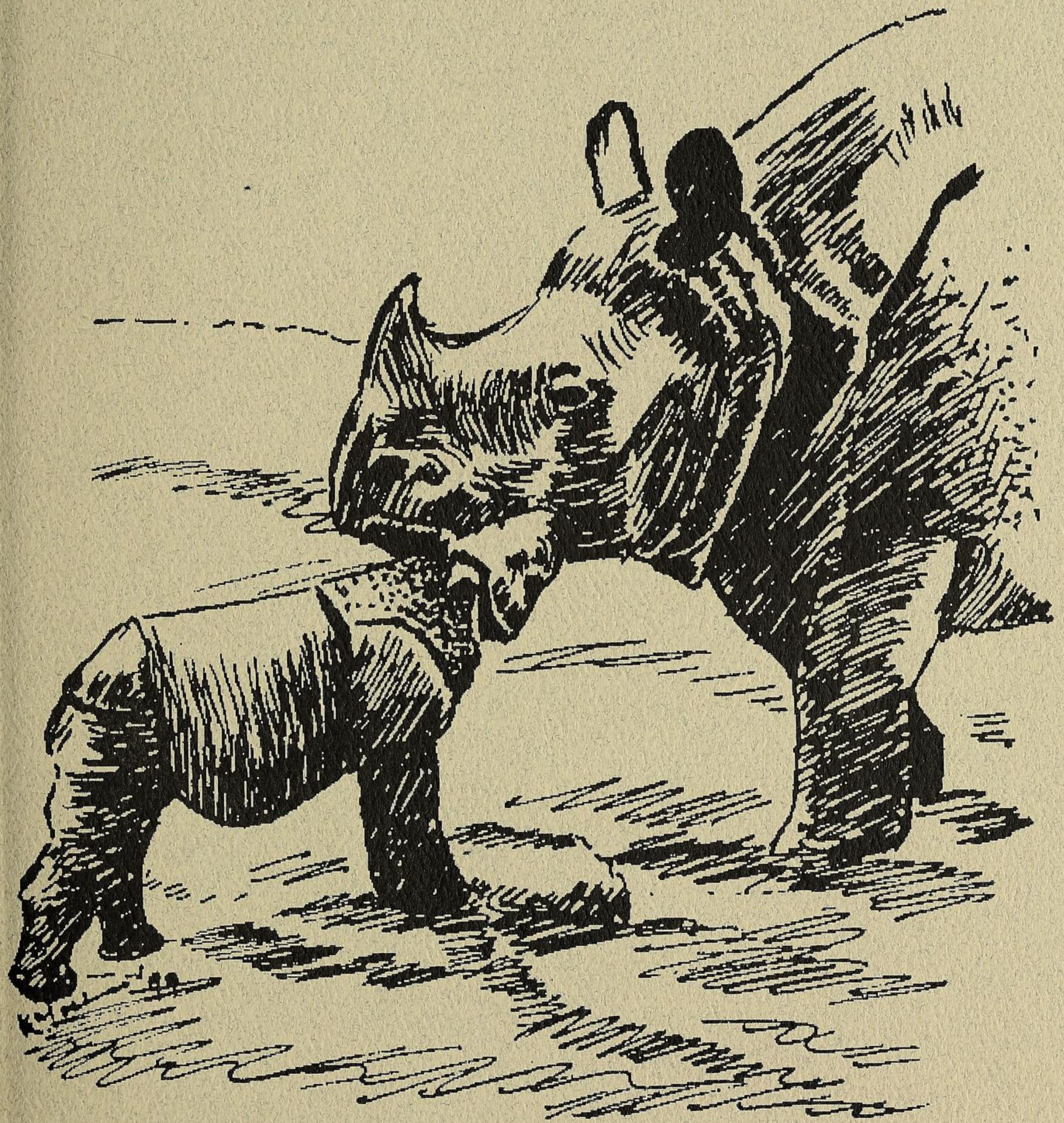


L
298
P

ANIMAL KEEPERS' FORUM



The Journal of the American
Association of Zoo Keepers, Inc.
September 2000

Table of Contents

About the Cover/Information for Contributors.....	370
Scoops & Scuttlebutt.....	371
Papers/Workshops to be Presented at 2000 AAZK Conference.....	372 - 374
Coming Events.....	375
AAZK Announces New Members.....	376
ABC's Column: Masia giraffe.....	377 - 381
Indy Zoo Announces Second AI Elephant Birth.....	382 - 383
Elephant Reproductive Monitoring Training Video Produced.....	383
Reactions Column: Preparing for Crisis Management Drill.....	383 - 385
Random Organization: Organizing the Enrichment Program at the Regenstein Small Mammal and Reptile House at Lincoln Park Zoo.....	386 - 389
Riddle's Sanctuary Announces Elephant Pregnancy.....	389
Legislative Update.....	390 - 394
Spotlight on Project M.A.R.C.....	395
A Overview of Training Staff and Rhinoceros for Ultrasonography Procedures.....	396 - 401
Chapter News Notes.....	401
Enrichment Options Column (Hide Roll-Ups).....	402
Rare Amur Leopard Born at Exotic Feline Breeding Compound.....	403 - 406
Wolf Awareness Week.....	407
Bear Conference Proceedings Online.....	407
Book Reviews (<i>Sperm Whales</i> and <i>Lions</i>).....	408 - 409
International Crane Foundation President/CEO to Retire.....	409
Opportunity Knocks.....	410 - 412



An Overview of Training Staff and Rhinoceros for Ultrasonography Procedures

By

Wendy Shaffstall, African Plains/Rhinoceros Keeper
Kansas City Zoological Gardens, Kansas City, MO

In 1996 and 1997, Kansas City Zoological Gardens confirmed its commitment to endangered species conservation with the importation of two female eastern black rhinoceros (*Diceros bicornis michaeli*). These females were to be paired with males currently at the institution. Both males are under-represented genetically, so the pairings with these females would add valuable genetics to the captive population.

Prior to any introductions, we carefully documented behaviors and estrus activity on monthly summary sheets to determine cycles. Once the pattern of behaviors and interval of cycles was determined, we proceeded with our plan for introductions. After successful howdying and olfactory contact phases were complete, physical introductions took place. As a result of these efforts, we had successful breeding of both females.

