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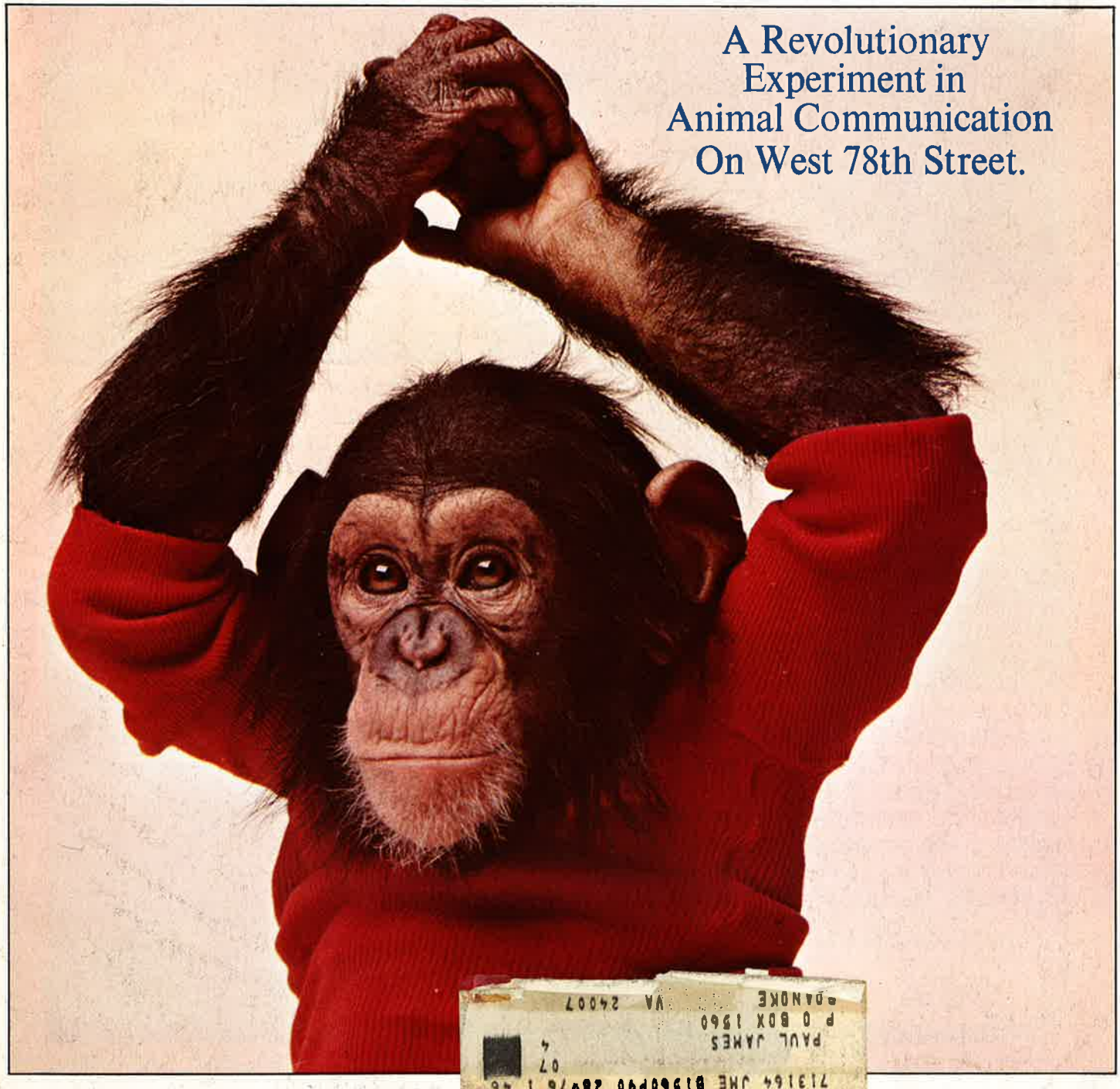
NEW YORK

First Message From the Planet of the Apes



NEW YORK

First Message From the Planet of the Apes

By Stuart Baur

"... In the near future, a man will ask a chimpanzee questions about his memories, dreams, and simmering resentments ..."

I met Herb Terrace for the first time on Columbus Day up at Columbia, where he is a professor of psychology. The first thing I noticed about him was that he was a ringer for Tolstoy, the young mustachioed Tolstoy when he was stationed in the Crimea, photographed in the tight military tunic of the Hussars. Before the two great books had been written. When Tolstoy was stumped by *The Cossacks.* When he had completed only the first third of *Childhood, Boyhood, Youth.* That's what Terrace looks like—Tolstoy before he was Tolstoy.

Terrace was genial as we shook hands; but underneath the geniality there was a trace of a habitual *anti*-anti-intellectualism. He knew that he was on the verge of an enormous intellectual gamble, perhaps a life's work, perhaps the sort of scientific revolution with religious consequences that occurs once every few hundred years. He agreed it was time to be written about, but he was clearly leery of being trivialized in print.

"I hear," I said, "that you and a squad of specially trained magicians are teaching a chimp to talk. . . ."

Terrace winced, told his secretary not to accept any calls for the next hour, and closed the door to his office. We sat down and he told me about Nim, the infant male ape upon whom so much depended.

Terrace said that Nim was being taught a vocabulary of *signs* as defined by the conventions of Ameslan, the American Sign Language, the gestural language of the deaf.

