

THE BROLGA BUGLE

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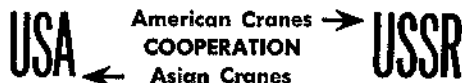
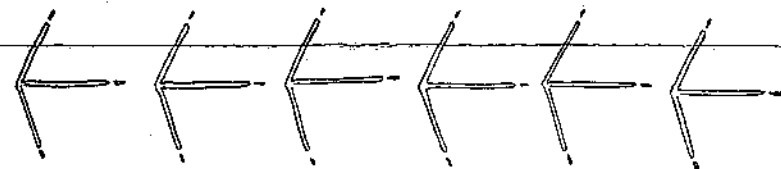
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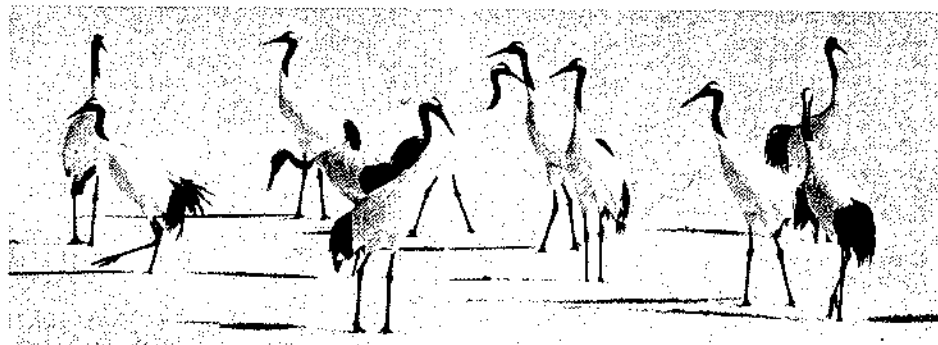
MAKING TRACKS - news of the foundation

IN THE SNOW



MOSCOW, NOVEMBER 19, 1976. A MAJOR BREAKTHROUGH IN CRANE CONSERVATION OCCURRED WHEN DELEGATES FROM THE UNITED STATES DEPARTMENT OF THE INTERIOR AND THE SOVIET MINISTER OF AGRICULTURE SIGNED AN AGREEMENT WHEREBY THE INTERNATIONAL CRANE FOUNDATION AND SOVIET SPECIALISTS MAY COOPERATIVELY WORK ON THE STUDY AND PRESERVATION OF CRANES IN THE UNITED STATES AND RUSSIA. The agreement is indefinitely viable and should waters remain calm between the world powers, cooperative crane programs will continue for years. In addition to the general agreement, the delegates approved the issuance of 6 hatching eggs of the rare Siberian crane to ICF in June 1977 and permission for two Soviet scientists to visit ICF and other crane centers in the US this summer.

In June, ICF's Soviet specialist, Elizabeth Anderson, travels to Moscow to meet several colleagues and discuss future cooperative projects now possible on all crane species native to Russia and the US. At the same time, Soviet co-worker, Dr. Vladimir Flint, will be 6000 miles away on the tundras of Yakutia in eastern Siberia determining exactly when each Siberian crane pair lays its eggs. The eggs must be collected at the beginning of the fourth week of their supposed 30 day incubation period. One egg will be collected from each of six nests. Placed in an insulated ICF egg-transport box, the precious cargo will be flown to Moscow where Elizabeth accepts the box and continues the remaining 8000 miles, a journey that brings viable eggs three-quarters of the way around the globe. In 1974 ICF and colleagues in Sweden demonstrated the feasibility of the inter-continental transport of viable crane eggs with a 100% hatch of six Common crane eggs imported from Sweden. But Sweden to Wisconsin is but half the distance separating Yakutia and ICF! Critical timing, efficiency, hot water bottles and luck will perhaps result in six white cranes from Yakutia flying over the Baraboo hills in September. These birds will contribute to our Species Bank of Siberian cranes, a captive breeding group from which we intend to send viable eggs to Common crane nests in Russia in an effort to re-establish a population of Siberian cranes in West Asia that winters in Iran.



JAPANESE CRANES IN HOKKAIDO

Photo by Takeo Iwamatsu

Breakthrough In Sexing Cranes

Male and female cranes look alike, externally at least, and, aviculturalists have trouble naming the gender although cranes themselves have no problem picking a mate. Like other birds, the sexual organs of cranes are located inside the body cavity making sexing by anatomy dangerous and disturbing to the crane's welfare. Mated cranes are easily sexed by voice during their loud duet called the Unison Call. (The male emits a long series of low calls and is accompanied in synchrony by the high-pitched cackle of the female.) Unfortunately unmated cranes seldom Unison Call and sexing them by behavior is difficult.