Ultrasonography has been used to detect and measure reproductive structures in a variety of animals (Adams, 1991). I felt, through a series of consistent steps, we could condition our animals to tolerate this invasive procedure without resorting to immobilization. Unfortunately, due to the body mass of the species, the procedure required the use of a hand-held transducer to image structures transrectally. The animal(s) must be conditioned to maintain the desired position during the procedure to ensure adequate imaging.

A protocol to condition the animals for full confinement within our chute and subsequent ultrasonography procedures had already been drafted. The protocol had been approved, but staff experience impeded its implementation since none of the staff had experience conditioning animals for this type of procedure. But, we had successfully conditioned for routine veterinary examinations, mouth/dentition inspections, blood sampling, etc. without needing to immobilize or confine the animal(s). But the ultrasonography procedure would require the use the chute. I would have preferred to complete the restraint training, then initiate ultrasonography training, but the mechanics of confinement impeded our progress. Confinement involved training of an animal to enter a chute upon request and maintain position until released (see Figures 1 & 2 for views of chute). While the animal is positioned, the door is closed to the chute. The animal is appropriately bridged and rewarded for maintenance of position while a door is moved. Calm demeanor while in the chute is reinforced to begin to establish the desired behavior. However, it was quickly determined that the noise associated with movement of the heavy door behind the animal was having negative implications. At this point, I felt we could slowly acclimate the animal to confinement while initiating our ultrasonography training. By following this pattern I could have the animal conditioned, but not delayed by the problems associated with confinement.

Initially, all conditioning involved only one person daily. But, it became apparent that a second person would be needed for these procedures. After discussion with supervisor, I secured the necessary approval to involve additional staff in conditioning. Since there is no time in our schedule dedicated to conditioning, the involvement of additional staff required the cooperation of all personnel in the area. But we felt the opportunity for

staff exposure to, and involvement in, ultrasonography and confinement training would be invaluable.

