



Working his way through school in Iowa, Leo Beranek repaired radios, played drums, recorded speeches, and demonstrated sound equipment at funeral homes—jobs that led to an international career in acoustical research and, in 2003, to the Presidential National Medal of Science.

Earning My Way in Iowa



Prologue to a Career in Sound

by *Leo Beranek*

Farm boys learn to tinker at an early age, and I was no exception. I often wonder how much that experience influenced my decision to become an engineer. My special interest in communications engineering almost certainly began in June 1924, when my dad, Edward Beranek, came home with a Crosby one-vacuum-tube radio receiver set that ran on telephone batteries. Using headphones, three people could listen at the same time. I all but devoured the instructions for assembling the set and getting it to work, and gradually came to grasp how radio waves behaved. I installed the antenna and a ground rod, as well as insulating strips under the window to lead wires into our house in rural Johnson County. I tuned in to a host of things: national news, weather reports, music, political debates. One station—WOS in Jefferson City, Missouri—came through particularly

well. I listened every night after doing my homework. One of the most popular entertainers at the time was a jazz pianist, Harry M. Snodgrass, billed as the “King of the Ivories,” whose programs originated from the Missouri State Penitentiary, where he was incarcerated. I was glad when the governor pardoned him, but sorry when his last program aired on January 14, 1925.

I started junior high school, eighth grade, in the fall of 1926 [only months after my mother, Beatrice, had died unexpectedly] and yearned to be more independent. I didn’t bother either my grandparents or my dad about my needs, though, preferring to see what I could do on my own. When I responded to a Real Silk Company ad for salesmen in the *Saturday Evening Post*, the company assigned me—a mere novice—Solon and a nearby village for my territory. It sent me a leather-bound sales kit with samples of its entire line of stock-

ings and fabrics for silk lingerie and blouses. For every sale I concluded, the buyer would make a down payment and the order would be shipped COD through the mails. The down payment was my commission. Even my lady teachers bought lingerie from me, with giggles and some embarrassment. I made a modest but regular income, and remained a Real Silk salesman for two years.

The Solon School band leader urged me to learn an instrument and join. I chose drums. Father bought me a marching drum, and the band leader taught me to play. I grew to be reasonably proficient. After a year, Dad purchased a set of trap drums from a retired professional musician, and I continued my lessons on them. I practiced after classes in the basement of the school building. Trap drums would later help me earn my way through college.

My freshman year in high school was my last in Solon. My widowed father married a woman from a neighboring village, and we moved to Mount Vernon, some 12 miles away, where he became co-owner, along with his cousin Gilbert, of Beranek Hardware. Keenly interested in my future, Dad came up with the idea that I should learn how radios work so that I could make some money installing and servicing sets sold in the store. He enrolled me in a radio course offered by the International Correspondence Schools. I took this quite seriously, even building my own radio set. The next year, he arranged for me to work as an unpaid apprentice to the store's serviceman, Francis Pratt, a senior in Cornell College just down the road (founded 12 years before the more famous Cornell in Ithaca, New York). Francis was an opera buff and, as we fixed radios, we played records on a wind-up phonograph. My apprenticeship completed, when Francis moved on, I was able to set up a radio repair shop of my own over Beranek Hardware. I bought a Model T Ford for \$50 and soon became known as Mount Vernon's "radioman." Meanwhile

I had not forgotten my mother's insistence on a college education. Dad made it clear that, because he was still deeply in debt following the sale of the Solon farm, I must save money for college. My radio repair business was no longer just a pleasant hobby; it was now a means to an end.