Dr. Motomichi Sasaki of Hokkaido University, Japan, sexes cranes by looking at chromosome structure. Within each cell of its body a crane has a set of chromosome pairs, half of which are inherited from each of the bird's parents. In the male, both chromosomes of each pair look alike although there are great size differences between chromosome pairs. However, in female cranes, one chromosome pair is different. One of the chromosomes of this odd pair is about one third the size of its mate. This unmatched pair of chromosomes contains the genetic material that determines female sex. Presence of the odd-matched pair indicates the animal is female; and conversely, a pair of large and identically shaped chromosomes indicate male gender. Dr. Sasaki's sex determination technique involves a complicated process of growing cells in tissue culture, treating them with chemicals to accumulate dividing cells, then examining the chromosomes of a

dividing cell. After staining and photographing the chromosomes, Dr. Sasaki cuts out each of the chromosomes from the photograph and arranges them in pairs to determine if the bird is male (all chromosomes match) or female (one pair of chromosomes not matched). This technique has greatly aided the management of cranes in zoos. However, the time and labor involved in the process make the approach suboptimal.

Recently an ICF research affiliate, Dr. Ellen Rasch, a professor in the Biology Department at Marquette University, tested a simple method for sexing cranes, a method that can be done quickly, at any time in the birds life and with little disturbance to the crane. All Dr. Rasch needs is a single drop of blood. Well, that's almost all. She also needs the use of a sophisticated instrument called - get this - a Barr and Stroud, Ltd., model GN2, integrated-scanning microdensitometer. This machine can measure the weight of the genetic material (DNA) in the chromosome of a single cell. Ellen reasoned that the smaller sex chromosomes of a female crane might cause the total amount of genetic material in the chromosomes of female crane cells to weigh less than the DNA in the chromosomes of male crane cells. To test this idea, Ellen collected a drop of blood from every crane of known sex at ICF and got blood cells from Whooping cranes at the Patuxent Wildlife Research Center and from a Siberian crane at the Philadelphia Zoo. She carefully measured the chromosome materials from cranes of known sex and sure enough, the smaller size of the female sex chromosome was reflected in a reduced amount of DNA in the chromosome set

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Cold Cranes?



Dr. Ellen Rasch and her 'toys' at Marquette University, a team that developed a remarkably simple technique for sexing cranes.
Photo by Robert Teevan

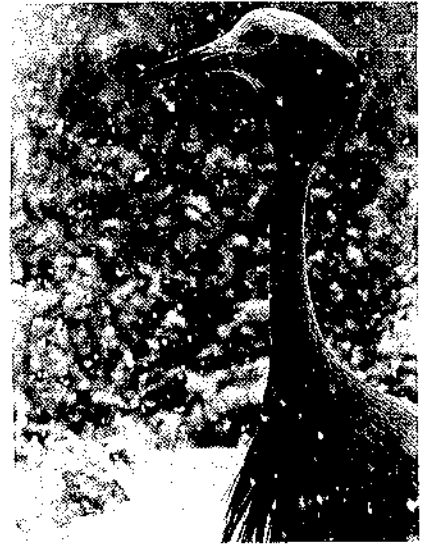
WISCONSIN HASN'T HAD SUCH COLD IN A CENTURY. NIGHT-TIME LOWS DIP INTO THE -30 DEGREES FARENHEIT FOR WEEKS AT A TIME AND WIND CHILLS HAVE BEEN DOWN TO -74 DEGREES. NO WONDER THE MOST POPULAR QUESTION ON ICF TOURS CONCERNS OUR MANAGEMENT OF CRANES AND THE CRANES MANAGEMENT OF THEMSELVES IN THE COLD. AFTER ALL, OUR LOCAL SANDHILL CRANES HEAD SOUTH TO WARMER CLIMES IN FLORIDA, A PATTERN REPEATED BY THEIR RELATIVES AROUND THE WORLD. OTHER SPECIES LIVE IN THE TROPICS ALL YEAR. HOW THEN CAN WE RIGHTLY KEEP NOT ONLY THE NORTHERN CRANES BUT THEIR TROPICAL COUSINS AT 43 DEGREES NORTH LATITUDE THROUGH WISCONSIN'S LONG, COLD WINTER?