The animal(s) had previous exposure to the chute and were permitted to transfer through it on a periodic basis. However, it did require some time to acclimate the animal to coming into the chute with the front door closed, and remain there for desensitization. The desensitization for ultrasonography took place in the chute and was conducted daily. In addition, after the morning session was completed, the animal received its grain ration in there. Initially the grain was placed at the entrance to the chute, then gradually moved further inward. While the animal consumed grain ration, staff would periodically enter area to verbally and physically reinforce animal. I felt the time spent focusing on these positive actions would benefit us in the long run.

As with any conditioning program, the animal dictates rate of progression. We wanted a prompt response to a command to enter, maintain position within chute (while assuming a relaxed body posture), then exit chute when released before proceeding. The next step involved requesting the animal maintain position while we walked towards its hindquarters. We acknowledged the animal's compliance, but did not reward at every bridge. As a result, the animal responded to position command and remained there while we walked to hindquarters and returned. Following that, we acclimated the animal to tail manipulation and tactile contact of the anogenital region. At first we would just grasp tail and bridge for acceptance of this procedure. Then we progressed to grasping tail, manipulating it, and rubbing

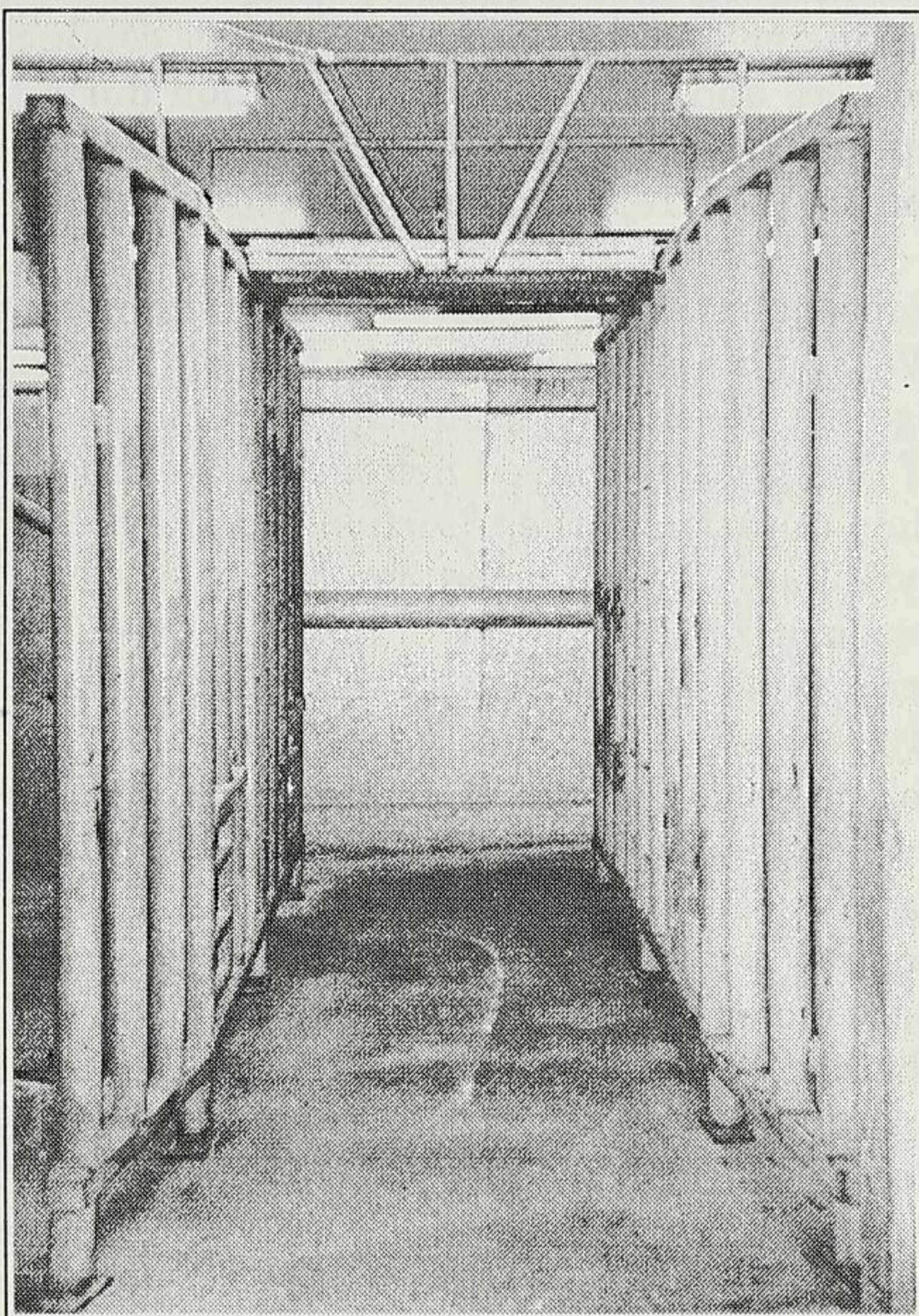


Figure 1. View into confinement area.

anogenital region while continuing to bridge periodically for relaxed tail and body posture.

To continue to desensitize animal to all aspects of the proposed procedure we needed to start to simulate the transducer itself and the insertion process. While one keeper would initiate the transducer desensitization exercise, the second person would remain positioned at the head. To begin, we secured an empty, twelve-cc syringe case and let the animal sniff the case and we rubbed it against her skin. We then proceeded to follow routine conditioning procedure, but