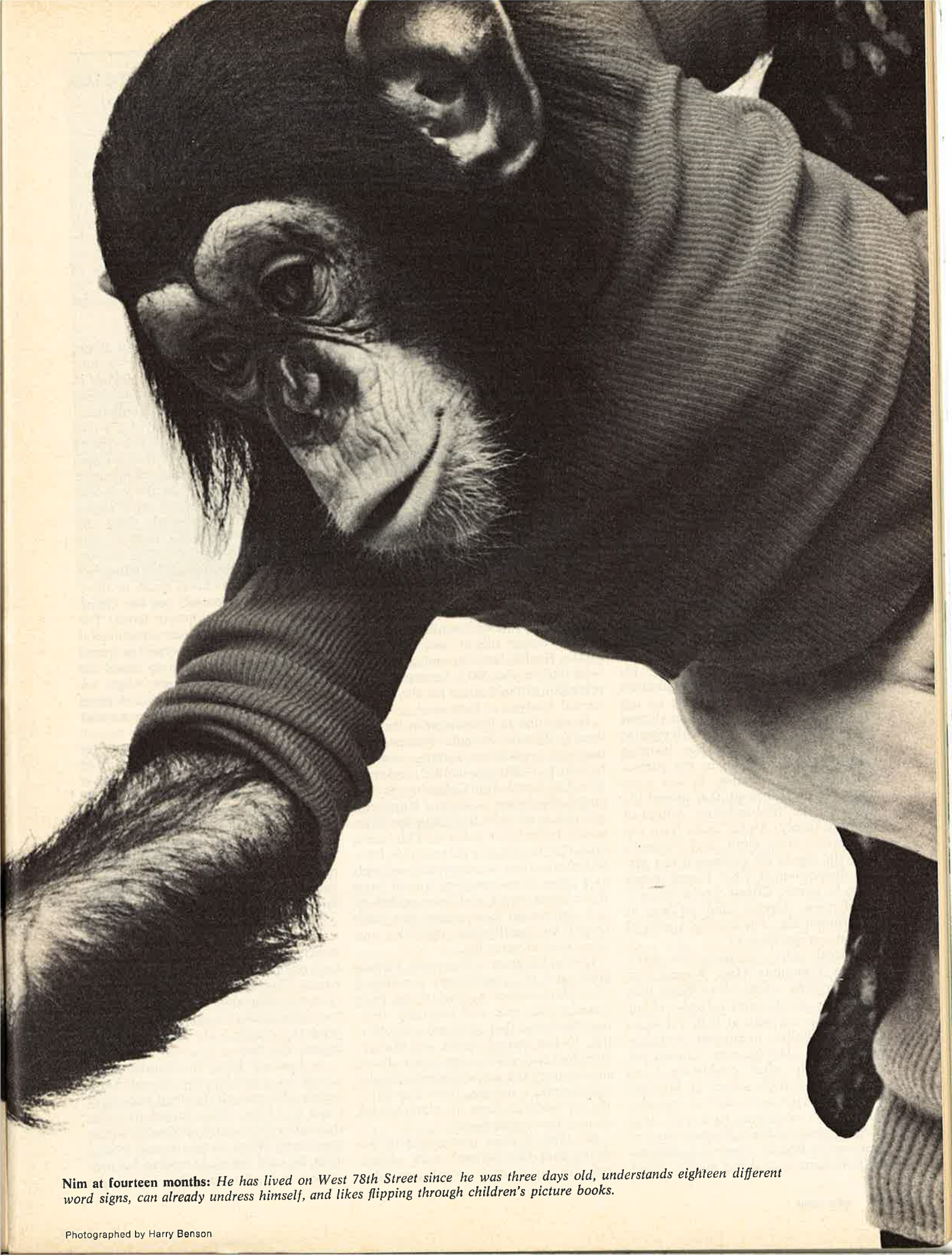
"As Nim masters more and more signs," he said, "I plan to determine whether he can combine them according to simple syntactical rules. When he has attained a vocabulary of 30 signs I want to find out to what extent this new vocabulary will influence his mental development." He and a colleague at Columbia, Thomas Bever, a psycholinguist, planned to test this relation between Nim's linguistic and mental development.

In the future, added Terrace, he planned to demonstrate and to record communication between two or more Ameslan-equipped chimps. Further ahead, he intended to train a signing chimp to teach a naïve one how to sign. And still further ahead, he said he wanted to breed two signing chimps and see whether, of their own volition, one or both of them would teach their offspring the American Sign Language.

But sometime in the nearer future, Terrace would be able to study the cognitive processes of the chimpanzee: a man proficient in Ameslan would ask a chimpanzee proficient in Ameslan questions about the chimp's memories, moods, dreams, simmering resentments, nightmares, and sexual urges, and, presuming the chimp were curious enough, would answer any questions the chimp had—man and chimp conversing in a sign language.

This epochal conversation, consisting only of an exchange of elegantly precise gesticulations, would be recorded and preserved on video tape.

With this and other evidence, said Terrace, he would have nailed to the wall proof that a subhuman primate can acquire a syntactical competence



Nim at fourteen months: *He has lived on West 78th Street since he was three days old, understands eighteen different word signs, can already undress himself, and likes flipping through children's picture books.*

Photographed by Harry Benson

"...'Terrace's dramatic rise,' said Skinner, 'perfectly illustrates what Pascal meant—"Chance favors the prepared mind"'..."

that at least overlaps with that of man. And once he had proved syntactical overlap, the age-old distinctions concerning man's uniqueness would no longer hold. Anyone still intent on preserving man's nobility in the hierarchy of nature would have to come up with subtler distinctions than the clincher that is usually advanced: man has language, animals don't.

It was pretty heady stuff, and Terrace, who is operating on a shoestring budget until he can secure adequate grant support, was well on his way. He had a nearly year-old chimp, and the chimp was picking up signs at a steady rate.

The assumption underlying Terrace's gamble is that the evolutionary gap between man and chimp is small enough to ensure that chimps have at least a primitive form of the neural mechanism needed to generate sentences.

