

THE BROLGA BUGLE

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THE RUSSIANS HAVE COME!

ICF Hosts Soviet Visitors

As the door of their pen swung open, the two young brown and white "colts" let out an impatient, hoarse "Wheep!" and ran straight through the opening and into the grassy field, all the while flapping their huge black-tipped wings. Somehow the young cranes seemed to sense that the two men standing by their pen were intensely curious about them and they lost no time in showing off to their new admirers.

Many visitors to Baraboo over the past six months have been similarly charmed by the antics of Vladimir and Kyta, the two Siberian Cranes hatched by the International Crane Foundation last July from eggs collected in arctic Siberia. But to the two Russian scientists who now watched these birds cavorting playfully through the grass, the spectacle had a much deeper significance.

For one of these men, Dr. Vladimir E. Flint, of Moscow's Central Laboratory for Nature Conservation, the sight of Vladimir and Kyta was culmination of two years of planning, negotiations, and difficult work. In July, 1977, Flint had "captured" these two birds, then, just two goose-sized olive green eggs, in the northeastern Siberian republic of Yakutia. He flew them, along with three other eggs, to Moscow where Elizabeth Anderson of ICF waited to take the precious cargo the rest of the way to Wisconsin. That was the last Flint saw of his cranes until this sunny day in May when he was reunited with his "god-children" 10,000 miles from their natural home in Siberia.

For Aleksandr Blistanov, the other visiting Russian, these two young birds were also very special. To him, they represented the germ of a new crane breeding center in the Soviet Union which will be located on a refuge Blistanov manages, the Prioksko-Terrasny Preserve. Although the refuge is now famous as a breeding center for the endangered European Bison, he and other Soviet conservationists are planning a propagation facility there for rare species of cranes, four of which breed in the USSR.

The visit of Dr. Flint and Mr. Blistanov to ICF during May, 1978 is another facet of the exciting cooperative venture between ICF, the Soviet Union, and the U. S. Department of the Interior to preserve the extremely rare Siberian Crane, *Grus leucogeranus*. This crane breeds in the Soviet Union, but winters and migrates through several nations in southern Asia. Since 1974, ICF has been studying this crane's wintering biology

(Continued on page 3)



A reunion of cranes and comrades. Dr. Vladimir Flint (far right) and Mr. Aleksandr Blistanov (standing) become acquainted with Vladimir and Kyta, two Siberian Cranes which Dr. Flint collected as eggs in Siberia. Also in the picture are George Archibald (left), Ron Sauey, and Elizabeth Anderson of ICF. Photo by Norris Klesman

ICF Education Program Gets Funding

Why do cranes stand on one leg? How long do cranes live? Don't they get cold in the winter? What do they eat? Why are cranes so rare? How long do their eggs take to hatch?

These are just a few of the questions asked during the almost daily tours at ICF. In the past, we had mixed emotions about tours. While we enjoyed showing people the cranes and our work to preserve these birds, we often became pressed for time and personnel to handle the increasing numbers of people interested in seeing ICF.

We are happy to announce that through the generosity of two foundations, the Patrick and Anna M. Cudahy Foundation and the Kohler Foundation, Inc., we now have a full-time education coordinator, John Wiessinger, who is able to provide informative and entertaining tours of ICF on a daily basis.

Tours last approximately one hour and consist of a brief slide presentation on the Foundation's work in the U. S. and Asia, and a leisurely walk through ICF's facilities. Some of the areas included in the walk are special pens for the delicate crowned cranes of Africa, a non-breeding compound which has a large assortment of different cranes, a breeding unit where some of the world's

rarest birds can be seen (from August through early March), and the chick house where from May through August our newest additions to the flock are kept under special watch by our dedicated "chick mothers."

The Foundation charges a small fee for tours of \$1.50 per adult and \$1.00 for students 18 and over. (Continued on page 4)



John Wiessinger (right), ICF's new Education Coordinator, demonstrates the finer points of a crowned crane to a group of visitors at ICF. Photo by Diane Wiessinger

The Hatching of Yuri, April 14, 1978

A series of photos by Norris Klesman documenting the hatching sequence of a Japanese Crane

feature . . .