Starting in my junior year of high school, and for three years thereafter, I played trap drums in a ragtag dance band. My talent—or, rather, rhythmic instinct

helped along by music lessons—was spotted by Wilbur Powers, a local electrician known to all as "Polly." He put together a dance combo, "Polly and His Parrots." A man of 40, a little on the heavy side, he was a stupendous saxophone player. It was whispered that, though married, he was always on the make for younger women. Our somewhat mismatched band of six played weekly at dances over at the Moose Lodge in Cedar Rapids. The bass horn player, Jake, a model of respectability, was stationmaster for the Chicago & North Western Railway in Mount Vernon. The banjo player, Frank, loved to regale us with stories of his trysts with local married women. The trumpeter, Bob, confined his tall tales to fishing and hunting, with dramatic accounts of narrow escapes from wolves and mountain lions. The piano player, Hildred, a thin, modest woman of 30, tried to distance herself from the seamier escapades of her cohorts—and certainly offered no comfort to Polly and Frank, our resident rakes. Busy with schoolwork and radio fixing, I simply had no time for sharing racy stories.

In school, my competitive streak was starting to show. I forget why, but I signed up for a typewriting class. The girls were honing their skills for office work and there I was, the only boy, intruding on their territory. Though willing to put up with me in general terms, what they couldn't abide was my being top performer. I looked forward to rattling through our weekly typing tests at breakneck speed and with high accuracy, leaving the others in my wake—helped along by a set of fingers well limbered through long hours of dance-band drumming. The outcome was as much fun

as the tests—"If looks could kill," as they say. I had never been one to worry about popularity; my goal was simply to excel in whatever I took on.

During my senior year, I applied for admission to Cornell College in Mount Vernon and was

accepted. Living at home I had managed to save about \$500. In 1931, in the wake of the Stock Market Crash of 1929, panicked runs on banks—and the resulting bank failures—were still commonplace. I recognized that we were on the verge of a deep economic depression, and I worried about the fate of my tuition money on deposit in a local bank. In mid-August, I went to the bank to withdraw \$400. The clerk called an officer, who asked me what I wanted to do with it. When I told him I was going

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to pay a year's tuition at Cornell College, he replied: "If you wanted it for any other purpose, I wouldn't give it to you." I headed directly over to Cornell's financial office and put my money down—in the nick of time. The bank closed its doors permanently the very next day, and all depositors lost their savings. I never saw my remaining \$100.

In the middle of my freshman year at Cornell, Dad told me that, because of dwindling business, he had sold his share in Beranek Hardware to his cousin and would move to Cedar Rapids in early March. Now I was *really* on my own—no more free room and board. I lucked out, however, in finding a cheap place to stay for the rest of the school year: Ma Miller's student rooming house, where I lodged at a discount. I applied for and received a scholarship for sophomore year, although I still had to come up with \$60 per semester for tuition.

I worked as a hired hand on a small farm for two summers, 1932 and 1933, not only to earn my keep but also to better my health and physical stamina. The farm lay to the south of Mount Vernon and my duties there fully tested the limits of my strength. To kill weeds around rows of corn, I walked from 8 a.m. to 5 p.m. behind a horse-drawn cultivator, moving slowly but deliberately over ground that the plow had just stirred up in temperatures exceeding 100 degrees on some days. Even though the noon meal meant an hour off, by evening, having rubbed all day against denim overalls, my sweaty legs developed painful chafes, which I salved from a can labeled "For man or beast." Corn cultivation stopped about July 4, but then the oats had to be harvested. I followed behind a binder, operated by my boss, each day plunking down hundreds of bundles (sheaves), six to a shock. Next, hay had to be cut and, after drying, stacked high with a pitchfork onto a wagon and hauled to a barn for transfer into the haymow. Gardens and melon patches had to be weeded, animals watered and fed. On some days, fences had to be repaired and rings put in the noses of hogs to discourage them from rooting. In late July, we harvested melons and picked berries to take to market. Yet, a few evenings each week, I still found the energy to jump into my Model T Ford and head over to Mount Vernon to fix radios or play in the town band.

Because we helped each other out at threshing time, I got to know most of the farmers in that part of

the country. Although Prohibition was in full swing, when one of our neighbors took up bootlegging, we turned a blind eye. I dated a neighbor's daughter, who had been in high school with me, and on Sundays often visited my grandparents in Solon. But I seldom got over to Cedar Rapids to visit Dad and my stepmother. The 20-plus miles seemed like an awfully long way in those days.

