



Peter, Paul, and the Parabola

by M. Peter Keane

M. Peter Keane, director of quality control for Home Box Office, was an undergraduate student in ornithology at Cornell when bird song recording was just beginning. He recalls his part in the birth of the first parabola made for the recording of bird sounds. At left, Paul Kellogg, sound truck, and parabola.

I WAS FORTUNATE enough to be studying under Dr. Arthur A. Allen when the combined talents of Allen, Albert Brand, and Paul Kellogg were propelling us toward the first breakthrough in bird song recordings.

I took all of Doc's classes. One was an entry level course in bird identification which was taken by many arts and science students. Then there were the professional courses. George Sutton was around for a while as was a graduate student named Pettingill.

As a special project, Doc teamed me up with Albert Brand. The impetus for pursuing the recording of bird song was provided by Albert when he arrived at Cornell in the 1930s. He had been a stockbroker in New York City who, at the age of about 40, sold his seat on the stock exchange, retired from business, and began to study his real passion, nature.

Albert was very interested in birds and a friend of his, Frank Chapman, an ornithologist at the American Museum of Natural History in New York, told him "if you want to learn more about birds, you ought to go to Cornell." Even before he got to Cornell, Albert had heard of Doc Allen. Doc had written books and had gone on successful expeditions.

Albert soon learned the importance of identifying birds through their songs and asked if phonograph records existed. At that time only the Fox-Case Movietone Corporation had a recording of a song sparrow made with the assistance of Doc Allen. Albert then offered to fund and operate a project to record all possible bird songs in the wild.

His first step was to ask for help from a friend in New York City, David Sarnoff, chairman of the Radio Corporation of America (RCA). When Albert explained his project, Sarnoff proposed that Albert

bring the birds into his recording studio—not very practical. Albert then found an electronics engineer who built an amplifier he thought would be powerful enough to record bird songs. Encouraged, Albert bought a sound-on-film recorder and a panel truck to house the equipment.

In the days before audio tape, sound recording was done on 35mm film, and it had to be sent away to a laboratory for development. When the film returned to Ithaca we rented the State Theater to hear our results. One of the first recordings included a loon, which seemed pretty faithful; however, the meadowlark we had recorded was totally distorted. Albert said it sounded like a Bronx cheer. The equipment simply could not handle the higher frequencies contained in many bird songs. So Albert enlisted the aid of Professor True MacLean of the Cornell electrical engineering school and Arthur Stallman, a local consultant. They were able to build a properly designed amplifier that could handle the high frequencies.

But there was still much to do. Besides a good amplifier we needed a sound reflector that would make faraway bird sounds seem louder. It just so happened that during World War I a Cornell physics student, Harley Howe, had made a plaster parabolic sound reflector to evaluate its use in detecting enemy airplanes. Now years later, that reflector was pulled out of storage and used as a model for the lightweight, portable one we needed.

With the help of Paul Kellogg, who had expertise in electronics, we made a copy of Howe's reflector. I contacted some people at the American Museum of Natural History and told them we needed a lightweight, hard substance with which to make our parabola. They gave me a formula that consisted of plaster of Paris, shredded building paper, and a powdered milk by-product. It

made a bone-hard substance when it dried. In fact, the museum people said they used it to make bodies of elephants for their exhibits.

The parabola worked surprisingly well. Its operator would point it toward a singing bird while the sound operator in the truck would watch the strength of the incoming signal on a VU meter. Communication between the parabola operator and the recording operator in the truck was two-way. The truck operator, observing the song signal, would advise the parabola operator through earphones when the sound was loudest. The parabola was very directional and when it was right on a bird the signal suddenly became very loud.

Over the next few years, recordings were made with difficulty since singing birds often flew away while the equipment was being set up. Also, noise from farm tractors or even nearby birds would damage the quality of the recording. Nevertheless a small, reasonably good library was acquired and Albert had a disc record cut, "Bird Songs Recorded from Nature," followed by his own book on bird song recording which contained several small discs.

When the far superior technology of audio magnetic tape recording became available after World War II, many species were recorded again, this time with an advantage. Now a recording could be made and immediately played back through a loudspeaker, instead of being sent to a laboratory. The singing bird hearing its own song will often fly close to the loudspeaker to challenge the "intruder." At that moment the tape machine can be switched on and an excellent recording can be made.

The parabola, however, has not been surpassed in its ability to pick up and concentrate bird song, and although today's models are made of aluminum or plastic, the basic instrument is unchanged. 