

THE BROLGA BUGLE

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INTERNATIONAL CRANE FOUNDATION
City View Road
Baraboo, WI 53913, USA

Nonprofit Organization
U. S. Postage
PAID
Permit No. 179
Baraboo, WI 53913

Address Correction Requested

International Crane Foundation Quarterly Newsletter.

Volume 7, Number 1 — City View Road, Baraboo, Wisconsin 53913, U. S. A. — A Non-Profit Organization — January, 1981

MIGRATION!

by Scott Freeman
Education Coordinator

"Dear ICF staff;

Yesterday we went to see the Red-crowned Cranes near Inchon, South Korea. We arrived about 10:00 a.m. and went directly to the mudflats, but found nothing because R. O. K. (Republic of Korea) soldiers were having drills with live ammunition. Later on, some soldiers told us that an American had been there earlier to watch the Red-crowned Cranes, so we figured it was Mr. Archibald. Then we checked the rice paddies, hoping that the cranes would be there feeding. There we saw the cranes about two football fields away, feeding and drinking water near a sewage treatment plant. There were 13 of them. There were no other waterfowl in sight, which seemed a bit peculiar.

Soon after we sighted the cranes two dogs approached them. They flocked together and started whooping, then flew away. The flock saw us, swerved, and landed. Then they began to roost with their heads tucked into their wings.

Sincerely,
Mr. Lorenz' 7th grade
Environmental Studies Class
Seoul America School
South Korea"

Reports like this have been streaming into ICF as students, crane researchers, and amateur bird-watchers make the winter census of endangered migratory cranes. Although adult crane pairs scatter to widely separated nesting territories and juveniles disperse in small "bachelor flocks" each spring, the migratory crane species commonly spend the winter in concentrated groups. Since winter is the time for flocking, it



A family of Siberian Cranes on the alert at the Keoladeo Ghana Bird Sanctuary in northcentral India. When ICF Co-founder Ron Sauvey took this photo in 1974, there were 64 "Sibes" wintering in India. In 1979 ICF colleague Dr. Paul Spitzer reported only 33 of the cranes at the sanctuary. This year, when Indian scientists reported no Siberian Crane sightings by early January, we feared that last year's drought in India and the continuing violence in Afghanistan (through which the cranes migrate) had taken a devastating toll. But on January 13th a flock of fifteen Siberian Cranes arrived at the Ghana Sanctuary, and soon thereafter another group of fifteen flew in. The Siberian Crane, a species ornithologist Allen Octavian Hume called "the snow wreath," is hanging on in western Asia.

is also the time for counting. ICF relies on a spectrum of reliable sources to closely monitor the status of the endangered populations.

The school group in South Korea sent an accurate count of the endangered Red-crowned Cranes wintering on the Inchon Mudflats adjacent to the Korean demilitarized zone. The endangered cranes of northeast Asia were surveyed at other sites by ICF researchers Kunkazu Momose and Yoshi Shigeta, ICF Co-founder George Archibald, and students in Hokkaido, Japan.

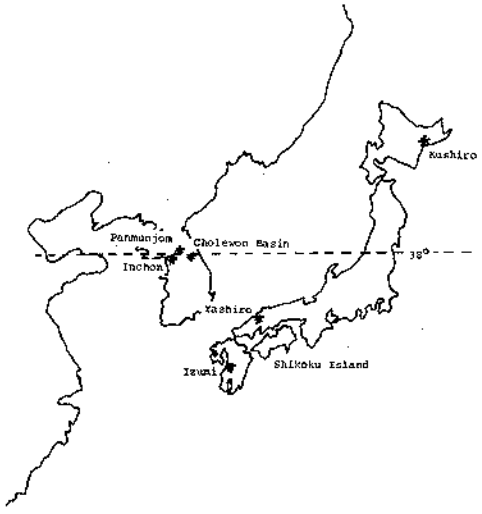
Dr. Rod Drewein and E. Frank Johnson of the U. S. Fish and Wildlife Service (USFWS) have given us exact counts of the western and eastern Whooping Crane flocks, respectively. Dr. Jim Carpenter at the Patuxent Wildlife Research Center, managed by USFWS, has sent precise numbers of the captive Whooping Cranes.