I ended the summers tanned and far stronger than I started out. Once, I even hefted a 160-pound keg of nails. I sometimes wonder how much those summers contributed to making my life as free as it has been from illness, and as active in my advancing years—with most of my joints and "marbles" still intact.

The college-owned dormitories and dining halls were way beyond my means. So, when Ma Miller offered no further discounts, I had to find another place to live. In late August, right before the start of sophomore year, I learned that three other students—seniors

—had made arrangements to live in two large, unfurnished, unheated rooms over a bakery on Main Street. They invited me to join them. We needed furniture, a stove, cookware, and dishes. Freddie Katz came up with most of the furniture—four beds, four bureaus, four desks, and a half dozen chairs—on loan from his father's secondhand furniture store in Cedar Rapids. I borrowed an oil-burning stove from Beranek Hardware. Other items came from our parents' homes or were borrowed from friends. We each paid \$4.50 a month in rent, and put in an extra buck or two for breakfasts and evening meals. We cooked one warm course each evening on the stove's single burner. I arranged for the bakery downstairs to pass along their one-day-old bakery goods for a dollar a week. Wilbur Smith dated a college woman who lived on campus and worked in a dormitory kitchen there. From time to time, she filched a whole roast chicken and passed it through a window to Wilbur. Leo Phearman's farm family sent eggs, smoked ham, and fresh fruit from their orchard. Freddie often brought packaged food to the table. How he acquired this we never knew, but I suspect his father helped out. On occasion, I dipped into my meager savings to bring in extra chow. I earned my noon meals by waiting tables in the Fair Deal, a restaurant just down the street.

As a sophomore, I was invited to be a member of

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Mort Glosser's college dance band. We played at campus dances on Saturday nights. Although my income from this and from my radio repair business took care of the year's expenses, I saw problems ahead. The repair business had fallen off—the Great Depression was deepening—and Cornell's scholarship stipend was smaller than it had been the year before. Because I could see no way to earn what I needed, and because no student in those days—in Iowa, at least—ever thought about borrowing, I resigned myself to enrolling in just one class the next year, mathematics.

Inited to go with the family of the local dentist, Lou Bigger, to Chicago's world's fair in August 1933, I jumped at the chance. The Century of Progress opened my eyes to the world beyond Iowa. I wandered from one exhibit to another, almost in a trance. The ones I remember the most showed manufacturing, such as brand-new tires all wrapped in paper. The stunningly illuminated Electrical Building showed electricity being generated and distributed, with a fireworks display every night. "The introduction of electricity in our daily life is the greatest factor in human progress," announced General Electric, presenting a dramatic set of murals to illustrate its claim. Ford, Chrysler, and General Motors exhibited their latest cars and showed motion pictures of the assembly process. Pabst Blue Ribbon, Schlitz, Budweiser, and Old Heidelberg set up their wares in huge tents filled with tables. Each tent had a stage at one end, where a popular "big band" of the day kept visitors tapping their toes.

The best surprise was the opportunity to hear, not one, but four hour-long outdoor symphony concerts each day. The Chicago Symphony, sponsored by Swift, performed twice a day, as did the Detroit Symphony, sponsored by Ford. I made it a point to attend a concert every day.

The foreign pavilions gave a panoramic sweep of world cultures enthralling to a sheltered Iowa youngster brought up among German-American farmers. I marveled at the Italian, Chinese, Japanese, Ukrainian, Moroccan, Belgian, and French exhibits. High in the air, the Sky Ride Car, a double-decker gondola, sailed from one end of the fairgrounds to the other across a lagoon. Because I had so little money, I lived on popcorn, hamburgers, and two beers a day. When I got

home, I calculated my total expenses for four days at \$12. I went again the following summer.