The Art of Captive Propagation

Editor's note: This is the second feature that Jim Harris has written for the Bugle. His last contribution was a general discussion of crane migration, and we hope to present future stories on different aspects of crane biology by him. Jim is a free-lance writer of articles on wildlife and conservation. He also is currently working on a book on the peregrine falcon, which should be published this summer.

by Jim Harris

Cranes have long been popular denizens of zoos. They are large, loud-voiced, and have special symbolic appeal to many different cultures. In the past, cranes, like many other birds, were freely available on the zoo market; trappers had no difficulty catching and exporting large numbers of cranes to zoos in Europe and North America. But with the continuing destruction of wetlands and declines in the wild populations of cranes, zoos have found it increasingly difficult to procure these birds. Some species, such as the Whooping Crane, are simply unavailable because of their great rarity and strict governmental protection. Other endangered species, such as the Whitenaped, Japanese, or Siberian Cranes, are extremely scarce on the market and fetch incredible prices when available. A male Siberian Crane earlier this year was sold in Europe for \$13,000.00.

This combination of popularity, scarcity, and great value has made the captive propagation of cranes increasingly attractive to zoos and private aviculturists. By breeding their own stock, zoos can avoid the hassles of importation, government regulation, and high prices. But propagating cranes is not like breeding farmyard ducks and geese. Cranes can be tough customers to aviculturists: they are pugnacious (even day-old chicks will fight), difficult to sex, and often lay infertile eggs in captivity. When chicks are hatched, they prove delicate and subject to development problems, particularly in the legs.

Over the past twenty-five years, several zoos, government agencies, and private institutions have approached the problem of crane propagation systematically, relying on experimentation and close observation of cranes in captivity and in the wild. The International Crane Foundation has continued its own work in this area and, while raising and breeding cranes can still not be thought of as routine, certain techniques seem to be successful when applied to this family. This article discusses in a very general way some of the methods we have used to propagate cranes in captivity.

Careful study of crane behavior in the wild shows that cranes are long-lived, monogamous (although a bird will select a new mate if the first should die), and strictly territorial during the breeding season. Cranes of breeding age should therefore not be kept in flocks in captivity, but isolated in pairs in separate enclosures. If this is not done, continual aggressive encounters will disrupt reproductive cycles. At ICF, crane pairs occupy 80' x 60' enclosures, and pine trees are tied to the adjoining wire between pens to prevent fighting between adjacent pairs. Vocal contact between neighboring adults, however, actually seems to stimulate reproductive behavior.

In cranes, as in many monogamous birds, sexes appear identical. Laboratory sexing methods have recently been developed, including examina-

tion of chromosomes under a high-powered microscope (called karyotype analysis) and weighing of DNA material. But a bird's performance of the union call, a beautiful display which facilitates pair bond formation and maintenance, and which serves as a territorial threat, also identifies its sex. The sexes call together, but body posture differs between the two birds, with males usually raising their wings more; females have higher and more rapid calls and usually initiate the performance.

Nest building behavior varies under different environmental conditions. In wet situations, nest structures are bulky and tall to raise the eggs above the moisture. But in dry areas nests are rudimentary or lacking. At ICF, pairs do not have marshy pens (for sanitary reasons) and little nesting material is required.

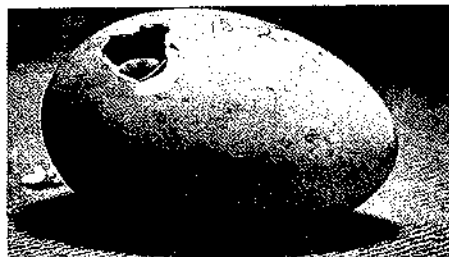
Strict adherence to a set of standard techniques does not guarantee success at captive breeding. Propagators must rely on careful observation of the birds and on their own intuition. At no time is this unquantifiable skill more important than when encouraging two new birds to pair. Cranes like many people do not mate indiscriminately—disposition of the individual plays a major role. A male should dominate his mate without intimidating her. In wild pairs, the males are usually larger than their females. At ICF in 1978 we attempted to pair two Sarus cranes, Millie and Squirt. Squirt, the male, was smaller than his prospective mate. To offset Squirt's size disadvantage, we put his food container on higher ground so that while he ate, Squirt was taller than Millie. During this process, both birds remained in separate but adjoining pens. Millie and Squirt are now firmly bonded and share a single pen.