"Mind you," he said, "I'm not the only one trying to teach a chimp a sign language. There are others . . . but I hope to be the one who is going to do it right."

"I would put Herb Terrace right up there at the top," said B. F. Skinner in William James Hall at Harvard. "Herb is one of the country's most distinguished behavioral psychologists. He was one of the best graduate students I ever had, if not the best. He set up, on his own, a series of rather elegant discrimination experiments with pigeons which proved that errorless learning results in a composure in the subject that maximizes learning. It was a remarkable breakthrough that turned the tables on the 'trial-and-error' school of learning theory. And it came from out of nowhere from Herb. And Terrace's dramatic rise in the profession is a perfect illustration of what Pascal meant when he wrote, 'Chance favors the prepared mind.' Herb's mind, as long as I've known him, has been in a state of constant preparedness."

A week after our wary first meeting on Columbus Day, Terrace, no longer fretting visibly about being trivialized in print, talked freely about himself. He was born in 1936 in Brooklyn to a Polish immigrant working-class family. He got into Cornell on a scholarship after graduating from Stuyvesant, a high school in Manhattan which, for over half a century, had been to the greater New York area roughly what the *Ecole Normale Supérieure* was to France—the most academically rigorous specialized public school of its time. Terrace graduated in the top 4 per cent of his class.

"In my senior year at Cornell," he told me, "I decided, against my parents' wishes, not to follow in the footsteps of my sister, who had become a doctor. I wasn't sure just what I wanted to do, but I stayed on at Cornell for another year and got my master's in psychology. Then I went up to Harvard to the Department of Psychology for my doctorate. For the first time I felt challenged to fight for my intellectual life. I performed my initial experiment in behavioral research on errorless learning with pigeons while I was taking a course given by B. F. Skinner. This was before he had published *Beyond Freedom and Dignity*. Before he was that widely famous. He saw the importance of the experiment and encouraged me. That's where it all began. . . ."

He received his doctorate in 1961, and after two years as an instructor in the psychology department at Columbia, Terrace began his serendipitous rise: he became an assistant professor in 1963; three years later an associate professor; two years after that a full professor at the age of 31. Along the way he has been a Josiah Macy Foundation fellow, a predoctoral fellow with the U.S. Public Health Service, and a Guggenheim fellow. In 1973 he was elected president of the Society for the Experimental Analysis of Behavior.

In addition to his interest in learning theory, Terrace became interested in language acquisition during a seminar held by B. F. Skinner in 1960, and since then has lectured at Columbia on language acquisition as viewed from various points of view, including the Skinnerian behaviorist position. This maintains that language is just another form of behavior and develops from scratch as a series of responses to stimuli from the external world, and that vocabulary and syntactical competence are reinforced by conditioning just like any other kind of behavior.

During his years at Columbia, Terrace kept tabs on experiments conducted with chimpanzees to investigate their learning processes and linguistic abilities. He found that since the early thirties, in the United States and Russia, there had been various attempts to teach chimpanzees the native language of the experimenters, but that there was virtually no evidence from the chimpanzees of an active vocabulary.

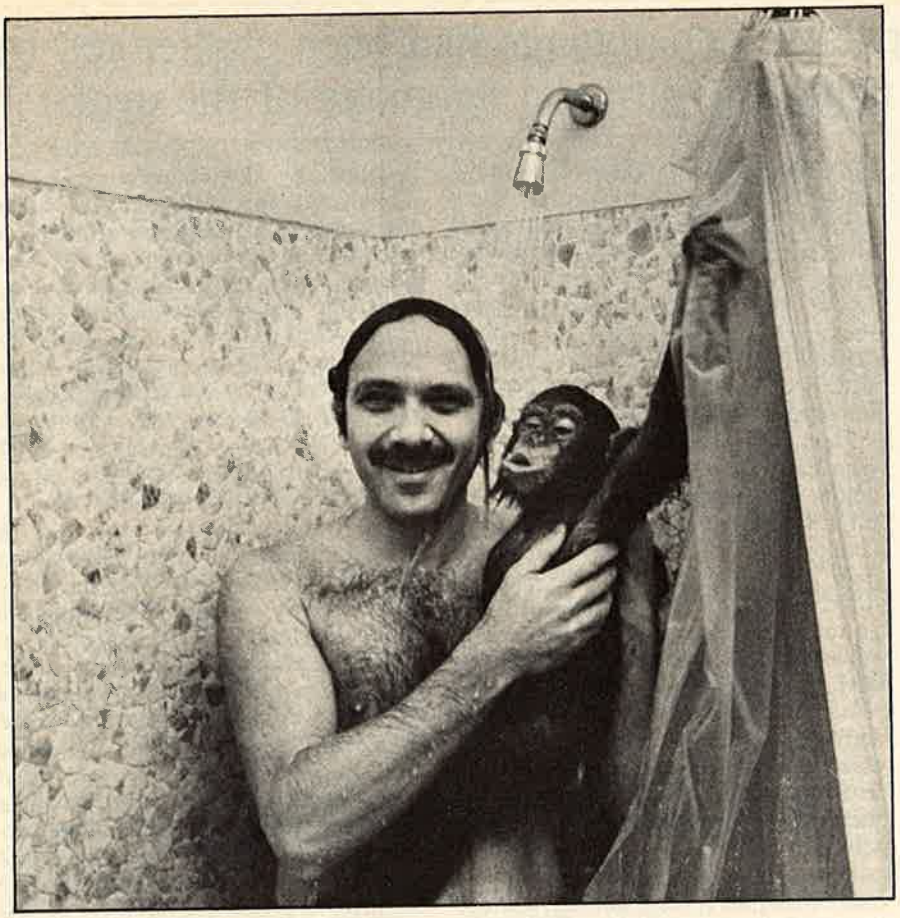
By 1965 it was pretty widely accepted that chimpanzees were phonologically inept: their vocal apparatus was simply incapable of producing anything more than a few very primitive utterances. Noam Chomsky concluded: "Anyone concerned with the study of human nature and human capacity must somehow come to grips with the fact that all normal human beings acquire language, whereas acquisition of even its barest rudiments is quite beyond the capacities of an otherwise intelligent ape."