In the fall of 1933, learning that Albert's, a dry-cleaning and laundry business in town, would house a student willing to help out, I applied and was accepted. I slept in a back room with bags of dry-cleaned clothes hanging some two feet above my bed. I was expected to start the steam boiler and sweep the floors each morning before the owners arrived.

For midwesterners, Halloween was, and probably still is, a major event. I can remember when I was living with Grandmother Beranek in Solon how high the excitement ran, how pranks would sometimes morph into vandalism, and how the townsfolk seemed resigned to this as part of an age-old custom. Main Street usually looked bombed out the morning after. Soap smears covered store windows, wheels from parked cars ended up on rooftops, and sidewalk benches were scattered everywhere. The most adventurous pranksters had absconded with outdoor privies from private homes (there was no town sewer system in 1926), lining them up in not-so-neat rows down the center of Main Street.

Things were pretty much the same in Mount Vernon, although it did have a sewer system. On Halloween in 1933, about 10 p.m., I heard a knock on the front door of Albert's just as I was turning in. Six Cornell students stood in the doorway and asked me to join them in commandeering a large privy

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behind a home on the outskirts of town and moving it to the college dean's front porch. Dean Albion King was an officious sort, with no friends among the students. When I asked my colleagues in crime how they planned to transport the privy, they said they

would simply carry it. Slipping into engineering mode, I quickly calculated the weight and reported the disappointing news: it was far too heavy to be carried. Then I got an idea. Behind the local telephone building, not far from Albert's, was a four-wheel flatbed trailer, which the telephone company used to transport telephone poles. I proposed that we "borrow" it, which we did, and we stealthily headed out to fetch our loot.

The privy was even larger and heavier than I'd calculated, but somehow we managed to tilt it onto the trailer and push and pull it to campus. Within a few hundred yards of the dean's house, a police officer I knew stopped us. I had repaired his radio once.

He asked where we thought we were going with that privy. To Dean King's front porch, I told him, knowing that King's unpopularity extended well beyond the student body. "If you put it anywhere else," the officer replied, "I will arrest you." After a struggle, we managed to stand the privy on the dean's wide, covered porch without waking anyone up—and to roll the trailer back to where we found it with no one the wiser.

The next morning, Dean King came to school fuming, exactly as we'd hoped. His suspicion fell right away on the likely perpetrators—the Deltas, a fraternity made up mostly of athletes. He grilled them, one by one, in his office. But none had been in our group, and, in the end, the dean failed to identify any of the culprits. He never suspected that I, of all people, had been willing not only to embark on such a disreputable scheme but also to make sure that it succeeded.

I soon became close friends with one of my mathematics classmates, Harold Ericson, a tall, slender fellow with a pleasant manner and disposition whose father owned a telephone company in Hector, Minnesota. Harold was a ham (licensed amateur radio station operator) and knew lots about radio receivers and transmitters. He urged me to get an amateur license, too, so that I could share in the use of his transmitter. This meant I had to learn Morse code. Harold loaned me a small code-sounding machine, and I learned the dits and dahs (dots and dashes) of the Morse alphabet. When I felt confident enough to pass the test, I went by bus to a Federal Communications Commission (FCC) examination center in Des Moines. All candidates had to show they could send and receive code at not less than 10 words a minute. I squeaked by, earning the call letters "WRER," which I could use as my signature anytime I broadcast. This experience came in handy later when I went to graduate school.

At some point in the fall of 1933, the head of Cornell's speech department happened to mention how helpful it would be for his students—as a measure of their progress—to record their voices before and after their year of speech training. I later chanced on an advertisement in a radio magazine for a small recording

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machine, which, I found out, could produce embossed aluminum records at a cost of about 50 cents apiece. I went back to the professor and told him that I would buy the machine out of my own pocket if he would commission me to produce a 5-inch aluminum record for each student at a dollar apiece. He agreed and, in the small studio I built in one corner of a physics lab, I recorded every member of his class before and after a semester of speech training. This brought me in contact with the field of acoustics for the first time. I

learned something about acoustics from a book in the college library, little realizing that it would become a major part of my professional life in the years ahead.