Although some of ICF's cranes copulate successfully without human help, others do not and infertility is a common problem with cranes in captivity. Artificial insemination has therefore proven to be a simple and reliable technique to insure fertilization. Individual cranes only gradually become accustomed to being handled for artificial insemination. At first they attempt to escape and should promptly be grabbed before they can injure themselves or the collector. The male is held standing and facing the corner, his thighs firmly but gently stroked until he relaxes, raises his tail, and ejaculates. The semen is collected by an assistant in an eye glass and promptly transferred to the female who is handled similarly. During the

(Continued on page 4)



Yuri begins the final hatching sequence after 31 days of incubation. A day earlier, the young crane had made a small pip hole in the egg and then rested for a day, a pattern which is normal in cranes. Yuri's egg weighed 245 g at the start of incubation and by the time of hatching had dropped to 207 g. This weight loss is the result of the metabolism of the yolk by the chick and the escape of water and other gasses during incubation.



Another piece of the egg has been chipped off by Yuri using his beak and a special "egg tooth" which is visible just above the tip of the bill. This "tooth" is not a tooth at all, but a small, horny projection which will disappear a few days after hatching. The number "15-2" which is visible to the right of the pip hole indicates that this was the second Japanese Crane egg laid at ICF in 1978.



Yuri's beak has now disappeared and the chick has begun turning to its left while battering the egg with its beak and special "tooth." The process of puncturing the egg continues in a counter-clockwise circle, eventually causing the blunt end of the egg to be pushed off like a cap.



Yuri's wing has now emerged from the egg and the cap is being pushed off the egg. In most birds, the chick makes two complete revolutions in the egg before emerging, but cranes only rotate 180 to 270 degrees. A special muscle at the back of the chick's head is used to crack the shell. The muscle atrophies shortly after hatching.



Yuri has now completely emerged from the egg through the cap. Exhausted and wet-looking at this point, the chick will soon be sitting up and its downy plumage will be dry and fluffy.



Yuri, now two days old, gets his first look at the big, wide world under the careful watch of Sarah Klesman. In nature, this young chick would be following his parents through the marsh begging for food.

MARCH EPIDEMIC HITS ICF

The winter of 1977-78 proved to be the longest, coldest, and snowiest on record, at least on record at the International Crane Foundation, and the first warming spell in March was a welcome relief to the birds and staff at ICF. But the relief was short-lived.

On the morning of March 15, one of the workers at ICF found a dead Stanley Crane in the non-breeders' field. The bird showed no sign of trauma, though one of its feet was stuck through a heavy metal wire near a storage barn. We concluded that the bird had met with an unusual accident which left no external sign of injury. Routinely, John Taapken, our aviculturist, wrapped the bird for shipment to the Fish and Wildlife Service's Animal Health Laboratory in Madison, where the bird would be carefully examined for the cause of death.

Later that morning, another Stanley in the same field was found acting "dumpy", a sure sign the bird was not feeling well. At first no connection was made between the two birds; but when shortly after noon a third Stanley in the same field acted listless with its head lowered and pulled against its body, we became concerned that the first crane had died of a disease and we rushed the body to Madison.

This was to be only the first of many hectic, anguished trips to the Health Lab. Within the next few days, a rare, previously undescribed virus became rampant among the 51 unmated and predominantly young cranes in our nine acre non-breeder field. Twenty cranes were to die from this disease in two weeks, including five splendid Japanese Cranes that had been painstakingly raised during the summer of 1977.

The initial diagnosis from Madison indicated that either a parasitic or bacterial disease had attacked the Stanley Cranes. But the symptoms were so general that it was impossible to tie the disease down to a particular pathogen.