Surprisingly, most cranes are remarkably cold-hardy, and given the benefit of a windbreak, food, and clean water they take whatever Mother Nature inflicts in Wisconsin each November through March. But the story of the crane's adaptability to winter is a rather recent phenomenon in crane history, a character that evolved with the onset of cold some 10 million years ago contrasted to the appearance of cranes 60 million years back.

Understanding this aspect of crane biology rests upon a knowledge of the differences between the two major groups of cranes: the Crowned cranes (those loose-plumed, barefaced, and top-knotted beauties from Africa) and the "Typical" cranes (more compact-plumed cranes including our North American Sandhills and Whoopers in addition to 11 other species). Besides the obvious differences in external anatomy between the Crowned cranes and the Typical cranes, there is a pronounced physiological difference: Crowned cranes can't take cold nearly as well as the Typical cranes.

Granted, Crowned cranes are birds of African savannahs where tropical conditions are maintained year-round while Typical cranes are scattered from cold mountain plateaus to the arctic wilderness. However, prior to the onset of cold, Crowned cranes were found across the northern continents and not until recent millennia do the Typical cranes appear in the fossil record. What happened? Why did Crowned cranes lose ground and only survive in Africa? What led to the evolution of the Typical cranes?

The answer to the riddle is found in the weather. From times untold until about 10 million years back, the earth was warmer and organisms now restricted to the tropics - Crowned cranes to rhinos-benefited by a much wider distribution. For reasons not well understood the world has become progressively cooler in recent ages. The onset of the cold precipitated the extinction of thirty-some Crowned crane species on the northern continents and the evolution of the cold-hardy Typical cranes, apparently from Crown-



South Africa's National Bird, the Stanley Crane, has a thick coating of head feathers that help it withstand Wisconsin's cold.

ed crane ancestors. Although glaciers grew and slid down from the north and up from the south, tropical conditions were maintained along the equatorial belt including a large section of central Africa. The Crowned cranes survived the Ice Age on the African savannahs where they remain to this day, the living fossils of the crane family.

ICF currently houses about 105 cranes of 14
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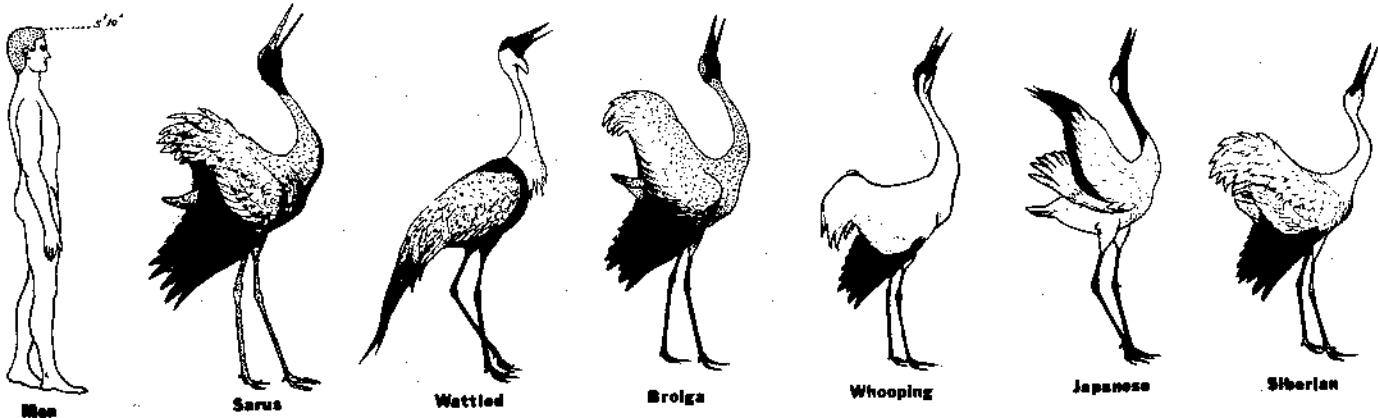
Tracks Made and Tracks To Make

Snow drifts grow around shelters and Christmas tree hedges as the cranes pass the winter resting, eating, drinking, and preening. Cold crisp dawns are heralded by little trumpeting contrasting to the chorus of Unison Calls that fill morning air at warmer times. Few people want tours and accordingly fewer membership envelopes brighten the 10:15 a.m. mail delivery. It's winter and from the outside, ICF seems to rest.

