gestions that nearly always made the work more incisive. I regretted the fact that he spent most of his time away from the lab, writing about abstract issues rather than doing experiments. Still, despite his scarcity around the lab there were a few special opportunities to learn directly from the great man. Several of us were enlisted as exam graders for the final edition of his large undergraduate course, which entitled us to sit in on all the lectures. He also taught one graduate seminar in which a manuscript-in-progress was placed on the table—very exciting stuff, concerning issues like what is at issue when we speak of ''seeing that we see.'' He was the sole examiner for one of my preliminary examinations, on the psychology of music (how that came to be is a story in itself). But the best lesson in mentoring came on the day of my final oral exam. As I sat at my desk stewing about the impending event, Skinner appeared at the door (first time ever, I believe), and immediately engaged me in conversation over some details of my first experiment. He then asked me how I had come up with the idea in the first place, and that led naturally to further possible work that might follow. I was just getting into this topic when he looked at his watch and said, ''I think you're warmed up now. Let's go!''

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Ogden R. Lindsley (1951–1964)

OUR HARVARD PIGEON, RAT, DOG, AND HUMAN LAB

Much, much, more than pigeon research happened in the west end of Harvard's Memorial Hall basement in the early 1950s. We called both the rooms used by Fred Skinner and his doctoral students and their regular staff meetings the Pigeon Lab.

The Pigeon Lab suite had seven rooms. Skinner had his own and a secretary office. A small narrow room gave four graduate students desks. In a small shop we built and repaired prototype apparatus. In our supply room we found new apparatus parts and old apparatus to cannibalize. In our experiment room pigeons pecked away in their free-operant chambers. In their dormitory, pigeons waited in their home cages, superbly cared for by Mrs. Papp.

The informal pigeon staff meetings usually included the current Memorial Hall pigeon staff plus all the free-operant troops from central New England who could come to the seminar room in Memorial Hall on Friday afternoons (Skinner, 1983, pp. 26, 135). A sampling of those not working in Memorial Hall follows. Jim Anliker, Peter Dews, and John Falk, from Harvard Medical School. Mike Harrison from Boston University. Don and Pat Blough from Brown. Marc Waller from Jackson labs in Bar Harbor, Maine. Barbara Ray, Paul Touchette, and Bea Barrett, from Fernald School, and my postdoctoral students and I from Metropolitan State Hospital.

While I was a German prisoner of war I promised myself that if I survived, I would spend half my life having fun and the other half studying people and trying to stop war. Back at Brown University I double majored in psychology and biology as a first step in stopping war by helping to build a science of human behavior. I yearned to move my research from rats to people. At Harvard, I saw Skinner's pigeon experiments as even further removed from people than rats. But his methods were superb! So I introduced a rat demonstration to Skinner's course, Natural Sciences 114, which Skinner and Harvard called ''Human Behavior'' and the students called ''Pigeons.''

Figure 1 shows Samson Rat pulling down his weights. I designed and built Samson's weight machine in our Pigeon Lab shop. Samson pulled several times his own weight demonstrating results of shaping to the students. They chose Samson as the class demo hit of the year! Samson's acclaim caused his demonstration to endure in Natural Sciences

Fig. 1. Ogden Lindsley adjusts the weight while shaping Samson Rat to pull down up to three times his body weight for a class demonstration in Skinner's Natural Sciences 114 course at Harvard in 1952.

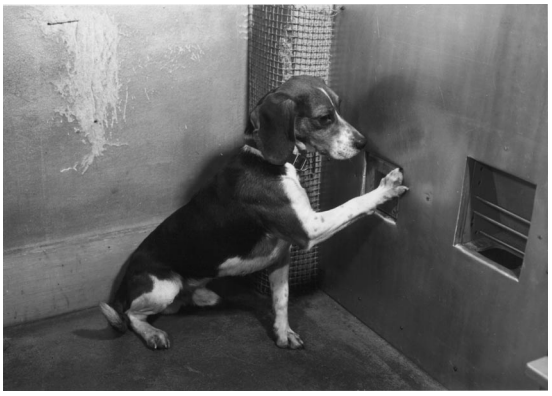

Fig. 2. Hunter, 2-year-old male beagle, presses a panel on a 1-min variable-interval schedule while watching for a dab of ground meat reinforcement to appear in the magazine opening to his right. Relocating the bars adjusted the opening to fit different dogs' noses. Hunter survived an LD50 dose of 300 roentgen units of total body irradiation in 1953 and became the Skinner family pet.

114 for a couple of decades. Ralph Gerbrands built a durable copy of Samson's weight-lifting machine out of stainless steel and brass in the Psychology Department shop.