Then one night in 1966 in Reno, Allen and Beatrice Gardner—a husband-and-wife team of psychologists at the University of Nevada—saw something the entire behavioral community had missed. They were watching a film made by Catherine and Keith Hayes which showed the result of their six-year attempt to get a female chimpanzee called Vicki to speak. The film was considered a classic of its kind, for of all the chimps experimented with since the early thirties, Vicki alone could manage *four words*, if encouraged. The encouragement took the form of swatting her on the neck, breastbone, chest, or stomach until she screeched out her chimp version of the appropriate word. The film was not shown as an experimental psychologist's triumph, but as proof that the very best a chimp could do with language acquisition after six grueling years of training was a mere four words that had to be pummeled out of her.

The Gardners, however, noticed that Vicki accompanied her meager set of utterances with hand gestures, and it occurred to them that although all speech is language, not all language is speech. Watching Vicki's hand movements they wondered whether it might not be possible to side-step a chimp's phonological difficulties with a sign language. A nonvocal, sign, or gestural language—it seems so obvious today.

The Gardners knew that there was a gestural language already available: Ameslan, in which a word is signified by a gesture made with the hand or the hands. They knew that Ameslan had a grammar of its own that organized gestures into sentences, and that it was the primary means of communication among the deaf.

In June of 1966, the Gardners acquired an approximately year-old wild female chimpanzee that had been captured in Africa. They named her Washoe, after the county in Nevada where they lived. With a few minor exceptions, the only language used in her presence was the American Sign Language.



A first: *Not for Terrace, but fourteen-month-old Nim has never had a shower before.*

At first the Gardners taught Washoe by rewarding her when she made more and more suitable approximations of the sign to be learned. But after the first year, another method, called *guidance* or *molding*, in which the experimenter actually formed the chimp's hands into the appropriate sign, proved to be more effective.

In a preliminary 1969 report of their Project Washoe, the Gardners listed 85 signs that satisfied their criteria. And by the time Washoe was approximately six years old, when she became too unruly to handle and was sent to the Institute for Primate Studies at the University of Oklahoma, she had an active vocabulary of 132 signs as defined by the conventions of the gestural language of the deaf.

Aside from their initial stroke of brilliance in trying a gestural rather than a vocal language, the real importance of Project Washoe was the Gardners' analysis of Washoe's multisign sequences.

Washoe made her first two multisign sequences (*gimmee-sweet* and *come-open*) when she was no more than two years old, around the time that human children utter their first two-word sentences. Between April, 1967, and June, 1969, 294 different two-sign combinations were reliably observed. Of these, 240 contained at least one of these signs: *come-gimmee, you, me, more, please, go, hurry, in, out, food, open, up.* With the exceptions of *me* and *you*, the signs most used in combination with the 120 others in Washoe's active vocabulary were those that included appeals, locations, and actions.

The Gardners' 1971 report on Project Washoe concluded that the signs really did serve constructive functions, and that based on a recognized system for describing acquisition of language in children, a subhuman primate had generated sentences for the first time in history!

There really had been nothing quite like it since 1908, when Freud murdered traditional philosophy with his theories of the instinctual nature of man and the unconscious. And now what remained—man's unique capacity for language and therefore for conceptual thought—had been challenged by a tongue-tied chimp using the gestural language of the deaf.

The American behavioral archipelago realized what had happened, and gave the Gardners credit for using a gestural language. But the psycholinguists with a stake in the acquisition of language as studied in children—Eric Lenneberg, Ursula Bellugi-Klima, and Roger Brown—balked at the Gardners' conclusion: were the multi*sign* combinations of a chimp similar to the multi*word* utterances of a child? Brown argued that the crucial tip-off to syntactical competence in a child's multiword utterances is word *order*.

For instance, if a chimp signs *come-gimmee tickle* as frequently as he signs *tickle come-gimmee*, it may simply be cranking out the signs appropriate for the incentive of being tickled, which is not the same as generating a sentence. And, Brown argued, since word order is "as natural to a child as nut-gathering is to a squirrel," unless one had frequency data for appropriate and inappropriate word order, Washoe's "semantic intentions" would remain a matter of guesswork.

Unfortunately, the Gardners had not bothered to assemble freqency data on word order. They still haven't published any, and Washoe has become known as the ape that almost, but not quite, made it into the hall of language.

Herb Terrace acquired his first chimpanzee, a young male called Bruno, early in 1968.

Terrace had casually mentioned to the Gardners in 1967 that he too hoped to try his luck with a chimp *someday*. A few months later, to his surprise, he got a call from Dr. W. B. Lemmon, the director of the Institute for Primate Studies at the University of Oklahoma, who wanted to know if he would like a newborn male chimp.

"I wasn't really ready for a chimp; the timing was all wrong. But when I mentioned Lemmon's offer to a former undergraduate student of mine, Mrs. Stephanie Lee, she volunteered the use of her apartment on West End Avenue. So, on March 5, 1968, I flew out to Oklahoma and brought Bruno in his diaper, all bundled up in blankets, back to New York."

"It seemed instantly and completely natural to us to treat Bruno exactly as one would a human infant," wrote Mrs. Lee in the progress report she kept between March 6, 1968, and May 25, 1969. "At the time we wouldn't have known how to do otherwise, since we had only our experience as parents to rely on."