We started treating the remaining birds with a half dozen different chemicals and anti-biotics, switching treatments almost daily as the technicians in Madison eliminated one by one the possible disease organism involved. With each new treatment, hope surged again that perhaps the answer had been found. But each day brought

more sick birds, more feverish trips to Madison with feathered carcasses in the back seat, and still a different diagnosis of the disease.

Some scenes were almost surrealistic in aspect. Late one dark night, the entire staff of ICF, from education coordinator, to aviculturist, to administrator chased cranes across the melting snow trying to round up the entire flock for treatment. The chick house was quickly converted to a hospital, and as each consecutive treatment failed, the small pens in the house in which many of the victims had started their lives, became finally their death rooms. In the end, only four of the twenty-four birds which contracted the disease survived, despite round-the-clock treatment.

The still unnamed virus is now being studied by the U. S. Department of Agriculture. USDA has determined the virus is not lethal to domestic poultry, causing little reaction in chickens. Like an outbreak of flu in a crowded classroom, the virus seemed to spread through close contact between birds and seemed to affect some species more than others. It did not affect any other areas at ICF; even the adjoining Common Cranes did not contract the disease.

Many questions remain unanswered. How was the virus introduced? How was it transmitted? Is it still in the ground or in a "Typhoid Mary" individual waiting to reappear again as virulent as before? ICF is taking steps to minimize the danger of this disease affecting so many birds again. We will no longer allow so many cranes together in a single flock and we will rotate flocks onto new ground every year. We will also cement the floor of the non-breeder barn to make disinfecting easier in the future.

The loss of so many individuals including several endangered species is a blow, but only a temporary blow. We have learned a great deal from this ordeal and our facilities for breeding and maintaining cranes will be all the better for our misfortune this spring. We are very grateful to the vets and technicians who aided us during the March epidemic. In particular, we would like to thank Dr. Stephen Kerr of the USF&WS Animal Health Lab, Dr. Richard Decker of the State of Wisconsin's Animal Lab, and to local veterinarians Dr. Marge Losch and Dr. Marvin Westerfeldt.

Indians Discover Blacknecks In Bhutan

In January of this year, the first phase of a two-part research program on the Blacknecked Crane, *Grus nigricollis*, sponsored by the World Wildlife Fund and the International Crane Foundation began in the remote mountain kingdom of Bhutan. An expedition headed by Mr. Lavkumar Khacher of the World Wildlife Fund - India and Dr. Salim Ali of the Bombay Natural History Society travelled to this Himalayan nation to search for the least known of the 15 species of cranes. The Blackneck breeds in the high altitude bogs and marshes of Tibet and winters over a wide stretch of sub-mountainous areas from Bhutan to Vietnam. The two Indian scientists are trying to determine the status, distribution, and ecology of this crane, currently included in the Red Data Book.

According to a February 6th letter sent to ICF, the Indian expedition found 18 Blacknecks including five juveniles in an eastern valley of Bhutan. The birds seemed to prefer natural feeding areas such as bogs and marshes rather than fallow fields. Mr. Khacher believes that such preferences may soon threaten the future of this species because reclamation projects are underway in the valley which will eventually destroy the crane's habitat.

Mr. Khacher continued the expedition in February to the eastern Indian state of Arunachal Pradesh where he looked for cranes in the Api Tani Valley, an area where the birds had been reported many years earlier. He found that the "kengda," as the locals call the bird, was no longer visiting the valley in winter. The reason seemed to be the recent introduction of firearms to the valley and the subsequent disturbance of the cranes by hunters. Apatani tribals reported that the last two cranes to visit the valley two years



A nationally famous "Odd Couple" taking their daily stroll at ICF. George and Tex's unusual relationship made national coverage this spring. Sports Illustrated, People, NBC's Today Show, and CBS News all publicized Tex's romantic attachment for George. Photo by Norris Klesman

RUSSIAN VISITORS . . .

(Continued from page 1)

and together with the Russians have initiated an ambitious program to establish a new population of this rare bird.