Our colleagues at the Keoladeo Ghana Bird Sanctuary in Bharatpur, India wired us just as soon as the Siberian Cranes arrived from the north. Chinese ornithologists continue to search for the wintering grounds of the eastern Siberian Crane flock, and may also soon begin an annual census of wintering Red-crowned Cranes in southeast China.

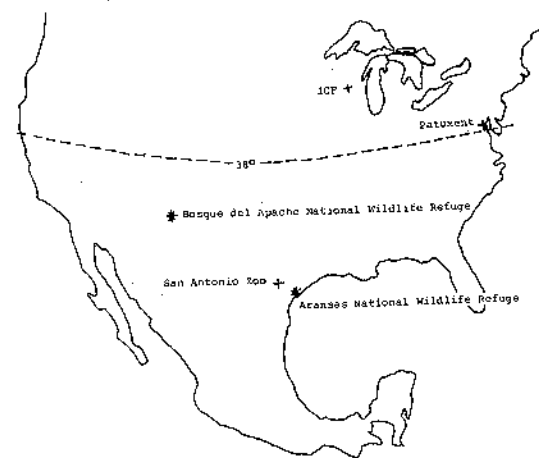
The 1980 counts are tabulated on page four of this issue. Comparing data from 1980 with counts from 1977 (see Bugle, 3:2), several trends are apparent. Hooded Cranes, though increasing, are still alarmingly concentrated at one feeding station in Izumi, on the island of Kyushu, Japan. White-naped Cranes also appear to be increasing. The best news, however, is that the inspiring comeback of the Whooping Crane continues. Down to approximately 14 birds in the early 1940's, Whoopers now number at least 118. Unfortunately, Red-crowned and Siberian Cranes

are apparently in trouble. Very few immature birds were spotted among Red-crowned Crane flocks this winter, indicating that human disturbance continues to impair breeding success in the marshes of southeast Siberia. Siberian Crane numbers are still uncertain, but our best estimate puts the population at only 200-250 birds. The captive population of Siberian Cranes, now numbering 28 (see Bugle 6:4), is acquiring increasing importance.

ICF will continue to monitor the endangered species' status closely. The census is our baseline - indicating where and when we should concentrate conservation efforts.



The east Asian wintering grounds of Red-crowned, Hooded, and White-naped Cranes. See page four for numbers of cranes at each site.



The wintering grounds of the Whooping Crane. See page four for census results at each site. + indicates captive populations.

Crane Researchers Tune-In

by Scott Melvin

University of Wisconsin - Madison

Department of Wildlife Ecology

Radio-location telemetry, a widely-used technique for studying wild animals in the field, has recently come to play an important part in studies of cranes in North America. In theory the technique is quite simple: a miniature radio transmitter is attached to the animal, and the radio signals that are continuously transmitted serve to pinpoint its location. In practice, radio telemetry is an effective research tool for students of crane ecology.

A typical radio package for a crane consists of a tiny transmitter, one or more batteries to power the transmitter, and a small antenna. Lightweight solar cells have recently proved to be excellent supplemental power sources.

A radio can be attached to a crane either as a back-pack or on a leg band. A back-pack radio rides on the crane's back and is held in place by a harness that loops around the neck and under the wings. Leg band radios are built small enough to be glued or bolted onto the side of a plastic leg band. They must be quite compact, only slightly larger than a cigarette lighter, and weigh approximately 30 to 60 grams (1-2 oz.). Back-pack radios can be somewhat bulkier and 2 to 3 times heavier.

Most cranes, including pre-flight chicks, adapt quickly to their new radio packages and, if instrumented properly, seldom show any long-lasting ill effects or abnormal behavior. This is fortunate and, indeed, essential, since a radio package that reduces a bird's chances of survival or alters its normal behavior is of little value to the serious researcher.

The instrumented cranes can be detected at

distances of up to several miles by researchers with portable receivers and tracking antennas. The receiver translates the radio signals into a series of audible "beep - beep - beeps," the exact frequency and pulse rate of which serve to identify the specific crane and its radio. Tracking antennas come in several sizes and look similar to a typical housetop television antenna. They can be carried by hand, or mounted on an automobile roof-top or an aircraft for more mobile radio-tracking.