Terrace and Mrs. Lee did not attempt to teach their first chimp any Ameslan. He was really part of an experiment, a dry run from which they hoped to gain invaluable practical experience as to how an infant ape adjusted to the household of a New York family. What intrigued everyone was the bond that developed between Bruno and Joshua, Stephanie's four-year-old son. "They were siblings in every sense of the word," wrote Mrs. Lee. "Theirs was a very intense relationship made more intense by the amount of physical contact they maintained."

After Terrace returned Bruno to Oklahoma in May of 1969, he left the country on a sabbatical at the Univer-

"...Man's unique capacity for language had been challenged by a tongue-tied chimp using the gestural language of the deaf..."

sity of Sussex, in England. Midway through the sabbatical he made a quick trip to Africa to see Jane Goodall, the young Englishwoman who had become expert on, among other things, the hoot-and-cry "alarm system" used by chimpanzees. Terrace was curious to know if Goodall had seen any signs of a gestural language in use among wild chimps. She hadn't.

"It didn't matter," said Terrace. "The fact that there is no indication of a gestural language in the wild should not be taken as evidence that chimps can't do so in a properly modified environment."

Terrace came back from his sabbatical convinced that he could pull it off. But three years slipped by before he got his second chimp, by which time two experimental psychologists, Premack and Rumbaugh, had published impressive papers on their work with caged chimps. Premack had used a token language; Rumbaugh, a computer-monitored lexigram language; but neither had provided overwhelming proof of syntactical competence. The time was ripe for Terrace to make his move.

He acquired his second chimp, the one he hopes to make history with, on December 4, 1973. Stephanie flew out to Norman, Oklahoma, to the Institute for Primate Studies, and brought Nim back to New York herself, to a three-floor town house on West 78th Street. Stephanie, recently remarried, was now Mrs. Stephanie LaFarge and the mother of seven children: three from her first marriage, four more from playwright Wer LaFarge's previous marriage. Nim was only two weeks old when he moved in with the nine LaFarges, Merika, a friend of the family, and a gentle, bewildered-looking police dog called Trudge. It was, to paraphrase Marc Connelly, a *complete* family.

Terrace and Stephanie were sure that Nim's exposure to a human home environment almost immediately after his birth would provide them with the best opportunity to teach him a gestural language and observe his linguistic responses. Washoe, the Gardners' chimp, had been kept in a trailer in their back yard, and became very spoiled. Terrace was sure that his emphasis on intense socialization, including strong discipline when necessary, would enable him to work with Nim at least until Nim reached intellectual maturity, an age estimated by Jane Goodall to be about sixteen. Washoe had become unmanageable by the age of six.

While Nim was being settled in at the LaFarge town house, Terrace arranged for his medical needs. Dr. Steve Lerman agreed to serve as Nim's pediatrician. For unusual emergencies, Professor Thomas Blumenfeld of the College of Physicians and Surgeons of Columbia University agreed to act as a consultant. Blumenfeld had wide experience with primates; he is the "pediatrician" for infant gorillas at the Bronx Zoo.

Next, Terrace contacted the people who had expressed an eagerness to be volunteer teachers in his project and informed them that he had acquired his chimp at last and that they should prepare themselves to sacrifice part of their vacations in the summer of '74 to go to special classes at N.Y.U. to learn Ameslan. He further stipulated that each volunteer would have to pledge at least five hours a week to Nim at the LaFarge town house and later at a special classroom-lab constructed for Nim in Schermerhorn Hall at Columbia. All the volunteers agreed to hold themselves in readiness.

Some of the members of the LaFarge household, plus Terrace himself, planned to attend the Ameslan classes at N.Y.U. This way, Nim would have about a dozen teachers. Terrace wanted to provide for him a stimulation greater than that provided for a human infant.

Although Terrace knew that the signs Nim would acquire would be determined by the chimp's proclivities and the varying abilities of his volunteer teachers, he drew up an initial target list: *up, hug, tickle, more, comegimmee, drink, listen, look, hurt, sorry, out, red, green, yellow, blue, white, black, book, key, Nim, me, apple, banana, who, shoe, on, in, below, above, you, go, baby, blanket, ball, flower, food, three, bottle, cat, toothbrush, smell, what, hurry, please, quiet, dirty, hammer, bird, where, dog,* plus all the names of Nim's companions.

The volunteers would have to write a short summary of their observations for that day. But once Nim started to sign regularly, video-taping equipment would be used. Terrace intended to video-tape as many sessions as possible. If no signing occurred, the tape would be erased. The signs that had been recorded, however, would be edited and stored in a permanent file that could be examined by *any interested party*, not just those who were present at the time. Ultimately, Terrace planned to invite deaf volunteers into the project to act as evaluators of this taped evidence of signing. Once Nim had acquired a vocabulary, Terrace wanted to see if he had an enhanced capacity for thought, and he was determined not to be accused of slipshod evidence.

We were in a restaurant around the

The adopted "child": *Stephanie watches patiently as Nim begins to recognize the kiss sign.*

Herb's reward? *Yes, but even a stranger can use Nim's favorite sign to gain such a hug.*

corner from the LaFarge town house a week before Thanksgiving, and I had just asked Terrace when he expected to shout "Eureka."

"I hope there'll be at least five 'Eurekas,'" he said. "First, I am going to shout 'Eureka' when Nim shows solid evidence of an ability to construct gestural sentences according to grammatical rules. Second, when he starts to use a gestural language to talk about his imagination. Third, when he begins to generate hypotheses about people not present. Fourth, when he begins to discuss the past or future. Fifth, when Nim begins to talk about an inner world—his emotions and dreams."

"When can we expect the first 'Eureka'?"

"Summer of '75," said Terrace. "Now, you have to meet Stephanie. None of this would have been possible without her."