Flint and Blistanov's 15 day visit to the U. S. was a combination fact-finding and planning session, designed to acquaint our Russian counterparts with techniques for propagating and restocking cranes, and to develop a schedule for future cooperative work on these birds. In addition to their visit to ICF, the two Russian experts also stopped at the Patuxent Wildlife Research Center in Maryland where the U. S. Government has its facilities for breeding captive cranes, and the Grays Lake National Wildlife Refuge in Idaho where Whooping Cranes are being reintroduced to the wild using Sandhill Cranes as foster parents.

As a result of several meetings between Dr. Flint and ICF's Board of Directors, a tentative timetable has been worked out for further joint studies of crane biology, pending approval by respective governments. Shortly after his return to the USSR, Dr. Flint will leave for northeastern Siberia to collect up to 12 Siberian Crane eggs for shipment to ICF. In exchange, ICF will host the visit of the new director of the crane propagation center at the Prioksko-Terrasny Preserve, and provide advice on banding Common Cranes in western Russia and on tracking birds fitted with small radio transmitters.

We are very grateful to many people who helped make Flint and Blistanov's visit to the U. S. memorable for them as well as us. First, our thanks go to the Fish and Wildlife Service and its Office of International Activities and to the Soviet Ministry of Agriculture for making the whole project possible. We are also very grateful to Elizabeth Anderson for acting as a translator and to Dr. Ray Erickson at Patuxent, to Ed Loth and Dr. Rod Drewien at Grays Lake, and to John Dahlberg, the Milwaukee Zoo, and the Milwaukee Museum for showing our distinguished guests areas of interest during their stay. And for their old-fashioned American hospitality, we thank Mr. and Mrs. Scott Ward, Mr. and Mrs. Oswald Anderson, Mr. and Mrs. Thomas Gause, and Mr. and Mrs. Gerald Scott.

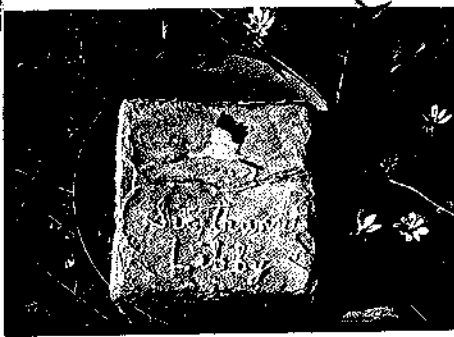
previously had both been shot and eaten. Before the advent of the gun to the valley, Blacknecks had been relatively tame, permitting women and children who were working in the fields a close approach.

Mr. Khacher concludes that the conservation outlook for the Blacknecked Crane is not favor-

(Continued on page 4)



A young Japanese Crane is force-fed with a liquid nutrient. Four of the nine Japanese Cranes afflicted with the March virus at ICF were saved by such feeding sessions. The virus caused a hepatitis-like affliction and a degradation of the gut lining.



Dorothy Malroy, a life member of ICF, baked this cake to celebrate Libby's completion of her Master's degree at Cornell University. We are assured by local sources that this is a cake (very tasty) and not a monument. Bloodroot, seen around the cake, was blooming on the day of Libby's spring flight from Ithaca. That seems only right after such a Gruisome (sic) winter. (Caption and photo are disclaimed by Editor—they are reportedly the work of one Paul R. Spitzer).

Sic Transit Libby

We at ICF are very proud to announce that our Russian translator, life member, co-worker, and friend, Elizabeth "Libby" Anderson, has recently completed the requirements for a Master's Degree at Cornell University. Her dissertation, "Four Case Studies in US-USSR Wildlife Conservation Cooperation" is an outgrowth of Libby's original involvement with ICF as a translator of Russian articles on cranes into English. Since 1978, Libby has donated hundreds of hours of translating time to ICF and often kids that she is working on her seventh "life membership" in ICF.

Libby's dissertation discusses the recent cooperation between the U.S. and Russia on matters related to the conservation of rare animals. This branch of Russo-American detente is part of the Agreement on Cooperation in the Field of Environmental Protection which was signed in Moscow in 1972 by Presidents Richard Nixon and Nikolai Podgorny. One of the projects under this Agreement is the joint effort between Russian and ICF scientists to reintroduce the Siberian Crane to western Asia.