Radio telemetry techniques have been used by Sandhill Crane researchers in North America for about 6 years and have contributed greatly to our knowledge of these impressive birds. The movements, behavior, feeding habits, and habitat preferences of radio-tagged Sandhill Cranes have been studied in Wisconsin and Florida, on wintering areas in Texas, and at migration stopover sites along the Platte River in Nebraska. In a recent series of studies radio-tagged Sandhills were tracked continuously during fall and spring migrations between Wisconsin and Florida, and Manitoba and Texas. These studies have provided considerable data on the location of migration pathways, crane behavior and habitat use during migration, and the effects of weather on crane migration.

Radio transmitters are presently being used to help keep track of cross-fostered Whooping Cranes (raised by Sandhill Cranes) in the Rocky Mountain States, and in the future may be used in migration studies of the original wild flock of Whooping Cranes that breeds in Canada and winters in Texas. Future studies will likely use radio telemetry to learn more about threatened and endangered cranes in other parts of the world.



Crane researcher Scott Melvin catches, and radio-tags, a pre-flight Sandhill Crane chick in the Interlake region of Manitoba.

—photos by S. Melvin

Contending With Killer

by Beth Baechler, Michael Putnam, and Sue Rogers, Aviculturists

Dr. Jean Delacour, the 90-year old internationally renowned aviculturist, once wagged his finger at a cute little day-old crane chick at ICF, turned to its chick mama, and said, "Someday this bird will kill you."

Our chick mamas and papas hand-raise all the crane chicks at ICF so the birds will be accustomed to human contact, and thus later be able to breed well in captivity. But hand-raised birds lose their fear of humans and are often extremely aggressive. As we make our daily rounds to provide clean water, fresh food, and remove what was once yesterday's meal, we often have to contend with a crane determined to defend its territory with beak and claw. Killer, our male Stanley Crane, tries to earn his name. We are equally determined to provide good care for these birds, and have devised a series of interesting techniques to avoid a show-down between aviculturist and crane.

Our first, and preferred, method is to avoid a confrontation at all. This sometimes involves trickery, and always a measure of discretion. Some birds are only aggressive when we get too close, so simply keeping a safe distance can avoid a confrontation. During the winter, a handful of corn thrown out in the bird's yard may distract it just long enough for us to run into the shelter and complete our chores. This often works for Tsuru, a male Red-crowned Crane, and Tex, a female Whooping Crane who attacks women. Another ploy which avoids dangerous encounters is to use a sliding door, which we operate with a rope from a safe position, to shut the bird

outside. We use this expressly for contending with Killer, our male Stanley Crane, and Tillman, a male Siberian Crane who is the most dangerous bird at ICF.

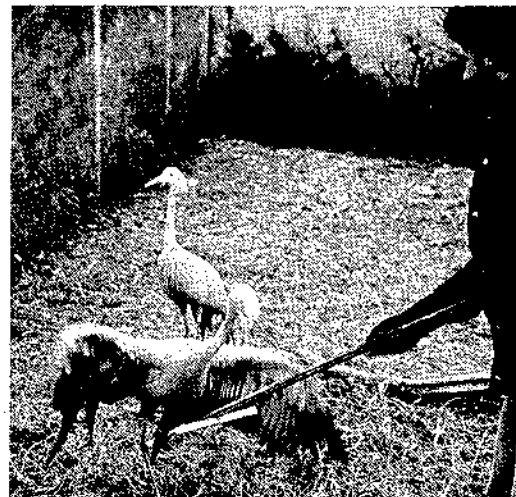
Three young male Siberian Cranes — Aeroflot, Eduard, and Bazov — warrant a different approach. These birds are just starting to become aggressive as they are nearing sexual maturity. They always guard-call loudly before attempting to peck us. We try to keep the birds calling, and therefore avoid a peck, by loudly repeating their names. If this fails, however, shaking water from a scrub brush into their faces will buy enough time for us to make a retreat.

When all else fails, we have to arm ourselves with a broom or a stick. We have several T-shaped sticks handy, which we use to fend off attacks. Each bird has a different method of attacking the stick. Casey, a male White-naped Crane, pecks at it a few times, then goes into a threat posture by throwing his head back, lifting his wings, and growling. At this point we gently push him aside with the stick and grab his water bucket. When we need to go into Killer's yard we also take along the stick. At first Killer pecks at the stick, leaving intimidating notches. He then grabs the stick with his beak and pushes it down to within range of his feet, where he flails at it with his sharply-clawed toes. Tsuru, like Killer, first pecks a few times. But then, instead of pushing at the stick, Tsuru leaps into the air and slashes at it with his feet.

