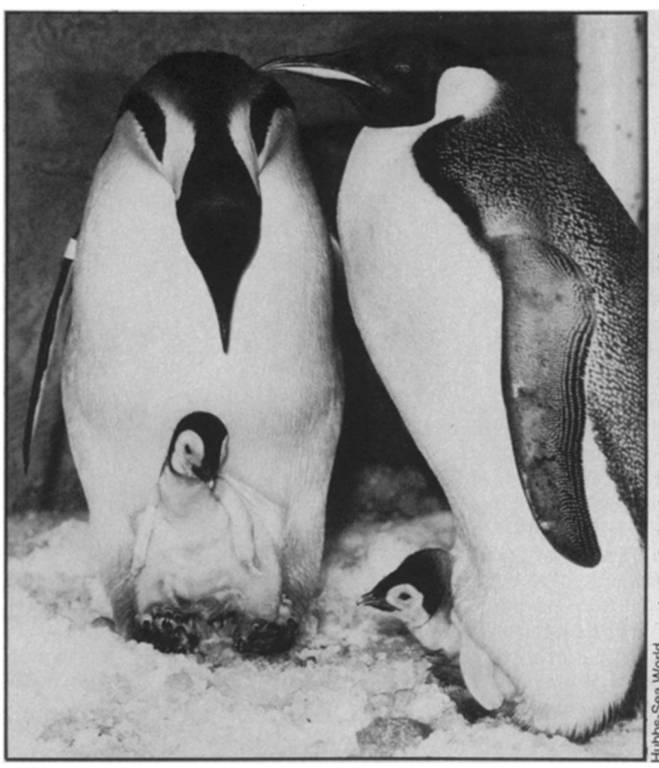
IMPERIAL CHICKS

Newly hatched emperor penguins are a triumph for bird breeding

BY JULIE ANN MILLER



Penguin parents socialize: Adult penguins can shuffle around with a chick (or an egg) on their feet. But by the age of one month, penguin chicks begin to wander short distances from the chick-tending parent. (These chicks have grown considerably since hatching this September —see cover photo.)

In the dark of the polar winter, when temperatures plunge to −100°F and winds gust at 100 miles per hour, tiny chicks of the largest living penguin species hatch into the ice world of the Antarctic coast. Little is known about early family life of the emperor penguin—nobody is likely to be around to watch. But now the hatching of three emperor penguin chicks at Hubbs-Sea World Research Institute in San Diego promises information on feeding, growth and chick-parent behavior.

The chicks join a colony of 45 emperor penguins, which as juveniles in 1976 and 1977 were airlifted to Sea World from McMurdo Sound. The adult birds are more than 3 feet tall and can weigh 90 pounds. The birds are housed along with a colony of the smaller Adelie penguins in a building kept at temperatures below freezing and supplied with 4 tons of flaked ice each day. The lighting of the penguins' environment simulates Antarctic seasons: six months of near darkness followed by six months of light.

On Sept. 16, the first emperor penguin chick bred and hatched outside Antarctica peeked from beneath its father's warm, feathered apron. Two more chicks hatched later in the week. A total of seven eggs had been laid by female penguins the previous July and two eggs, which did not hatch, had been laid the year before.

As in the wild, each newly laid egg had been transferred from the mother to the father. Making a warm nest between their feet and protective abdominal folds, the fathers incubated the 14-ounce eggs for about 64 days. In Antarctica, the males do not eat during the incubation period and can lose 45 percent of their weight. At Sea World, however, the fathers-in-waiting were offered food and they willingly accepted it. Frank Todd, Sea World's curator of birds, explains that the penguins are too valuable to risk losing any to starvation, a fate of some males incubating eggs in the wild. In Antarctica, the females return to the sea to feed during the incubation period, so at Sea World the female birds were kept out of the special incubation corral until after the chicks were hatched.

Since the hatchings, the mother and father penguins have been sharing chick-care responsibility, as do the emperor penguins in their natural habitat. Each parent carries its offspring on its feet and feeds it regurgitated food. The Sea World scientists allow only one parent of each chick in the corral at a time. (In the wild one parent or the other would always be off finding food.) If both parents are with the chick, they each try to feed it and confusion reigns.

The scientists are prepared to raise the emperor penguin chicks by hand, but they are happier just to observe. "So far the adults are reading the script just right," Todd says. Now, at the age of 1 month, the chicks are beginning to spend a little time away from the attendant parent.

The parents and chicks seem to identify one another by voice. Within hours after hatching, the downy, silver-gray chicks begin to vocalize. The scientists have observed a mother outside the enclosure call to her chick inside, and the proper chick, and only that chick, immediately responds. Previous research demonstrated that penguin vocalizations are sex specific (SN: 3/22/80, p. 182), age specific and probably individualized.

The recent success in emperor penguin breeding is probably due to two factors, Todd speculates. One is that the temperature of the facilities is kept below freezing. Todd says that housing for emperor penguins elsewhere is often a bit too warm, and although the penguins may appear healthy, the temperature may influence their behavior.

The gregarious nature of the penguin colony is the other factor Todd cites. In Antarctica several hundred to a hundred thousand penguins herd together, so a penguin pair alone in captivity can't help but have an unnatural lifestyle. "You probably need a certain number of birds to get going," Todd says. And now that a few have reproduced successfully, he expects more to follow suit. With Adelie penguins, the Sea World scientists have found, in Todd's words, "Once they catch on, it can really take off." Each year more of the small penguins breed successfully. Sea World has raised 117 Adelie chicks in the past four years. (Of the 17 penguin species, 10 have now bred in captivity.)

The goal of the Sea World project is to establish a self-perpetuating colony of Antarctic penguins for year-round observation. In nature, emperor penguin colonies are difficult to observe in the cold, dark winter, and the penguins summer at sea. Emperor penguins are the only birds that may live their entire lives on ice at sea and never touch land. "Much of what we're gaining is material just not available in the course of field studies," Todd says.

Currently there are an estimated 300,000 emperor penguins in Antarctica and the population seems steady. Scott Drieschman, curator of birds at the San Diego marine park, says he expects studies of their colony to contribute information suggesting safeguards for the unique animals.

Emperor penguins have been called the most improbable of all sea birds — improbable in their size, lifestyle and reproductive behavior. More accessible observation is likely only to increase our amazement at these improbable birds. □