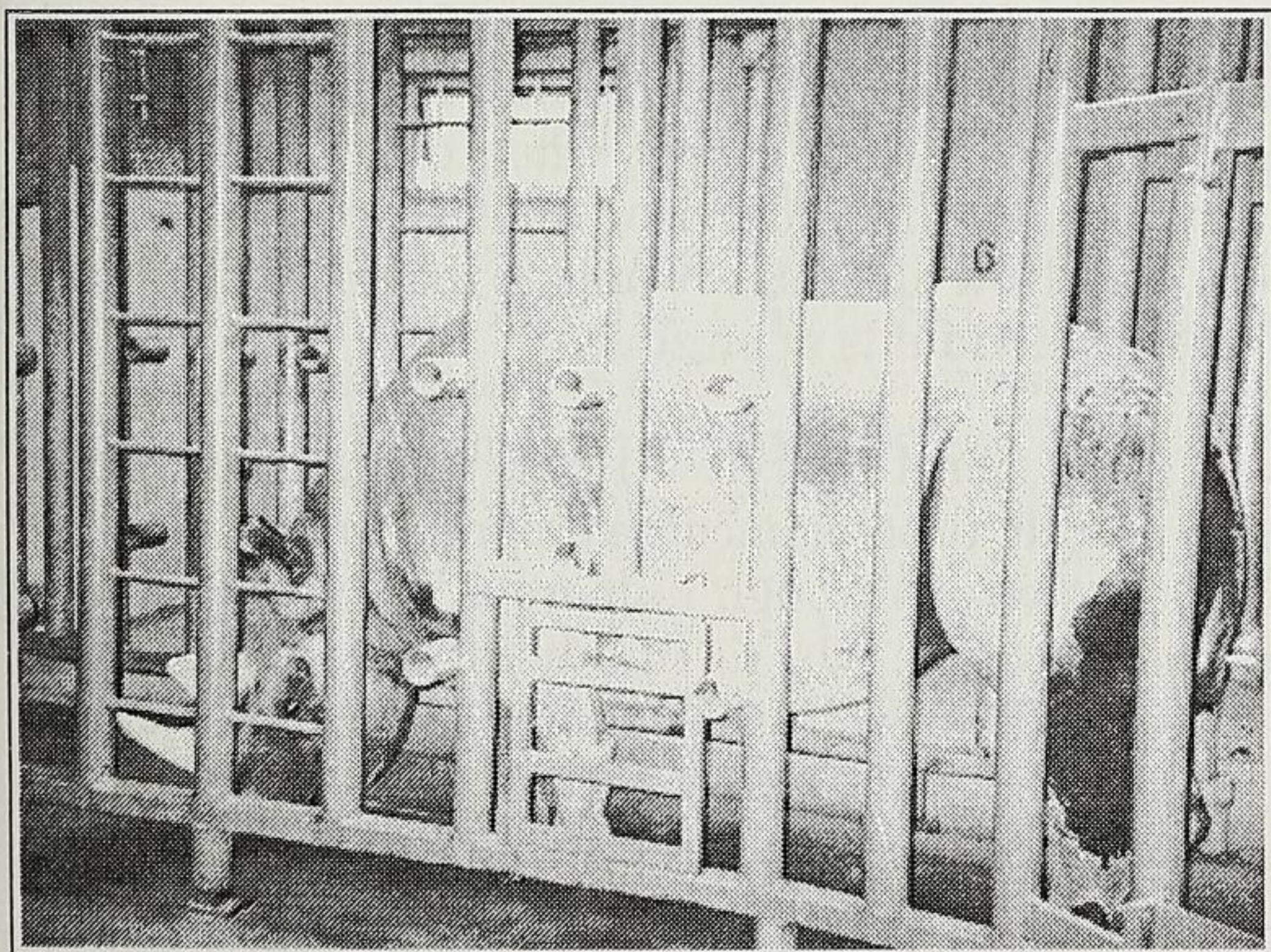


Figure 2. View of animal within the chute, but not confined.

instead of rubbing anogenital region with our hand, we used the syringe case. When the animal was desensitized to this, we would push the syringe case gently against the sphincter muscle. As before, keeper conducting the exercise bridged for relaxed body posture and maintenance of position during procedure while second keeper rewarded animal at bridge cue. We felt this method would ensure accurate bridging, and reward, for the posture and calm demeanor we required for this procedure.

Subsequent steps involved desensitizing animal to actual insertion of the transducer. We would apply lubricant to the end and sides of the syringe case and after pushing against the sphincter muscle, would insert the end of it in the rectum. The progression of this phase involved increasing the length of case inserted into the rectum and the time duration of the insertion. The next transition involved the use of an empty, 60-cc syringe case, but used the same gradual acclimation process. The final step in desensitization (for the transducer) required an increase in the length of the device inserted to simulate the approximate distance required to image reproductive structures. By reviewing Dr. Nan Schaffer's videotape, (1999), I could estimate this length. I constructed the new transducer simulator using a 60-cc syringe case, length of hose, duct tape and a plastic storage bag. The base of the hose was pushed into the syringe case and secured with duct tape. The storage bag was turned inside-out (to avoid sharp edge of bag seal from irritating lining of the rectum) and covered the syringe case and hose to form a continuous, smooth surface. The bag was tightly wrapped and secured to the hose but still provided a quick, easy means of changing the covering. This process ensured the smooth insertion and withdrawal of device. As with the syringe case, this device was liberally covered with lubricant. We repeated the same gradual acclimation process with this device and eventually increased the time span the device was in position. All staff had the opportunity to be involved in all aspects of this training as well as the daily conditioning documentation process.

We appeared to make consistent, steady progress with the ultrasonography conditioning, but the confinement conditioning was not progressing. We continued to focus on establishing a positive "atmosphere" during the confinement process. But, the animal continued to become agitated when door was closed behind her. However, once door was closed, the animal resumed a relaxed body posture and calm demeanor within one minute. This scenario persisted but we felt that continued desensitization to the door movement was the best avenue to pursue. We also faced the consequences of using this "keeper unfriendly" device for confinement on a regular basis. Only a few of the staff could easily manipulate the shift door and the animal quickly focused on these persons and refused to enter the chute when they were present. This limited our actions but the animal still responded appropriately to all commands by all staff, except when these individuals were in position at the shift door. Thankfully, the supervisor alleviated some of the problem by working on the door rollers, etc. Now all staff are able to move the door and animal could not focus attention on select individuals at shift door.