We can often learn new captive management techniques from the bird's aggressive behavior. For

example, a crane standing at eye level with a person almost always tries to attack the person's eyes. Since sparkling, round objects seem to be enticing targets, we place colored marbles in bowls to help attract day-old chicks to their water. Thanks for the tip, Tsuru!

Contending with Killer and other aggressive cranes requires imagination, a nimble step and, most of all, careful observation. Most of the cranes go through a series of threat postures before actually laying a beak on us. By minding the birds' actions, and adjusting our own, we can avoid situations where birds and aviculturists might be injured.



Killer attacks the "T."

—photo by S. Freeman



Warwick Tarboton (left) checks a Wattleed Crane nest in Transvaal, South Africa. The cranes create the pond they nest in (right) as they excavate nesting materials. The pond enlarges each year, as the pair returns and excavates new nesting materials.

—photos by W. Tarboton

Crane Count Plans Laid

by Karen Voss, ICF Researcher

ICF and the Wisconsin Wetlands Association (WWA) have braved the wintery blast to hatch plans for the 1981 Sandhill Crane Count. This event has become an annual rite of spring in Wisconsin. For crane count participants, seeing their first robin pales in comparison to hearing spring announced by the pre-dawn calls of Sandhill Cranes.

The Crane Count began in one Wisconsin county in 1976 as a cooperative venture between ICF and high school students from Middleton, Wisconsin. Last spring over 200 people surveyed more than 100 different wetland areas in seven southern Wisconsin counties. In 1981 we hope to survey additional marshes, involve more people, and expand the census to a total of 30 counties.

The major accomplishment of the annual count is to expose many people to the beauty and fragility of the wetland environment and its inhabitants. Wetlands are in constant danger of development for agricultural or commercial use, and efforts to protect Wisconsin marshes require general public awareness and support. The thrill of seeing a Sandhill Crane in its native habitat has inspired, in many minds, a change from thinking of wetlands as "dismal swamps" to considering them a vitally important ecosystem worthy of protection. Also, as survey participants return to the same marshes year after year, we gain valuable information about changes in the status of wetland areas. Sites of draining and ditching are identified and can be checked for compliance with government regulations.

Getting the annual crane count "fledged" each year is a major cooperative effort. ICF and WWA work together to identify wetlands and find people to coordinate the survey in each county. The state coordinators from ICF and WWA brief county coordinators on count procedures and supply maps, survey information, and data collection sheets. The county coordinators, in turn, contact the actual participants in each county.

Crane Count participants of past years have found the project a rewarding experience. If you wish to watch the sun rise over a Wisconsin crane marsh this year, listen for the hauntingly beautiful call of the Sandhill Crane, and watch for this magnificent bird in flight, we urge you to join us on April 4th. We can't guarantee you will see cranes, but we can promise that you will almost certainly be greeted with some unexpected sign of spring. Wisconsin members who would like to participate this spring, or any member or crane researcher who would like more information, should call ICF at (608) 356-9462.

The Wattleed Cranes of South Africa

by Scott Freeman, Education Coordinator

The Wattleed Crane (*Bugeranus carunculatus*) is a sedate, purposeful crane with a most dignified bearing. Though many cranes at ICF call vociferously, the high-pitched unison call of the Wattleed Crane is heard but seldom. This is probably with good reason, as the Wattleed's unison call resembles the squeeks made by a boy struggling through the voice changes of early adolescence.

In company with their quiet behavior, the Wattleed Crane is a little-known species. Two of the world's leading Wattleed Crane biologists visited ICF recently, however, and made one fact clear: the Wattleed Crane has been eliminated from much of its former range, and is struggling to hold its own in the habitats remaining.

Deryck Day, Convenor of the Southern African Ornithological Society's Crane Study Group, and Warwick Tarboton, a biologist with the Transvaal, South Africa, Nature Conservation Division, toured ICF independently last autumn. ICF staff were eager to interview these two outstanding ornithologists, as their visit promised our first "word" from Africa since ICF Researcher Paul Konrad's trip to Zambia and South Africa in 1979. Deryck and Warwick were equally enthusiastic about ICF's efforts on behalf of crane and wetland conservation around the world. Their stays at ICF were one continuous, and lively, discussion of crane conservation and research.