Libby plans to continue her long and close association with ICF this summer when she will assist us with the hatching and raising of Siberian Cranes at the Biotron of the University of Wisconsin in Madison. This fall, she and George Archibald will attend a meeting of the International Union for the Conservation of Nature (IUCN), which will be held in Ashkabad, USSR, as representatives of ICF.

We congratulate Libby on her accomplishment and express our thanks for her past assistance to ICF and our hope for her continued involvement with the effort to save endangered cranes.

Education Program . . .

(Continued from page 1)

under. Members of ICF, of course, are not charged. Those wishing tours are requested to call or write for appointments well in advance of their arrival. Tours are generally given at 10:00 a.m. and 2:00 p.m., but other times can be arranged if necessary. Since much of what we have to show is outside, proper clothing is essential to insure a comfortable visit.

Besides tours of ICF facilities, John also offers slide programs on the Foundation and two natural history topics for classrooms and organizational meetings. Further information on these programs is available upon request.

Once again, we express our deepest thanks to the Kohler and Cudahy Foundations for their timely support of our education program. Oh yes, if you wish to know the answers to the questions at the start of this article, join a tour at ICF and John will be glad to answer these and any other questions you might have!

FEATURE . . .

(Continued from page 2)

breeding season, birds are inseminated every third day, and some females eventually start to assume a solicitation posture as the keeper approaches.

Because of the uncertainty of pair formation, male and female are sometimes housed in separate pen. The female thus runs no risk of being attacked. Phyllis, our first female Siberian crane, was suddenly killed by her mate Wolf after the two had peacefully shared their pen for over a year. Our new female, Hirakawa, is now kept separately from Wolf and we will never trust this male again with a female.

Cranes which nest at high latitudes, such as the arctic-nesting Siberian and the north-temperate Hooded Crane, have proven especially difficult to breed in captivity, even if successfully paired. Artificial photo-period seems necessary in these cases to "fool" the cranes into believing they are further north. At ICF, large spotlights are trained on the pens of the northern cranes and a longer "day" is produced artificially. In 1976 and 1977, ICF hatched the world's first Hooded Crane chicks. Our female Siberians, Phyllis and Hirakawa, after living for years without special lighting and being barren, quickly began to lay eggs at ICF in pens with artificial lights.

As soon as a female lays an egg, it is removed from the nest and placed in an artificial incubator. In this way we can greatly increase the productivity of a single pair. In the wild, pairs normally lay two eggs, and seldom does more than a single chick survive from a nest. By removing eggs, we induce the female to keep laying, obtaining as many as a dozen in one year. Eggs are protected in the scrupulously clean incubator room, where embryos and newly hatched chicks are safe from exposure to disease.

Within the incubator, eggs are placed in a horizontal position and kept at 37 to 38° C. and 29 to 30° C. wet bulb. They are turned automatically 270° every two hours, plus a rotation by hand twice each day. Daily, eggs are taken out and allowed to cool to room temperature for an hour. This procedure improves hatching success; perhaps it simulates parental absence from the nest.

After 2½ to 3 weeks' incubation, eggs are tested for fertility by being floated in a basin of warm water. If they bob and gently move about, the embryos live. If they float motionless for long, they are infertile or the embryos are dead.

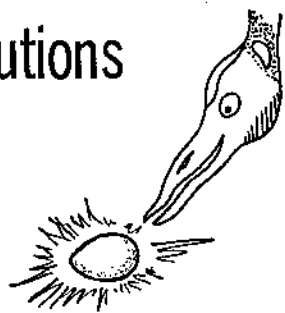
Hatching is perhaps the most critical event in a crane's life. As the time nears, we frequently examine the eggs. Four days before the hatch date, the egg is placed in the hatcher. No longer is it turned; it rests on carpet, a firm substrate for the chick's feet. From first pipping, it takes about 36 hours until the chick emerges from the shell. As soon as it is dry, the chick is placed in a clean and dry brooder.