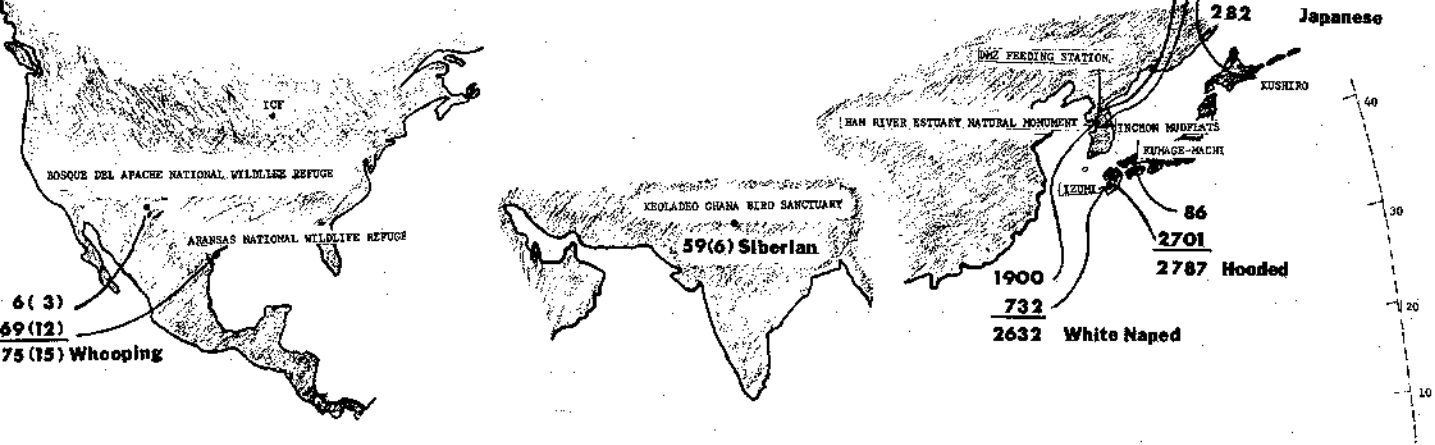
Inside is another matter. Nine people are on deck at headquarters. Caretaker, Howard Ahrens-meyer, taps away in his workshop building blinds for spring research projects. Our 'flock mother' and administrator, Millie Zantow, frowns over hills and beams over balances. In the public relations department, Terry Quale manages the ever-ringing phone and provides tours on appointment. Director and lawyer, Forest Hartmann, roosts at his firm's downtown law office and prepares formal matters for the Wednesday night Directors' meeting. George Archibald feeds and waters the flock in the morning then scratches through correspondence and research reports the rest of the day. 'The Boys', Dave and Mike Gavin and Victor Broas, arrive after school for odd jobs that include pen cleaning, tying up Christmas trees as windbreaks, and other activities that keep ICF in top shape. A student from Beloit College, Barb Katz, is undertaking an eight month study of the breeding behavior and ethology of Hooded cranes. The remainder of ICF's flock of researchers are at school at distant points awaiting spring migration back to Baraboo. Life is not as hectic as other seasons. We have time to reflect on past activities and future challenges.

1976 was a year of achievement both in captive breeding and in the field. Last year ICF catalyzed a program between Russia and Iran to
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SEASONS GREETINGS FROM



1977 WINTER COUNTS

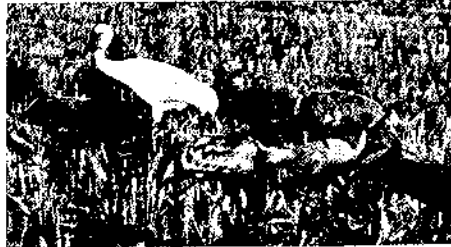


In autumn, cranes abandon their breeding territories, congregate in flocks and travel to their winter haunts sometimes as many as 5000 miles away. Because each crane pair defends a huge acreage of wetland as a breeding territory, crane populations are scattered over wide regions in spring and summer and are difficult to count. However, in winter, cranes usually congregate in flocks at restricted areas and are easily counted.

This map indicates the location and number of cranes counted this winter in United States, India, The Republic of Korea and Japan. Unfortunately we have no information on populations wintering in Burma, Laos, Vietnam, The People's Republic of China, and the People's Democratic Republic of Korea. 75(15) means there is a total population of 75 birds of which 15 are chicks.