Figure 2 shows Hunter discriminating while pressing a panel for dabs of ground hamburger. Of the 65 beagles that I trained for Boston University's total body radiation Atomic Energy Commission research project, Hunter learned most rapidly. I designed and built Hunter's prototype dog apparatus in our Harvard Pigeon Lab shop.

This research produced 10 products:

One, dogs got me closer to people than had pigeons and rats. Dog blood is so close to that of humans that research pharmacologists prefer to study it over other animal blood.

Two, we had brought another new species to the free operant.

Three, by using benzedrine, nembutal, and alcohol as well-known substance effects before radiating the dogs, we had socially valid standard effects to use in gauging the size of any radiation effects we might find.

Four, we had built a stable 1-hr behavior sample including baseline variable-interval responding, a flashing light visual S^{Δ} discrimination, and a buzzer followed by a horn blast conditioned auditory fear suppression.

Five, the LD50 (lethal dose 50% of the dogs died) of 300 roentgen units of radiation has a temporary immediate effect 1 hr after radiation extending the fear by disrupting the variable-interval baseline.

Six, only responding for food was disrupted as the dogs sickened and half died from maximum leukopenia (no white blood cells) about 15 days after radiation. The visual discrimination and sound-conditioned fear suppression continued without disruption until death (Jetter, Lindsley, & Wohlwill, 1953).

Seven, we first demonstrated using aversive loud noise for an aversive stimulus.

Eight, part of this research became my doctoral dissertation (Lindsley, 1957).

Nine, Nathan Azrin, a graduate student at Boston University, daily observed me working with the dogs and became interested, and we did a human social cooperation experiment together (Azrin & Lindsley, 1956). I designed the experiment by translating Skinner's three-key cooperating pigeon demonstration to human use by giving each child a wired stylus to act as a beak. I built the apparatus in the Pigeon Lab shop. Nate found a school, ran the students, and collected the data. Lat-

er I introduced Nate to Fred Skinner. Accepted as a Harvard graduate student, Nate did extremely well and got his PhD before I did!

Ten, Hunter, the brightest dog of the lot, survived to join Fred, Eve, Debbie, and Julie Skinner in their home on Old Dee Road, Cambridge (Skinner, 1983, p. 91)! Julie taught Hunter to pull a dog cart at their summer home on Monhegan Island.

Figure 3 shows our third daughter, Catherine Lee Lindsley, free panel pressing in her air crib. I built an experimental panel to put in one end of Cathy's air crib in our Pigeon Lab shop. I designed and built various hanging toys and flashing lights, which Cathy operated by pressing a signal on the lit panel at one end of her air crib. Sound proofed and child proofed, locked, and insulated, boxes under her crib held the cumulative recorder, counters, and relays that recorded Cathy's panel pushing to operate her toys. Our biggest discovery was Cathy's intermittent responding that gradually became more regular and even as she matured. These first human free-operant cumulative recordings were shared at a meeting of the Eastern Psychological Association (Lindsley & Lindsley, 1952[1]). *Newsweek* published a short note and photo describing Cathy's recorded play, which they titled "Babe in a Box." Several experimental psychologists attacked me for doing research on our daughter, and for depriving her of toys during parts of her day to see if it would increase her response rates when she had toy access.

Mine was not the only nonpigeon research spawned in the Pigeon Lab. Other Pigeon Lab folk pioneered with other species. But that is their story to tell. Those early 1950s were glory years at Harvard! We all wanted to prove the generality and sensitivity of our free operant by bringing in new species. I can still feel the excitement when we heard the rumor that Peter Dews had free-operantly conditioned an octopus while on a visit to Italy! In Hot Springs, Arkansas, Marion and Keller Breland were making a living training sheep, dogs, pigs, and chickens to perform astounding tricks in county fairs! Joe Brady had finally found a reinforcer for cats (expired human blood!) at Walter Reed Hospital. For political reasons, the American Red Cross prevented Joe from publishing the results of using their expired blood supply!

Fig. 3. Cathy Lindsley presses a panel to flash lights and sounds on a fixed-ratio reinforcement schedule in her air crib in 1951. The bank of 10 colored reinforcing lights alternated above the panel, which had a discriminative signal light in its center.

You have just read how my rat, dog, and human free-operant research was born in our Harvard Pigeon Lab. Yes, many other wonderful and varied experiments grew from those few pigeons pecking keys in their boxes at 180 responses a minute!

[1] Lindsley, O. R., & Lindsley, M. (1952, March). *The reinforcing effect of auditory stimuli on operant behavior in the human infant.* Paper presented at the meeting of the Eastern Psychological Association, Atlantic City, NJ.

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