Ten minutes later, Terrace and Stephanie and I were sitting around the thick-carpeted conversation pit on the first floor of the LaFarge town house. They were both smiling, because only a few minutes before, as Stephanie was introducing me to her family in the dining area, Nim, from his highchair, had spontaneously signed *eat*. Jennie Lee, Stephanie's twelve-year-old daughter from her first marriage, had then spooned some baby food into Nim's mouth, and he had swallowed it, smacked his lips, oblivious to all the eyes on him, and signed *eat* again. On the wall behind Nim was a blackboard with the chalked words: FINISH, EAT, DRINK, SIT, HUG, KISS, STAY, DON'T, STOP, GAME—words already part of his receptive repertory, plus some others, not yet capitalized: *stroller, diaper, napkin, trudge*, that Nim, who was just a year old, was working on. Terrace's technique of intense stimulation at an early age and Stephanie's happy home environment were obviously paying off: Nim was acquiring language *as fast* as a human child of the same age.

Stephanie LaFarge is tall, willowy, and extraordinary looking, far more so than her photographs suggest, since the camera seems to emphasize a rawboned angularity in her features and filters out her most striking characteristic, which is a shrewd but good-natured watchfulness. Although she was friendly she was clearly not the sort of woman who enjoyed talking about herself to a stranger.

Only gradually, therefore, did she let it be known that her father was a CBS executive; that she had worked as the director of a primary unit at the West Side Montessori School; and that shortly she planned to begin work on her doctorate in psychology at Teachers College.

I asked her what kinds of reactions she got from people on the street when she had Nim with her.

"Most people, once they get over the initial surprise, are intrigued," she said. "But some are really offended by the sight of a woman with an infant ape in her arms."

Terrace mentioned that he expected a lot of people on and off the streets to be offended. Language-acquisition experiments with subhuman primates not only challenge a lot of age-old assumptions about animal and human behavior, but pose ticklish questions that spill out of the behavioral sciences into philosophy, theology, the law, and civil rights.

These assumptions can be traced back through humanism, empiricism, Christian theology, Judaism—all the way back to Aristotle, who, in *De Anima*, developed a treatise on the soul. In it, Aristotle distinguished between man, who was supposed to have a rational soul, and beasts, who were supposed to have only an animal spirit. Man with his rational soul was supposed to be thoughtful; but beasts were mere automatons thoughtlessly going through the motions assigned to them by Nature. This Aristotelian distinction between man and beasts was popularized by Plato in the *Phaedrus*, and ever since then it has been part of the cultural baggage of the West. Man with his rational soul, so the argument goes, is capable of conceptual thought, which is dependent on language. Animals, who are not blessed with language, are therefore not capable of thought.

Terrace's gamble, if it succeeds, will, among other things, throw some light on these areas. Have some animals always possessed the mental hardware for language, but merely lacked the vocal apparatus? Have they been capable all along of a nonvocal language? And once they acquire it will they prove to be as capable of conceptual thought as man is?

This last question upsets many people, and it is not just the man in the street who is vaguely discomfited by the idea. And when it comes to *their own language* (there are some 4,000 known languages), people tend to be even smugger, each nationality convinced that its language is the best.

Goethe, Montaigne, and Ortega y Gasset said very similar things about their respective favorite. Each maintained that language is man's fundamental treasure, his prize, his trump, his ace in the hole, his final pleasure and consolation when everything else has soured; and he bristles at the idea of sharing it with a lower form of life.

And yet, as jealous as he is of language, man knows so little about its origins. How did language begin? What conditions had to prevail before the great multibranched language trees—Semitic, Egyptian, Berber, Cushitic, Germanic, Celtic, Italic, Slavic, Iranic, and Indic—developed? There are plenty of language-origin theories.

One is that language developed *onomatopoetically*—imitative of natural sounds; another, that it started with

Apes prefer to bite or nip to show affection, but when the sign is "kiss," Nim likes to kiss.

Hugging comes naturally to Nim, so he hurries toward Herb in response to his favorite sign.

"...Terrace signed *come-gimmee-hug*, but Nim did not want to go-give-a-hug: he wanted to whirl like a hairy top for a while..."

work chants; another, that it began as *babbleluck*—associations between spontaneous infant babbling sounds and features in the environment; still another, that it was *instinctivist*—that it suddenly appeared at a certain level of human cognitive evolution and was inborn thereafter; that it was *conventionalist*—that individuals deliberately agreed to create language in order to improve their lives; that it was *divine*—the gift of a creator; that it was *chance mutation*—the outcome of a random biological accident; and, finally, that it was *gestural* in origin—that it began with hand and arm movements, like Nim was being taught, that later turned vocal. . . .

"May we join the party?"

It was Jennie Lee with Nim in her arms. When Stephanie gave her permission she climbed up into the waterbed near the conversation pit and burped Nim gently. Jennie is a pretty, bright-eyed twelve-year-old, and to Nim what Joshua was to Bruno—a sibling companion, with the difference that she is also a very competent surrogate mother.

Nim disengaged himself from Jennie's arms and climbed down from the waterbed. Once you get a look at Nim, Terrace had warned me, it is difficult to take your eyes off him. It was true. Nim has star quality. He is built like Antonio Rocca, the wrestler, with all his authority in his chest and arms. In profile, he looks like a weak-chinned old monarch; full face, remarkably like Carl Albert, the speaker of the House.

Terrace signed *come-gimmee-hug*, but Nim did not want to go-give-a-hug; he wanted to whirl like a hairy top, which he did for a while. Then he came scampering purposefully toward me; and for a wild moment I thought he was going to look me in the eye and shout: "Get me a lawyer!"