By combining efforts, Deryck and Warwick have succeeded in piecing together an accurate picture

of the Wattleed Crane's status in South Africa. Their most recent data indicate that approximately 60 pairs of Wattleed Cranes are left in their home country, principally in the northeastern provinces of Natal and Transvaal. Unfortunately, few of the nesting pairs inhabit established conservation areas. Both researchers stress habitat protection as the major problem for Wattleed Cranes in South Africa, and are working strenuously to educate the sheep and cattle ranchers whose lands harbor these precious birds. If indiscriminate burning and disturbance can be controlled, the Wattleed Crane may have a future in South Africa.

Fortunately, the Wattleed Crane seems to be more secure in countries to the north of South Africa. ICF researcher Paul Konrad studied a fairly large crane population in the Kafue Flats of Zambia in 1978-79 (see *Bugle*, 5:2). He raised concerns about the cranes' future, however, due to alterations which the recently-constructed Iteschiteschi Dam may make in the hydrology of the Kafue Flats. The cranes are thought to be relatively safe in Zimbabwe and Botswana, but data are extremely scarce. Deryck Day is shaking every conceivable ornithological bush for confirmed sightings in these countries, and intends to keep close tabs on this regal birds' status.

ICF looks forward to cooperating closely with these two fine ornithologists. Shrinking Wattleed Crane populations call for expanded ICF efforts in Malawi, Zambia, South Africa, Angola, and Ethiopia. We are eager to support our excellent colleagues in Africa.

A Pasque Flower "HEIST"

by Konrad Liegel, ICF Ecologist

Soon after Sandhill Cranes begin bugling in the prairie marshes of south-central Wisconsin, the first pasque flowers (*Anemone patens*) appear on nearby sandy uplands. Blooming on the average by the 11th of April, they are the first flower to carpet the sunny slopes and dry prairies each spring. Their lavender-blue to creamy white blossoms are our true Easter flower.

By the time the crane chicks have hatched, the flowers are replaced by a silky plume which bears the seed, then quickly disappears. The seed is often eaten by goldfinches before ripe. For the rest of the summer and early fall, the presence of this small wildflower is marked by divided, heavily cut, basal leaves.

Mature pasque flowers live indefinitely. Inedible to cattle, they are sometimes found in great abundance

on grazed hillsides. Here, where no competition exists from native grasses and little foliage remains from the previous summer, their display is especially stunning.

Pasque flowers rarely appear in prairie restorations started by seed. Like many of the spring-blooming prairie species, their feathery seed only germinates in a wet summer. So when ICF learned, this last spring, of a grazed hillside resplendent with pasque flowers leased for construction of a water tower, our Ecosystem Restoration Program eagerly sought to transplant the plants that would be destroyed by construction activities. We asked for and received permission from the hillside owners, Harold and Joyce Moyer, who were delighted to see the uncommon wildflowers saved.

Then we waited patiently. As with most of our native wildflowers, pasque flowers transplant best either in early spring before growth ensues or in fall during dormancy.

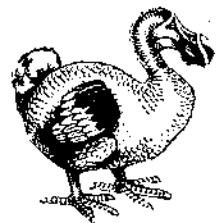
At last the appropriate time arrived. On September 26th ICF aviculturist Beth Baechler and I transplanted approximately 100 of these flowers to a similar site on ICF's new property — a sandy hillside adjacent to the future location of ICF's administration/

education building. We were especially careful to obtain as much of the rootstock as possible. The project went smoothly, and the first blossoms should appear in spring of 1982. Pasque flowers will, after a long absence, once again signal the return of life to ICF's rolling hillsides.



A pasque flower in bloom.

—photo by K. Kohout



WPTI Supports ICF in the Far East



The Wildlife Preservation Trust International (WPTI) based in Philadelphia, Pennsylvania supports an array of outstanding research, captive propagation, and specialist training programs in the conservation of endangered species. WPTI's symbol, the Dodo (above left) is an extinct bird which might have been saved by captive propagation. WPTI is determined to head off tragedies like the Dodo's extinction, and has linked arms with ICF in an effort to save the world's most endangered bird: the Japanese crested ibis (above right).