As the spring of 1934 approached, I found myself in financial straits once again and realized I would need to find a

full-time job to accumulate some savings. In April, I applied to the fledgling Collins Radio Company in Cedar Rapids. The young president, Arthur Collins, interviewed me personally and offered me a position at \$14 a week, starting May 15. Arthur was the son of a wealthy real estate dealer, M. H. Collins, who had managed to avoid the worst of the bank and stock failures during the Depression. Arthur was known locally as boy inventor and radio wizard extraordinaire. Arthur's father set him up in Collins Radio, which at first manufactured only transmitters for amateurs. His breakthrough came in 1928, when he was chosen to equip Admiral Richard Byrd's expedition to the South Pole with a small transmitter that ended up performing magnificently. I became a friend of Arthur's and he invited me to his home several times to look over his amateur radio equipment and to share an evening with his family.

Now that I was leaving Mount Vernon, I decided to sell my radio repair business, which I did, to Harold Ericson for \$40. I stored my drums and headed for Cedar Rapids, where I rented a room for a dollar a week in the home of an elderly couple. I remember keeping close tabs on the clock, as we had warm water available just two hours a day.

Collins Radio was moving ahead with some fairly adventurous marketing strategies at the time, particularly with a view toward broadening its clientele for the manufacture and sale of sound systems. One possibility was that funeral homes might play recorded

music during services. I was assigned to go on sales expeditions with an old salesman, Jim Thompson, who was about 35, and had little in the way of technical know-how. My job was to demonstrate equipment, answer technical questions, and help plan the kind of system each client needed. Collins gave us an old Cadillac, a four-door sedan, to travel around in. We visited funeral homes all across Iowa, staying in low-cost motels as we roamed the countryside.

[In September the company asked me to stay on as an assistant in the engineering department.] I kept very busy outside of work, reading books that ranged from dime mysteries to engineering texts, and going out on dates. On one such date, I met Florence (Floss) Martin, a beautiful, slim woman some three years younger than I. Floss was attending business school in Cedar Rapids and lived with her aunt in a modest second-floor apartment not far from me. She and I hit it off from the start, finding plenty to talk about, and I began seeing her regularly.

We liked going to movies and kicking up our heels at Danceland, the city ballroom. By the time I returned to Cornell, Floss was my steady girlfriend, and we had even talked about getting married someday.

In January, I made plans to return to Cornell. Arthur Collins appeared sorry to see me go, but I had put aside what I had aimed to—a pot of savings to help me finish up college—and along the way I had learned a lot and gotten to know some interesting people. I arranged with Harold Ericson to share in (now) his radio repair business back in Mount Vernon. Cornell awarded me a second-semester scholarship of \$112.50, which meant that I only had to find \$87.50 for tuition. Another lucky break: fellow student Richard Rhode asked me to join his popular college dance band. I played drums with them about once a week, earning \$4 each time.

At the end of the semester, I went back to Cedar Rapids to spend the summer working once again for Collins Radio. I moved into the same dollar-a-week room that I had previously occupied and, always a planner, I started thinking about what I would do after graduation, just over a year away, when something happened that led me in a direction I never expected. On Friday evening, August 16, 1935, I drove to Mount Vernon on the Lincoln Highway, which then went

from New York to San Francisco, passing through Mount Vernon along its Main Street. I spent the night on the back-porch swing of the Bigger family's home. After lunch, having passed the morning at the Cornell Library reading technical periodicals, I was strolling along Main Street when I came across a Cadillac with Massachusetts plates standing at the curb with a flat tire. Beside it was a well-dressed man looking glum. When I asked him if I could help he jumped at the offer. As I worked away with the jack and lug nuts, we engaged in a friendly exchange. I told him that I was between my junior and senior years at nearby Cornell College and how I wanted to go to graduate school, but could not afford to unless I were to obtain a scholarship. He asked me about my majors and my grades. I cheerfully answered and said that I was planning to submit scholarship requests to the University of Iowa and to the universities in the states surrounding Iowa.