But he said no such thing, of course; he said nothing, nor did he look me in the eye; chimps, especially young ones, try to avoid eye contact. He tucked his nose into my armpit to smell me. So I smelled him back, curious to know if an infant chimp in a diaper had the cidery sour-milk aroma of an infant human in a diaper. Nim smelled, not unpleasantly, like a rotting dock.

"Bite him!" called Jennie from the waterbed. "Chimps love to be bitten. It's a sign of affection with them."

So that I might be able to boast when I am old that once-upon-a-time I sank my teeth into the vanguard of a scientific revolution, I bit Nim; and he let out a piercing hoot of pure pleasure and backed off; and we made eye contact for a few seconds and I got that strange reverberating jolt I always get when I look into the eyes of gorillas, orang-utans, gibbons, sportive lemurs—any primate. It is a jolt that comes from a certainty that something complicated and rich is going on inside their heads that they lack the words to express. Nim then touched base, hugging Terrace and then Stephanie, and climbed back up to Jennie on the waterbed.

It was time to leave, and I was about to say good night when I realized that I had not asked Stephanie the obvious question: surely, there was no other woman in all of America quite like her. She was running a very large family, bringing up a subhuman primate as part of that family, and participating in a revolutionary language-acquisition experiment that would not have been possible without her; but I did not yet know *why* she was doing it.

"Because," she said, "I plan to work as a clinical therapist with emotionally disturbed children. Which is another way of saying that I am interested in the rehabilitation of the mind; and, to me, that does not preclude the rehabilitation of the animal mind. . . ."

As I was leaving, Terrace invited me to attend Nim's first birthday party. "You'll get to meet the volunteers that way," he said. "Each one came into the experiment from a different angle and for a different reason. They're a remarkable group. You'll see, when you meet them. . . ."

Nim's first year on earth was celebrated four days late, on November 24, 1974, so that all the volunteers could get together on a Sunday at the LaFarge town house.

The first volunteer I met was Maggie Jakobson, a fifteen-year-old beauty who heard about the experiment with Nim and had attended the special Ameslan classes at N.Y.U. in the summer. Maggie had a WIN—Whip Inflation Now—button pinned upside down on her sweater so that it read NIM. When I mentioned that some realists in Washington were also wearing the button upside down too, but that "in D.C., NIM stands for No Immediate Miracles," she said: "Same with NIM in N.Y.C. What we're doing with Nim *is* a miracle, but it does require patience."

Maggie gives her spare time to Nim after classes at Calhoun High School. Lisa Paddon is doing it for college credit. Lisa has come from Hood College, in Maryland, just to work with Nim full time for six months.

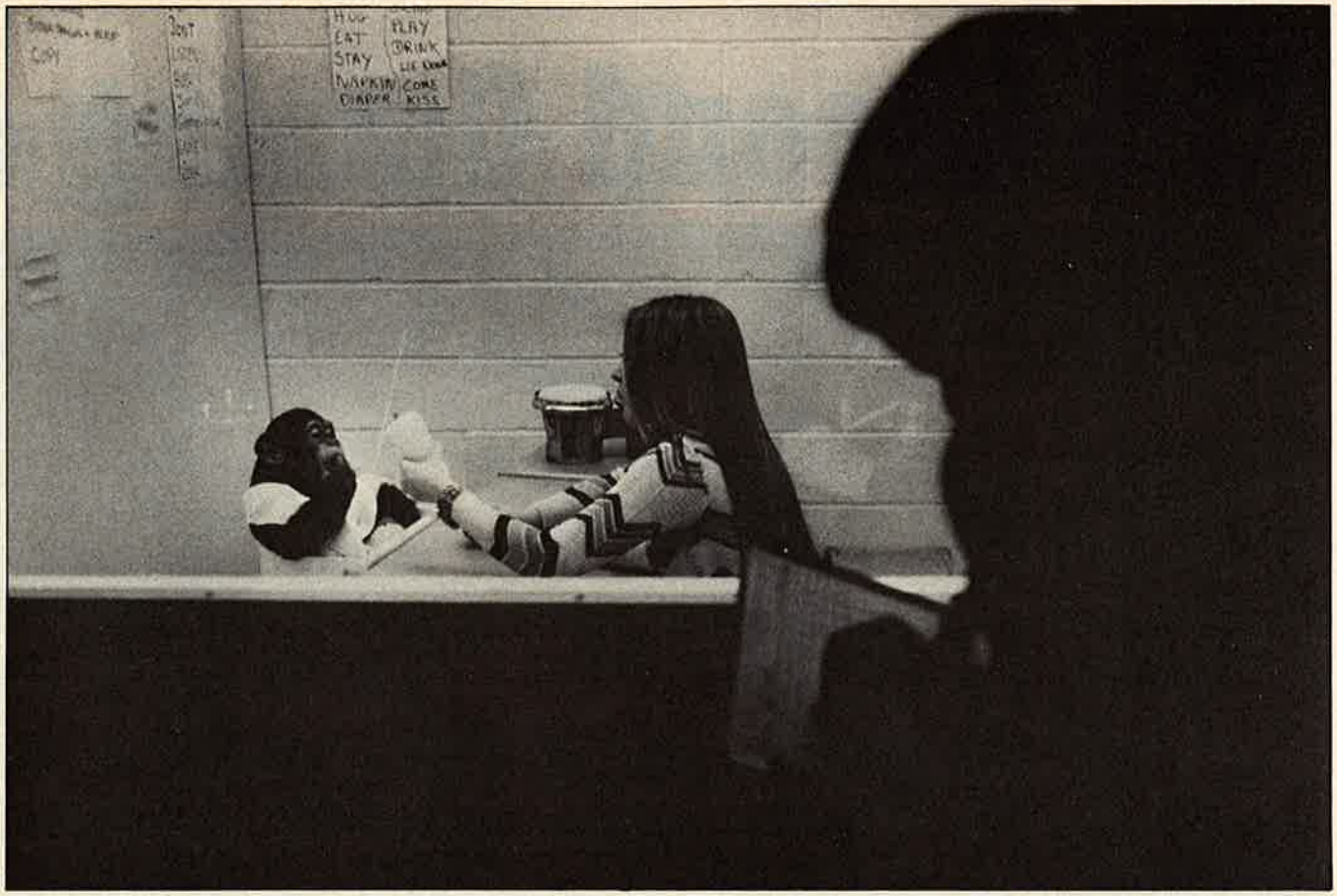
Mrs. Penny Franklin and Mrs. Connie Garlock both knew about Terrace's plans for Nim before any of the other volunteers. Mrs. Franklin, a professional book editor, is an old friend of Stephanie's and the only volunteer with some experience with the first chimp, Bruno. Connie, who is now completing work on a degree in psychology at Columbia, was once Terrace's secretary. When she heard he had finally acquired Nim, she volunteered.