ICF Co-founder George Archibald discovered four of the crested ibis during his 1974-75 field studies of Red-crowned Cranes wintering on the Korean DMZ. Before this discovery, the species was believed to be extirpated from the Asian mainland by overhunting and pesticide poisoning. A relict population of 12 crested ibis, or "Toki," remained on Sado Island, Japan.

The Japanese population continued to decline, and with WPTI's support George returned to Korea three times to try and rescue the mainland group. In 1977 George's surveys located only a single pair of ibis - so he immediately proposed that the birds be

captured and sent to WPTI's sister organization, the Wildlife Preservation Trust, Jersey, for captive propagation purposes. By the winter of 1978 he had the permit, but the female of the pair had died. George spent three long, cold months trying to capture the illusive male, in vain. His most recent survey, in December of 1980, failed to find even a single ibis.

George's desperate efforts in Korea did, however, dramatize the plight of the ibis, and helped to prompt the Japanese government into action. ICF has just received word that researchers from the Yamashina Institute of Ornithology captured the last five remaining wild ibis. The last six Toki are now well-established in a gleaming new captive breeding center on Sado Island, Japan.

The drama of the crested ibis illustrates how ICF has responded actively to aid threatened species which share the wetland ecosystem with endangered cranes. Equally important, the story shows how ICF works closely with other organizations to make conservation happen. ICF extends a sincere thanks to WPTI for its magnificent support, and looks forward to future cooperation on behalf of the world's endangered birds.

1980 WINTER COUNTS

Whooping Cranes	1977	1980
Aransas	69 (12)	80-81 (6)
Bosque del Apache	6 (3)	12-16 (4-5)
Captivity	27	26
TOTAL	102 (15)	118-123 (10-11)
Siberian Cranes		
Keoladeo Ghana	59 (6)	30 (4)
China	?	?
Captivity	8	28
TOTAL	est. 300	est. 200-250
Hooded Cranes		
Izumi	2701	4200
Yashiro	86	34
Shikoku	0	12
TOTAL	2787	4320
White-naped Cranes		
Korea	900	167*
Izumi	732	967
TOTAL	1632	incomplete
Red-crowned Cranes		
Panmunjom	42 (3)	30-40*
Inchon	20	13 (0)
Cholewon Basin	80-100	80-100 (4)
Kushiro	220 (40)	267 (32)
TOTAL	282	390-420 (36)

*Flocks were scattered with many birds in North Korea; complete census impossible.

Contributions



The Bottom Line

by Alice D'Alessio,
Development Coordinator

Grants and Awards

Wolf Brehm, Cudahy Fund, Sam and Gene Johnson, Kohler Foundation, Krause Foundation (Willis Sullivan), Wildlife Preservation Trust International, World Wildlife Fund.

Life Membership Contributions

Russell Aitken, Chicago Metallic Corporation (Reinhardt Jahn), Mr. and Mrs. Richard Clack, Stanley Hubbard, Charles Miller, Charles and Mary Nelson, Christopher Owens, Norman and Claire Sauey, Mr. and Mrs. John Stedman, Mr. and Mrs. Gerard St. George, Mrs. Howard Weiss.

Supporter Contributions

Madison Kipp Corporation (Reed Coleman), Roxanne Steinman.

Associate Contributions

Heien and Bruce Ambuel, Donald Archibald, Mr. and Mrs. Ira Baldwin, Michael and Janet Brandt, Elaine Burstatte, John and Barbara Canfield, Roy and LaRae Carlson, Mr. and Mrs. Charles Carpenter, Chet and Margaret Corson, J. Doherty, Mr. and Mrs. Harold Falk, Guy Greenwell, Mrs. James Hageman, William Kieckhefer, Brian Knox, A. Ross Manning, Ronald and Margaret Mattox, McGann Kurtz Furniture Co., Dorothy McIlroy, Lawrence Oelker, Dr. Philip Piper, Norman Quale, George Ranney, Donald Reinhoehl, Gordon and Janet Renschler, David Rorick, Mrs. Philip Taxon, Mr. and Mrs. Jaque Vallier, Mr. and Mrs. Willson Von Neumann, Washington High School, Wisconsin Power and Light Co., Winifred Woodmansee, Don and Carol Worel.

