institute

North Bali Pearls in Penyabangan, an aquaculture farm with modern technology for oyster raising and pearl production



Henry Hanni, SSEF Swiss Gemmological Institute

A skilled operator makes an incision in the gonad of an oyster and introduces a bead and tissue graft

Once the young pearl oysters reach 10mm they are carefully removed from the collectors and placed in a mesh pocket system, 64 oysters per unit. The growing oysters will be graded at least twice before operation, and the number of shells per unit will be reduced on each occasion. Regular cleaning is done to remove debris and harmful organisms from the shells.

When the shells are about 11cm to 12cm, they are ready for operation.

Young oysters with beautiful nacre are sacrificed as donors for the mantle tissue pieces that are grafted into the recipient oysters. A donor may provide 30 grafts, and its capacity for producing beautiful nacre will govern the production of the overgrowth on the bead. After the recipient oyster is fixed in the grafting clamp, the skilled operator makes an incision in the gonad and introduces the bead and the tissue graft. The relatively small bead, 6mm to 8mm, made from thick-walled freshwater shell, is coated with antibiotics to help prevent infections.

After the operation, the young oyster can relax in the seawater. The mantle tissue transplant grows around the bead, forming the pearl sack. With favourable conditions, nacre is deposited on the bead in successive layers. The nacre consists of minute tiles of calcium carbonate (aragonite), and the layers of these platelets are responsible for the unique lustre and orient of the pearl. Cleaning the oysters and checking them by means of X-ray provides information on the health and the progressive growth of the animals.

While the company is developing pearl production sites in Bali, the majority of the pearl oysters produced there are shipped to West Papua, or Irian Jaya, for operation and further growth. In a boat with special seawater tanks, up to 40,000 oysters are suspended in their pocket nets for their six-day voyage. They are going to Alyui Bay, where the growth conditions are most advantageous for high-quality pearl production.

Some of the operated shells may reject the bead, but the graft will remain and will form the pearl sack, precipitate nacre and deliver a beadless cultured pearl, a product often called keshi in the trade. But the majority will keep the bead and cover it with a substantial layer of nacre, producing a classical South Sea cultured pearl. **JNA**

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Henry Hanni, SSEF Swiss Gemmological Institute

Workers loading pocket nets with pearl oysters into tanks for the voyage to West Papua, where they produce nice beaded cultured pearls

Henry Hanni, SSEF Swiss Gemmological Institute

Cleaning the oysters and checking them by X-ray provides information on their health and progressive growth

No funding, no trade body

Efforts to build an umbrella association for the global pearl industry ended again in vain.

The initiator of the establishment of the International Pearl Organization (IPO) in late 2005, Martin Coeroli, who is also the president of the Pearl Commission of Cibjo and general manager of GIE Perles de Tahiti, told *Jewellery News Asia* that the project had failed because of a lack of support from pearl people in Australia and China.

The pearl trade in general reportedly supports the formation of the IPO, but has been unable to reach a consensus on funding. **JNA**