(Continued from page 2)

species, including both Crowned crane species and 12 of the 18 species of Typical cranes. The Crowned cranes are the least cold-adapted of gruids and consequently in winter we keep them in former horse stalls in the headquarters barn. The barn is not heated but the cranes can warm their African toes on warm electrically-controlled pig pads laid on the floor next to their feeder. All the Typical cranes have shelters but the doors are usually left open so they can choose between the elements and protection. Some arctic-inhabiting cranes such as the Siberian, Common, and Hooded cranes seem to thrive in the cold and often stay out in the snow, facing the blizzards, heads tucked under wings, in apparent comfort. Tropical species of Typical cranes such as the Sarus and Brolga, although among the largest of cranes, are less adapted to cold and usually seek sanctuary in their shelters. Only the injured and aged, of which ICF has a healthy representation, require very special care in winter.



A 1975 - hatched (white) and a 1976 - hatched (brown) Whooping crane pass each other on their winter sorghum field at the Bosque del Apache National Wildlife Refuge, New Mexico, amidst the ranks of Sandhill cranes, the species that foster-reared the Whoopers on Grey's Lake National Wildlife Refuge, Idaho.

shelter that warms her joints when the mercury lowers. No wonder Ueno's and Lulu's breeding success is only possible through artificial insemination!

Crooked toes are another problem. Cranes have thick paddings of scales on the base of each toe that insulates the fleshy upper and inner regions of the toes against the cold ground. If a toe is bent with the padded surface facing to the side rather than down, the sensitive upper regions of the toe touch the ground and, lacking the insulation of the pads, the toe freezes. Cranes with crooked toes must be kept on bedding of deep

dry wood shavings that provide insulation from the substratum. Needless to say, our only cranes with toe problems are our rarest cranes, Tex and Tony, the Whoopers, who each have at least one crooked toe - abnormalities since chickhood.

Old cranes are stressed in cold. But how old is old for a crane? A Siberian crane at the National Zoo in Washington survived to be 64 and specimens in Japanese collections are reputed to have lived into their eighties. Casey, a showy and aggressive male White Naped crane was imported from Japan as an adult in 1940 but still looks young. Granny, his mate, is another matter. We don't know Granny's age but she must be well on in years for she walks stiffly, her former red-combed face is partially covered with gray feathers, her beak is starting to grow crooked and she insists on remaining in her shelter through the cold. Although Granny certainly qualifies for the geriatrics clinic, she faithfully lays eggs each spring and is artificially inseminated every three days from Casey. Her eggs are much smaller than normal-sized White Naped eggs and to our surprise one hatched last year. Charlie, the product of Casey, Granny and A.I. is now a beautiful addition to the nonbreeders flock and unlike his aged mother has no problem with the cold.

But be they young or old, tropical or arctic, crowned or combed, all cranes have a common denominator in their winter food preference; they

(Continued on page 4)

THE SIXTEEN SPECIES



Black Necked



Stanley



Common



Hooded



East Crowned



West Crowned



Sandhill



Demoiselle

Sketches by Diane Pierce

Contributions . . .

WHO PAYS FOR FIELD RESEARCH?

ICF-researchers have conducted extensive field projects in Australia, Canada, India, Iran, the Republic of Korea, Japan, and the US — projects that require substantial financial backing. Although some funds have originated from ICF's depleted coffers, most support comes from other conservation organizations, particularly the National Audubon Society, New York Zoological Society, and the World Wildlife Fund. Our only government funding has been from the Iran Department of the Environment, who supported the work in India and Iran last year. Mr. Norman Sauey and Mr. Don Southwick supported the Australian project and Mr. Donald Sauey helped back our 1974-75 field season in India. Field research is the backbone of a sound conservation program. The cranes are grateful to all individuals, organizations, and governments that have helped ICF's cause in the field.

MEMBERSHIP CONTRIBUTIONS

Rebecca Adams, Mrs. Harold S. Allen, John W. Anderegg, Carl F. Anderson, James D. Andrus, Animal Protection Institute of America, Antigo Audubon Society, Mr. & Mrs. Donald Archibald, Frank Aronson, Roger O. Baker, Mr. & Mrs. James P. Balding, Mary M. Baxter, Mr. & Mrs. Gerald J. Behling, Mrs. Henrietta Beranek, Ruby Bere, Alice C. Bertschy, Jane & Ted Beverly, Kathleen A. Bieniasz, H. R. Bird, John C. W. Bliese, Michael H. Bodden, James J. Bogan, Mr. & Mrs. D. R. Boucher, Donald O. Brace, Mr. & Mrs. Donald L. Bradley, Michael & Janet Brandt, H. D. Bruhn, Richard Brune,

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LOAN OF CRANES

National Zoo, Philadelphia Zoo.