As mentioned, the staff had received the general overview I had written regarding confinement and ultrasonography training. But, to accommodate progress in confinement training and resultant animal response, we went through numerous revisions. I also refined the process itself to ensure consistency. Up to this point the majority of confinement procedures had involved few staff, but with the door repairs completed, we could maximize the training opportunities for staff. Participating staff needed to be proficient in all aspects of the confinement so, to this end, I initiated a four step training process. The first step consisted of a verbal review of the procedure and safety guidelines, confinement simulation without the animal, then observation of all aspects of an actual procedure. In the second step the person is actively involved in reinforcing the animal and is responsible for moving the shift door to release the animal. The third step involved

closing the door to confine animal and placing the pipes behind the animal. During this step, while the person completes the tasks, an "extra", trained person stands nearby to assist, if needed. The final step is the completion of the aforementioned tasks but no "back up" person is present. From this point on, the person can function as part of the two-person team required for confinement. The scheduling and training itself seemed to progress with only minor deviation and feedback from staff was positive.

With the transducer simulations complete and confinement proceeding, albeit slowly, we had a few more actions required to finalize the desensitization. The animals were accustomed to the Senior Staff Veterinarian and technician, but had no previous exposure to the machine itself. We needed to mimic not only the mobile equipment required for the procedure, but the movement into and down the building as well as manipulation within the confinement area. To this end, we borrowed a noisy television cart with rollers and the television for our training. Initially the device was set at the end of the building and tuned to static. Over the next several days, we moved it closer to the confinement area daily. Once at the confinement area, we desensitized the animal to it and reinforced the animal for proceeding past it. Within a short period of time, the animal did not appear to focus any attention on the device. Then, during our routine conditioning sessions, one person would condition within the chute and second person would manipulate the cart around the area. The final phase of this desensitization was to imitate the actions to be taken when we would perform the actual procedure.

Every morning staff would open the chute, then wheel the cart down the hall and into the confinement area, then initiate normal conditioning routine. We progressed with her desensitization to the equipment by having Senior Staff Veterinarian and technician set up equipment, etc. prior to initiating our conditioning routine. We would then proceed with our conditioning and confinement procedure. However, as we progressed, it was determined that the time required to unload and set up equipment and additional staff present was having a detrimental effect. Therefore, we alternated this schedule to see if one method worked better than another. We determined that if we continued with our normal conditioning routine, then confinement while beginning to reinforce desired behavior/position while equipment is set up, it seemed to not only proceed more smoothly, but animal responded positively. And since she was previously desensitized to equipment begin manipulated within the confinement area, she generally did not pay any attention to these activities. This method continues to be used and has proven successful in our situation.

The last task to be accomplished was the acclimation of the animal to a person stepping behind it while confined. This is essential since the procedure will require the Senior Staff Veterinarian to be directly behind animal. The pipes, once placed, will provide a space for him to conduct the procedure by prohibiting her from backing into the shift door. As always, this was a gradual process. We started by having a person physically reinforce her while moving towards the hindquarters. Once in position, the person would continue to verbally reinforce while stepping through the pipes. The animal did react to this change in location, but within a short period of time would only shift slightly to view the person as they stepped behind her, then re-focus on the person reinforcing her at the head. At first, all this person did was stand behind her and talk to her. But, we gradually proceeded to having this person rub her hindquarters, then grasp tail and manipulate it. Finally, this person would conduct the probe desensitization from this position to mimic the posture and action of the veterinarian. Throughout the entire training process, the Senior Staff Veterinarian was kept apprised of our progress by verbal communication. We felt, at this point, we were close to the goal of being able to conduct the procedure, but would like him to observe the process. By reviewing the process, animal positioning, and probe desensitization procedure he could make any suggestions for corrections that

might be needed. We did not need to make any corrections per se, but learned exactly where animal needed to be positioned to accommodate the equipment and its cables.

Due to our efforts, we were able to accomplish not only transrectal ultrasonography but, to a limited extent, transabdominal ultrasonography as well. We continue to perform ultrasonography on a weekly basis and we may do the procedure both transrectally and transabdominally. These procedures enable us to evaluate fetal viability and get measurements of physical structures. Since the procedure may take from 20-60 minutes, we continue to periodically bridge and reward for relaxed body posture and compliance with our positioning requirements. Once the procedure is concluded, the shift door is opened and the release command is issued. At the completion of her release, the animal receives abundant verbal and physical reinforcement. Additionally, we go right back into the confinement area, sit quietly and reward the animal when she enters the chute. We do not command her to enter, but rather, provide the option of interacting with us of her own volition. The animal receives more verbal and physical reinforcement for this action and a whole piece of produce as a "jackpot". This also permits us the opportunity to evaluate her attitude and posture as she re-enters the confinement area after just completing a confinement procedure.