Mrs. Rena Cascone, a petite curly-haired brunette with a rich contralto voice, volunteered after reading a magazine article about the work Roger Fouts, one of the Gardners' former assistants, was doing in Oklahoma. She wrote to Fouts and he referred her to Terrace. Somehow, Mrs. Cascone, who has two careers going at once—professional singer and free-lance writer—manages to find more than five hours a week for Nim. "I make the time," she said. "It's important."

Laura Petitto, a senior at Ramapo College in New Jersey, got interested in ethology when she was a teen-ager and has worked since then in various zoos and at Jungle Habitat. Of all the volunteers, she is the one who will probably devote herself to a life spent with animals. After graduation from Ramapo she hopes to go to Africa to a field study project, similar to the one run by Jane Goodall in the Gombe Preserve.

Bill Tynan, after a hiatus, is completing his education at Columbia. Mr. Tynan, who has experience in cable television and was once an editor of *High Fidelity*, will be in charge of videotaping sessions with Nim once he starts signing regularly.

Kela Stevens, of all the volunteers, is the most proficient in Ameslan, for a good reason: she is putting herself through college as a professional translator for the deaf. This entails standing up in front of a class for 50 exhausting minutes and translating what she hears an instructor say into a gestural language that deaf students in the class can comprehend. She learned Ameslan on her own so that she might communicate with a deaf boy she had become fond of; and when she completes her undergraduate work she plans to go to law school and specialize in legal guidance for the deaf. "The deaf, in effect," she said, "have no legal rights at all. Whom can they communicate with? Deaf lawyers, who know Ameslan?



Records: *Observed by Lisa Paddon through a one-way mirror, Nim signs "drink" and Laura Petitto gives him his special drinking cup.*

There *are* none."

Carol Stewart brings more experience in gestural language rehabilitation to the project than all the other volunteers put together. Carol is present at all the sessions with Nim; so, strictly speaking, she is not a volunteer, but a supervisor of volunteers. She has never worked with primates before, but has wide experience working with the profoundly mentally retarded—the mentally retarded who are deaf and suffer from cerebral palsy—the triply benighted. "The perpetual rockers, the ones who knock their heads against the wall, the eaters of their own excrement," she said bluntly. After exhausting years of work with a group of the profoundly mentally retarded at the Southbury Training School in Connecticut, Carol Stewart and Paula Wilson and Linda Goodman and Robin Wood taught them enough of the gestural language of the deaf so that they could communicate with their parents for the first time; in effect, they broke through the wall of silence the patients had been imprisoned behind since birth, and gave them at least the rudiments of human dignity. Since September, 1974, when Terrace enlisted her in his project, Carol has made enormous contributions to Nim's socialization and language acquisition. Because of her experience at Southbury she was remarkably successful in getting Nim to sit quietly, to attend to a volunteer teacher's face and hands, and to make the appropriate response when signed to by a teacher.

After a coffee and cake and beer and pizza birthday celebration for Nim on the first floor, Terrace and Stephanie led all the volunteers upstairs to the second floor to make plans for the next week. Certain adjustments had to be made if Nim were not to fall behind schedule.

Stephanie's father had suddenly died and she had to make the long drive to Chicago to attend the funeral. Carol Stewart, after working with Nim virtually every day, all day, for three months, was fatigued and had been ordered by her doctor to take a few days' rest. Rena Cascone had a cold. Penny Franklin, Laura Petitto, and Connie Garlock were simply tired. And yet, despite their fatigue, all the volunteers indomitably rearranged their lives so that Nim would not fall behind schedule.

An hour later, walking down the stairs of the town house that led to West 78th Street, I tried to calculate what it had cost Terrace and Stephanie and the volunteers to accomplish what they had achieved with Nim so far.

Terrace's experiment appears to be the most subtle and ambitious of all the experiments ever conducted with chimps. It is an attempt to breach the wall of silence that has separated man from the animal world ever since man fled the jungle canopy. It is also an investigation into how we acquire language, and what the distinguishing features of language are. If it succeeds it may even throw some light on the origins of language and the ultimate wilderness—the processes of the mind. All the other attempts—the Gardners, Premack, Rumbaugh—had generous grant support. Terrace is operating on a shoestring budget with a group of devoted volunteers.

I tried to calculate the cost to them, some of whom had to come in from Connecticut and New Jersey twice a week. Altogether, something like 10,000 man-hours had already been expended on Nim: the cost in human terms was incalculable; but the results were impressive. Nim was acquiring language as fast as a human infant of the same age.

Turning for a last look at the town house, I saw that I had not closed the door properly. I hustled up the steps to do it right, and heard two young volunteers in the vestibule.

"Do you think he realizes the importance of what we're doing?"

"He asked enough questions."

"Anyone who doesn't realize needs a new central nervous system." ▬