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The International Crane Foundation is a registered, publicly-supported, non-profit organization which is dedicated to the study and conservation of cranes throughout the world. Saving cranes, saves earth's vanishing wetlands.

Cold Cranes . . .

(Continued from page 3)

are 'cornmaniacs' and actually prefer corn to their normal pelleted food. Corn is rich in carbohydrates and fats, molecules that release large quantities of heat when broken down in digestion, energy that helps the cranes combat the elements.

Corn also helps wild-caught cranes tame down. They learn to associate man as a positive (corn) and not negative (fear) element of the captive environment. Tame cranes breed more readily in captivity than wild birds. Corn indirectly improves the reproductive performance of wild-caught cranes.

Another positive part of winter is that the cold sanitizes ICF. During the warm months diseases accumulate in the soil of the crane pens but many of these same pathogens are killed by the cold. Crane eggs are extremely sensitive to infection transmitted from contaminated soil after the egg is laid. Winter helps.

But winter, 1977, will be gone in a few weeks and the corn bins closed until November. Spring is heralded by the cries of the wild Sandhills in mid-March returning to their nesting grounds on wetlands near ICF. We also look forward to the sight and sound of ICF's Cranes of the World greeting the new breeding season with reproductive zest, well prepared after surviving the long cold winter with the help of pig pads, shavings, shelters, corn and unending care.

Breakthrough on Sexing . . .

(Continued from page 1)

from female cranes when compared with males from the same species. Although there is some variation among different species, the chromosome set of female cranes contains about 3 picograms (millionths of a gram) of DNA, whereas the male chromosome set has about 5 to 6% more of this genetic material. Because these differences are near the limits of precise measuring with her instruments, Ellen feels that she can make a correct diagnosis of sex only about 95% of the time when working with an "unknown" juvenile crane. This means that wildlife researchers now can collect a single drop of crane blood, smear it over a glass slide, and send it to Dr. Rasch for a quick, simple, and reasonably reliable sexing. Dr. Rasch's research is an important and practical contribution to man's knowing who's who in the crane world.

Tracks Made . . .

(Continued from page 2)

reestablish Siberian cranes as winter visitors to former Persia. Our rare Hooded cranes took the stage by producing the first of their species ever reared in captivity. ICF's first student, Karen Voss, finished her Master of Science degree on the behavior of Sandhills. Hundreds of people toured ICF headquarters and the membership list topped 1000 in October with membership branches operative in Japan, Russia, and Sweden and plans are underway to establish ICF-Europe in conjunction with Vogelpark Walsrode, West Germany. March 20, 1977, ICF celebrates its fourth birthday. We are fledged. Smooth flight is another matter.

This year we hope to hatch 50 chicks but only have rearing facilities for 12. A new HATCHING AND REARING FACILITY is needed. Price \$70,000.00 This spring and summer ICF reaches the masses through several media packages now in the works. Publicity means thousands of people requesting tours. Crowds upset the breeding cranes and so a PUBLIC EDUCATION CENTER must be built. Price — \$80,000.00. We have many young cranes that must be segregated by pairs from the non-breeders flock and placed in private breeding pens. But our 38 breeding pens are filled. The answer is another BREEDING UNIT to house 20 pairs. Price — \$50,000.00. Finally there are the day-to-day operating expenses that come to more than \$50,000.00 annually and increasing as ICF and inflation grow. In summary, ICF headquarters needs about one quarter of a million dollars in 1977, a scary yet challenging figure. Reflecting upon the value of ICF goals, evaluating our achievements to date, and accepting our responsibilities to cranes and their habitats, fills us with undaunted determination to fly onward.

Finally our thoughts turn to the people that make ICF tick. They are, you, the faithful members. ICF is a public-supported project and it depends on the labors and resources of us all. The world's wetlands and their crane populations are deteriorating at an alarming rate. Considering the earth's human population is expected to double by the year 2000, the prognosis for wilderness and wildlife is bleak. We all must work now to assure a quality environment for man and birds for generations to come. What better indicator of a pristine world than a white crane traversing blue sky over a clean earth? ICF must grow.



Photo by M. Yoshil.