We feel that the time we spend serves to reinforce/associate the positive atmosphere in the confinement area while adding opportunity for interaction. Animal continues to progress and remains relaxed within the chute, and responds promptly to requests. However, she still shifts her focus to monitor the movement of the door behind her and is hesitant to enter the chute at times. We continue to desensitize her to door movement and do see subtle improvements.

The staff continues to work with her on a regular basis. We now conduct daily fetal assessments by timing the interval between the calf's kicks (see Figure 3). As mentioned, ultrasonography is done weekly. And, we measure anterior and posterior girth dimensions on a monthly basis. I am also in the final phase of a research project to correlate urine and serum hormone levels with behavioral observations. This project will span 22 months and has provided another educational avenue for area staff. All have participated in either the biweekly, midstream urine collection or weekly blood sampling and as the data becomes available, I post it in the barn for staff review.

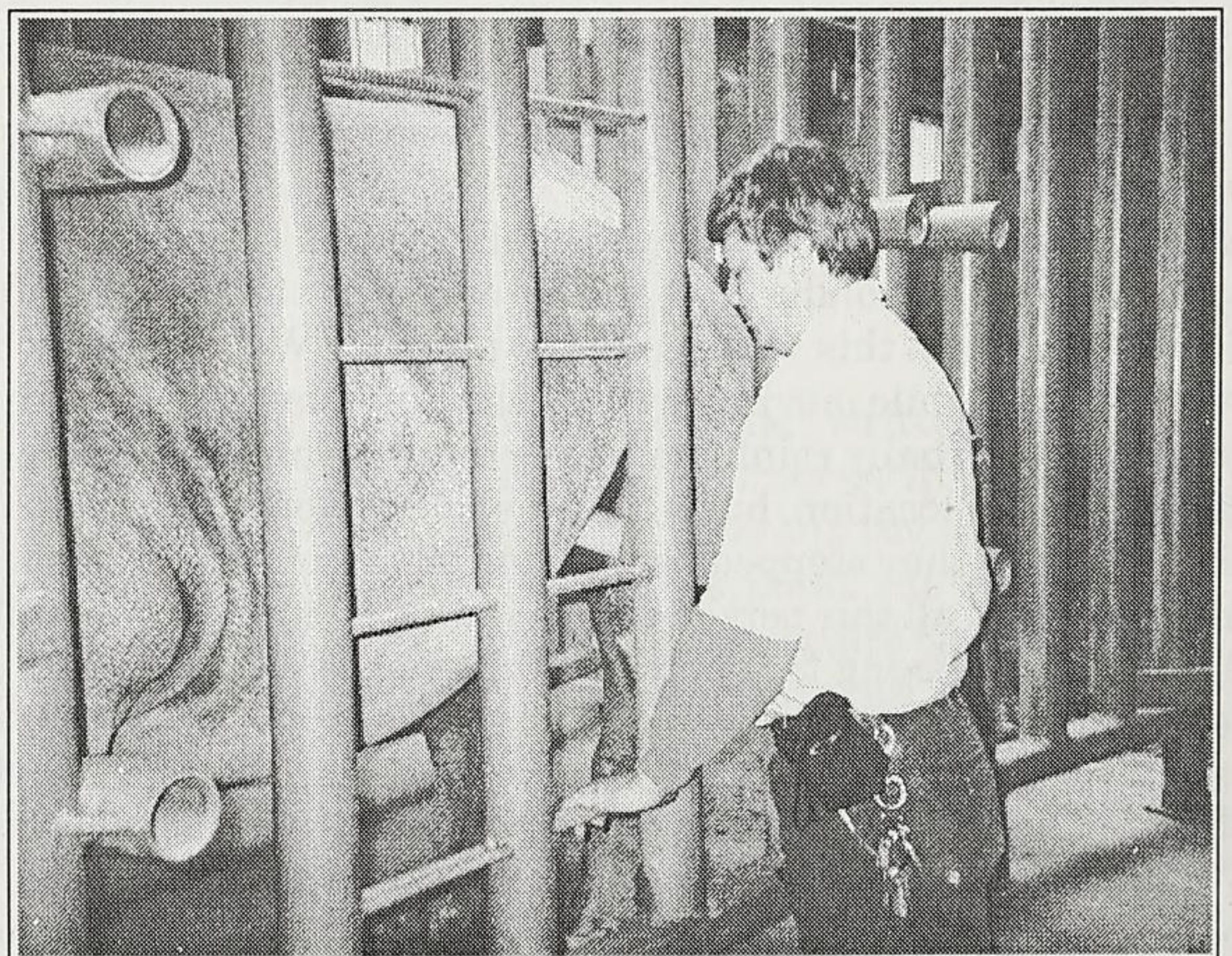


Figure 3. Staff conducting daily fetal assessment.

I feel the participation and cooperation of area staff was imperative to our success. We all gained invaluable experience in conditioning for this procedure. Additionally, I tried to encourage participating staff to volunteer suggestions or changes at any time. I communicated any training protocol changes to staff while coordinating procedures with Senior Staff Veterinarian. Upon reflection, there are minor changes I would have made. The process itself took longer than expected since we discontinued conditioning for various lengths of time depending on introduction schedule and exhibition schedule. But, I feel the results were more than satisfactory, given the obstacles we had to overcome.

Acknowledgments

I sincerely wish to thank Brett, Lisa, Tracy, Aimee and Kristen for their participation and persistence while conditioning for this procedure. I would also like to thank Agelon Jones, Area Supervisor, and Dr. Wm. Kirk Suedmeyer, Senior Staff Veterinarian, for their encouragement, support and advice throughout this project.

References