At the mention of my work as a radio repairman, he perked right up. "Radio is my business," he said. He asked for my name, and after responding, I asked for his. "You are Glenn Browning?" I blurted out. "I just read one of your papers on the Browning Tuner in *Radio News* this morning in the library." Suddenly I had a new friend. He wanted to know if I had considered going to Harvard University. "No," I said, and then—before I could catch myself—"that's a rich man's school."

Smiling, he informed me that Harvard had more scholarship money to offer than any of the schools I had named. He opened the door to the front seat of the car and took out a pad of paper on which he jotted down the names and addresses of two people at Harvard—one for ad-

missions and the other for scholarships. "When you submit the paperwork," he said, "use me as one of your references." I would learn later that he had spent three years as an instructor at Harvard's engineering school before opening a successful radio manufacturing business in suburban Winchester.

That fall, I sent scholarship applications to various state universities. I also sent one to Harvard. When I wrote to Browning in February 1936, thanking him for letting me use him as a reference, he wrote back that he had already been contacted by Harvard's dean of engineering, had put in a good word for me, and wished me luck.

Strolling across Main Street, I came across a Cadillac with Massachusetts plates and a flat tire. Beside it was a well-dressed man looking glum.

Letters from the state universities started arriving in March—all of them saying, in effect, that my grade record and references were satisfactory, but that, because there were so many applicants, they could not offer me a scholarship. Then a letter came from Harvard. I opened it slowly, anticipating yet another letdown. Dated March 27, 1936, it stated, "I am very happy to tell you that you have been awarded a Gordon McKay Scholarship of \$400, covering your tuition for study in the Graduate School of Engineering at Harvard University during the academic year 1936-37." When the news got out, I could barely contain my joy. I became an instant celebrity.

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yet another letdown.**

In my senior year, I bought back the radio repair business from Harold Ericson and took up residence at the Neff Funeral Home on Main Street in Mount Vernon, where, in lieu of rent, I helped undertaker William Neff pick up corpses, usually in the middle of the night. To finish up at Cornell that summer, I piled on the subjects: sociology, mathematics, philosophy, German, physics, and art.

At the beginning of the school year, I was elected to the Alpha-Theta-Alfa fraternity, with headquarters in Ma Miller's rooming house just off campus. As part of our hazing, about a dozen of us pledges were given a list of things to get done in one evening: steal some watermelons, pilfer a pig, swipe a girl's panties from a dormitory, and answer a set of tricky questions correctly. The penalty for failure was a dozen or so whacks on the rear with a large paddle—a fate we wanted to avoid at all costs. We drove over to see the farmer I had worked for who raised watermelons and who let us "steal" enough melons to treat our whole fraternity. At one of the girls' dormitories, we stood outside and yelled up our plea for a pair of panties; to our surprise, not one, but two pairs came flying through an upper window. Another farmer I had come to know during my summer stints agreed to let us "pilfer" a pig, on condition that if the animal were not returned, we would pay him \$20. With our booty in hand, we got back to the house about two hours after we started out. After correctly answering the tricky questions, we were showered with praise. But the pig got away from us and we couldn't find it in the dark, so the next day we had to fork over \$20.

To make extra money in my senior year, I added retail sales to my radio repair business, with a shop on the second floor of a building on Main Street. I convinced the RCA and Atwater Kent radio suppliers to ship me a dozen sets. My shingle over the entryway downstairs read: "Leo L. Beranek, Radios and Service." I found an unemployed man—about 40 years old, intelligent, nicely dressed, and clean looking—to run the sales room whenever I was doing other things, mostly schoolwork. The radios sold well and my repair business picked up, too. I also hired an electrician to help and wired some private homes.