Non-monetary Contributions

Badger Army Ammunition Plant, the Bruce Co., Betty Burgess, Colleen Burtt, Carpet Barn, David Deppe, Mariam Fordham, Anne Glicker, Janet Grennell, Samuel Harper, Marion Hill, Barb Lalor, Larry Lantis, Sharon Lantis, Susan Leopold, Kathy Lofdahl, Kyoko Matusmoto, B. T. McClure, Darrell Morrison, Dan Mueller, Peterson Electric, Phil Plath, St. Clare Hospital, Randy Schoepp, JoAnne Schuh, Larry and Nan Stocking, Dr. Milton Sunde, Karen Voss, Scott Weber, Winnie Zantow, and all the people who so kindly dropped off their Christmas trees.

The start of a New Year is traditionally a time of hope, optimism, good cheer and resolution - and this one is no different. ICF has indeed been fortunate in the generosity of its friends, and we start 1981 full of high hopes.

Very special Christmas treats: the Patrick and Anna M. Cudahy Fund pledged support of our Education Program for two years; the Charles A. Krause Foundation and the Johnson's Wax Fund donated substantially toward our building program, and the Kohler Foundation made a generous gift to assist with land payments. This kind of commitment will enable us to move ahead with building on our new property - possibly within the next two years.

In the meantime, the money we receive from membership donations is the heart of our operation: it's what keeps us going, buys the bird's food, and pays our trio of dedicated aviculturists to care for the flock (oh yes, even on Christmas and New Year's, at 20° below and during blizzards - nothing can stay them from their appointed rounds!). We had a marvelous response to the insert in the last issue of the *Bugle* - thank you one and all.

Because our members are so important, we're anxious to reach out to the many conservation-minded individuals who don't know about our program. With assistance from the Marshall & Ilsley Bank Foundation and Johnson's Wax Fund, we're developing new brochures and will mount a membership drive in the spring. We have over 1500 members now. Just think - if each of you could bring in one more member - we'd double!

A nod to inflationary pressure: we've scrutinized our projected costs for 1981 very closely, and regretfully decided that if we're going to be able to fulfill our promises to all of you (and the cranes) we'll need a modest increase in membership rates. Starting with your next renewal notice, the following categories will apply:

Patron	\$1000
Sponsor	\$500
Associate	\$100
Family	\$25
Foreign	\$20
Friend	\$15

Our program is thriving, as you can see from the articles elsewhere in this *Bugle*. We're asking for a little more as costs go up, but we're offering more, too. Thank you for helping us help the cranes.

THE WISH LIST

The entire flock began dancing when all of last issues' wishes were fulfilled. Mrs. Arthur Freeman trimmed our tree with a pair of beak clippers, Sandy Utech and Barbara and Jack Wolf made a splash by donating water buckets, Mariam Fordham lined us up with a card file drawer, and John and Barbara Canfield donated a case of semen extender after making us tell them what it was for.

And now, good members, we're going to make a BIG wish. Our aviculturists need a phase-contrast microscope. Without it, we can't effectively continue our studies of crane semen, which we hope will lead to a reliable method for freezing "the goods." Coming up with a good technique for freezing semen would be a major breakthrough for our captive breeding program.

As you may have guessed, phase-contrast microscopes are not cheap. They cost \$2500. We have \$1500 towards the purchase already donated by the World Wildlife Fund-U.S., and need \$1000 more. Now, I don't have \$1000 and you may not have \$1000, but I DO have \$25 and you may have ten or twenty or fifty, and together we're going to get this microscope for the Crane Foundation.

Chip in whatever you can as soon as you can, and we'll send you a small card certifying your donation. Bring this card with you when you visit next spring, and we promise that you'll get a look at crane semen magnified 2,000 times.

We'll let you know how the microscope drive turns out in the next issue of the *Bugle*. And now, at the risk of being run out of town for being too cheeky, we also need:

- A dehumidifier (for our incubator room), \$150
- Calipers (to measure eggs), \$25
- A quick-registering thermometer (for feverish cranes), \$25
- A 5 gallon aquarium for floating eggs (to check development), \$15
- German-English, Japanese-English, and Russian-English dictionaries, \$5 each
- And a good World Atlas (cleaning out your bookshelves?)

Spring is coming, and both ICF staff and birds are gearing up for a successful breeding season. With your help, we'll fill each and every nest!