Adams, G.P.; Plotka, E.D.; Asa, C.S.; Ginther, O.J. Feasibility of characterizing reproductive events in large nondomestic species by transrectal ultrasonic imaging. *Zoo Biology* 10:247-259, 1991.

Schaffer, Dr. Nan. SOS Rhino. "Semen collection methods, reproductive anatomy and ultrasound images in the rhinoceros" (videotape), 1999.

(Photos by author Wendy Shaffstall)

Chapter News Notes

Kansas City AAZK Chapter

Already halfway through the year 2000 and we are busier than ever. In March we held our 13th Annual Bowling for Rhinos bowl-a-thon and raised around \$3,000.00. We want to thank all those who bowled, purchased raffle tickets, donated prizes, and of course, our sponsors. This is one battle completely worth fighting for.

For the 30th annual "Party for the Planet" in April, we set up a booth showing how the Kansas City Zoological Park was in the past, present and will be 30 years into the future. The day was capped with perfect weather and great attendance.

Things we are working on include our 3rd annual "Pie Throwing Contest". It's not just a good way to raise money, but also releases pent-up frustrations. Our Chapter's core committee for the 2002 AAZK Conference here in K.C. has selected the site and is working strongly with all facets of our community and other organizations. Of course, fundraising is already underway.

Through generous donations from local grants and the AAZK Chapter, we have

been successfully tracking our female Black Rhino's pregnancy through urine, serum, and ultrasound analysis. For all those who are interested in seeing our pregnant cow via "Rhino Cam", click on to www.thekansascitychannel.co/news/rhinocam

--Aimee Goldcamp, Chapter Liaison

Milwaukee AAZK Chapter

Again we had another successful bowling session for Bowling for Rhinos. Keepers from the Racine Zoo joined us and we had a ball! This year we raised \$1500.00 from our 30 bowlers.

Recently our Zoo had its Conservation Weekend event. The theme for our Chapter was Rhino Hornbill Conservation. At our information booth we sold grab bags full of little goodies, and managed to raise \$240.00. Our Chapter then decided to use this money to adopt two Rhino Hornbill families for one year through the Thailand Hornbill Project run by Dr. Pilai Poonswad.

--Earl Conteh-Morgan, Chapter Liaison