I attended classes during the day and studied in the library in the morning and early afternoons, where I could be certain to avoid interruption. In the late afternoons, I tended to the radio business. That winter, Cornell President Herbert Burgstahler sent out a questionnaire to all students asking how many hours a week we spent on nonacademic activities. The answers were anonymous, and I reported 40 hours. In our compulsory chapel service, Burgstahler announced the results and made a special point of observing that whoever reported spending 40 hours a week outside could not be getting much out of college.

The New Year brought much change. When radio sales dropped off but the house wiring side of my business grew—because my rates were cheaper than those of the Iowa Electric Company and I benefited from subsidies under the Federal Rural Electrification Act—I decided to concentrate on wiring and stop selling radios. An advertisement I placed in the Mount Vernon paper read: "Radio Clean-Up Sale! Friday, Saturday and Monday, January 24-25-27." And, sure enough, I pretty much cleaned out my stock that weekend.

One day every weekend, I would drive over to Cedar Rapids to see Floss. Some Sundays we went to her church, First Christian, and took part in young people's fellowship activities there. Sometimes she would catch the bus to Mount Vernon and we would attend a college social together. We also exchanged letters weekly. Then came the day we went on a picnic with a small group of her relatives. This being the first time I'd met the greater family, I wanted to make a good impression. No such luck. Floss's aunt asked me to drive her car. But, as I pulled out of her parking space, I pressed down too hard on the accelerator, clipping and bending the bumper of the car in front and causing the bumper on our car to fall off altogether. The usual awkward exchange of information and documents was made even

more awkward because I had no license to exchange and could only stand there, looking foolish. When the aunt's car went into the garage a few days later, fortunately, nobody asked me to help out with the repair bills.

With graduation not far off, three opportunities for wiring jobs came up at Cornell. In June, I wired the dining-hall addition to Bowman Hall and, a month later, completed the rewiring of Rood House. My third job was the most ambitious of all. I had convinced the building committee that a central antenna system should be installed in Merner Hall, a new men's dormitory then under construction—at a fixed price of \$556.58. Later that summer, the *Cedar Rapids Gazette* announced: "Individual radio outlets [at Merner Hall] are

connected with a master antenna system designed and installed by Leo Beranek of Cedar Rapids. The antenna on the roof of the hall is connected with room outlets by a continuous system of wiring in conduits."

I received my bachelor's degree in the summer of 1936, just as I had hoped. I missed Phi Beta Kappa by a tenth of a point, but Cornell made up for that 26 years later by naming me an honorary member. Diploma in hand, I sold my radio business to a repairman in Lisbon, Iowa, for \$99 at the end of August.

With a mix of excitement and nervous anticipation, I started to gear up for what was looking more and more like a risky plunge into the unknown. I had saved about \$450, which—along with my scholarship—I was hoping could be stretched to cover rail fare, room, board, and essentials for a year at Harvard. But I was already wondering, then what? ♦

Epilogue

Editor's Note: Leo Beranek received his master's degree from Harvard in 1937 and his doctorate in 1940. He married Phyllis Knight in 1941.

This article is extracted from chapter one of his autobiography, *Riding the Waves: A Life in Sound, Science, and Industry* (MIT Press, 2008), reprinted with permission. To quote MIT Press, "Beranek went on to be one of the world's leading experts on acoustics. . . . Known for his work in noise control and concert acoustics, Beranek devised the world's largest muffler to quiet jet noise and served as acoustical consultant for concert halls around the world (including the Tanglewood Music Shed, the storied summer home of the Boston Symphony Orchestra). As president of the consulting firm Bolt Beranek and Newman, he assembled the software group that invented both the ARPANET, the forerunner of the Internet, and e-mail. . . . In recent years, he has served as president of the American Academy of Arts and Sciences, Chairman of the Boston Symphony Orchestra, and a member of Harvard's Board of Overseers. The many awards he has received include the Presidential National Medal of Science, presented in 2003."

For more on Beranek's autobiography, visit <http://mitpress.mit.edu> and search for "Riding the Waves."