Now begins a whole new stage in ICF's care of cranes, the raising of chicks. This is really a topic for a full article of its own. But one aspect of chick rearing will affect an individual's social development throughout life, including formation of pair bonds. Chicks raised entirely in human company will later only be sexually attracted to humans. At ICF, we raise chicks in close proximity to other chicks, so that they imprint on cranes. Because of the frequent but not exclusive contact with people, a special bond with humans also develops, later making artificial insemination an easier process. Otherwise the birds exhibit normal social development.

Tex, ICF's female Whooping crane, was raised entirely with humans (in the living room of a house), and is imprinted on humans. Nonreceptive to either Angus or Tony, her male Whooper companions, she is excited only by George Archibald. His frequent companionship this spring at last resulted in her laying a fertile egg (the result of artificial insemination) in his hand!

Propagation is the magic part of keeping captive cranes. It is challenging, frustrating, but also exhilarating work. In no other way, can humans become more involved in the life of another species. Yet despite the extent of our intervention,

Contributions



MEMBERSHIP CONTRIBUTIONS

Berthold Anderson, Audubon Society of Central Atlantic States, Ira Baldwin, Ted Barton, William Baum, Frederick Beall, Cynthia Becker, Diane Berg, Beswick Family Fund, Cecilia Bosman, Margaret Brandt, Wolf Brehm, M. W. Breit, Alfred Brown, James Bruskevitz, Robert Buchanan, Frances Buss, Kjell Bylin, Claude Christenson, Christopher Clampitt, Catherine Coleman, James Colias, Sandy Collins, Roy Cooper, Jeremy Crane, Mary Currier, Barbara Davis, Detroit Audubon Society, Helen Dattl, E. H. Down;

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Manitoba Naturalist Society, Carl Matthusen, Oscar Mayer, Malcolm McDonald, Stephen McKasson, Leslie McNeil, Mrs. H. E. Moser, Dick Murray, Shiro Nakagawa, Helen Northup, Akir Okazaki, Phi Sigma, John Pike, Norman Quale, William Rand, Albert Rathert, Jonathan Reed, Mrs. H. L. Risteen, Jerry Rowe, Deloris Skiles, Ann Sartwell, Jerry Saunders, Jack Savidusky, Jack Schmutzler, Patti Schuknecht, Allan Schwahn, Mr. Seidelmann, William Sieker, James Slack, Walter Smalley, Richard B. Smith, Bruno Stein, Sally Stenhouse;

Mark Thompson, William Todd, Bryan Toney, Emil Vacin, Robert Vane, Daniel Varland, Mrs. Howard Weiss, H. Werdinger, Florence Whitefield, John Whitney, T. G. Wiselogel, Elizabeth Wright, Yasuhide Yamana-kuchi, Justin Young, D. E. Zafra, Anne Zemba, Frank Zubeck.

VOUNTEER LABOR AND MATERIALS

Howard Ahrensmeier, Elizabeth Anderson, Harold Bessa, Barb and John Canfield, Laurie Gause, Steve Kerr, Kathy Lofdahli, Flo Lueders, Charles Luthin, Helen and Herb Malzacher, Dorothy Mudd, Akira Okazaki-JAL, Eleanor Parson, Portage Industries Corporation, Ed and Jane Rikkers, Steve Schmidt, Gladys and Gerald Scott, Lucille Thompson, Nelle Weiss, Frank and Katie Wenban.

Discover Blacknecks . . .

(Continued from page 3)

able and that every effort should be made to establish a captive population in the near future.

The second phase of the crane project is scheduled for 1979 in Ladakh, a mountainous region in northwestern India where a small population of Blacknecks are known to breed. The Indian Government has granted the International Crane Foundation permission to collect twelve Blackneck eggs for propagation purposes. If all goes according to plan, a small population of these montane cranes will join the other 14 species of cranes at ICF's propagation facilities in Baraboo by Fall of 1979.

We become awed spectators at the crucial moment — as the male responds to a strange female or as the damp chick struggles to emerge from its shell. And throughout the difficult work, we take pride in knowing that our efforts may dramatically improve the future of these magnificent birds.

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.