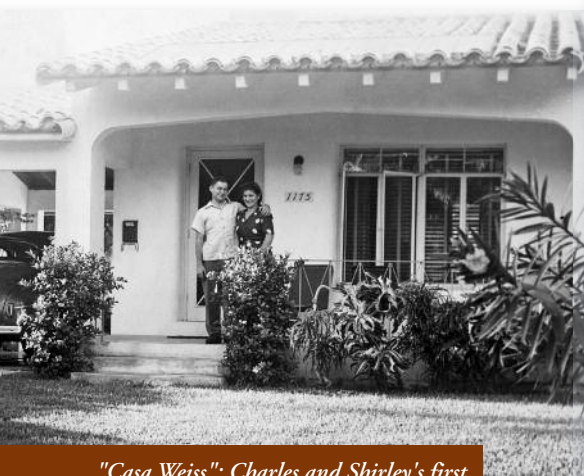


## Beginning Their Journey Together

When Charles and Shirley married on June 7, 1942, it was under the shadow of the deepening war effort. Immediately after their honeymoon in New Orleans—the next best choice after France, which was now off-limits—the Weisses packed up their belongings and moved to Coral Gables, Florida, a small community where the University of Miami was located. It had laboratory space available for the Navy project. The scouting that Charles had done for a study site had paid off, and the Navy's study of ship hull fouling would be located in Biscayne Bay, an area with intense marine fouling. Charles would be responsible for evaluating how different ship hull coatings resisted fouling.

*Charles and Shirley on "unpacking day" at their new house. "The results! And we didn't mind the work a bit," wrote Shirley to her mother.*



*"Casa Weiss": Charles and Shirley's first house together in Coral Gables, Florida*



## Honeymoon by Train

It was a long train trip that Charles and Shirley undertook together on their first evening as a married couple. Boarding the train in New Brunswick, they arrived in Washington, D.C., just in time for dinner. Then they boarded another train headed south for New Orleans, a two-night journey. Their Pullman car was slightly cramped for two people—but luckily, the porter was happy to find them a larger compartment once Charles mentioned they had just been married.

After a wonderful week exploring the French Quarter of New Orleans, Shirley and Charles headed east along the Gulf Coast by train. In Jacksonville they caught one final train that took them to Miami, where their car and their new home were waiting.

*Charles and Shirley on the train to New Orleans*



*Charles was in charge of evaluating test panels and their resistance to organism growth. Here he is shown at the WHOI research site in Biscayne Bay, Florida.*

Charles and Shirley's first house together was a small cottage in Coral Gables. They soon found that their next-door neighbor, Blanche Bogey, was friendly, and a good cook to boot. "She was anxious to be sure we ate well, and she showed us how to prepare a good meal. We traded all our sugar ration stamps over to her, and we got wonderful pies in return," Charles recalled.<sup>1</sup>

For three years, Americans at home waited for news from the war fronts and did what they could to help. In Miami, Charles and Shirley threw themselves into the war effort. A private boating dock on Biscayne Bay had donated a boat slip to the Navy project, and Charles set to work hanging coated test panels into the slip and evaluating their resistance to organism growth.<sup>2</sup> Though supervised by a biologist at the University of Miami, Charles did much of this work on his own.<sup>3</sup>

Meanwhile, Shirley—never one to stay home alone during the day—found a job as a reader at the Office of Censorship, reading international mail and summarizing suspicious content for her supervisors. Her French skills, honed so well under Gary's tutelage, made her a valuable employee for this wartime job.





*"I was actually driving the car!" wrote Shirley. Charles taught her to drive in November 1942.*

"Being bilingual helped as a reviewer, because we were reading primarily business mail for defense concerns," Shirley explained. "That meant having readers from all the languages there, reporting what you found as important, and then sealing it up."<sup>4</sup>

In addition to working full time, both Charles and Shirley volunteered at the Air Force filter center. Arriving at the center at 4 a.m. three times a week, they recorded information that airplane spotters phoned in about planes flying overhead. They worked from 4 a.m. until 7:30 a.m., and then left to start their work days.<sup>5</sup>

Even with resources tight, Charles and Shirley still found ways to enjoy their life together. They found that by volunteering to usher they could attend local performing arts and music shows for free—so usher they did, seeing many high-quality performances. They made many friends through their jobs, and colleagues from Woods Hole visited so often that their home became known as "Woods Hole South." Charles, an accomplished amateur photographer, photographed friends' weddings and children in addition to the photography he used in his work; eventually his photography "business card" boasted his four most frequent subjects: "brides, babies, boats, and barnacles."<sup>6</sup>

By 1945, the Axis powers were losing ground. Then, in May, the Germans surrendered to Allied Forces, followed in August by the Japanese. With the war over, the nation breathed a sigh of relief and began welcoming their servicemen and women home.



*Shirley, never one to stay home, soon found a job at the wartime Office of Censorship.*

*Shirley, in their Florida home, working on her photo album, 1944*



## Racing the Train

At the end of Shirley and Charles' first summer in Miami, Charles' mentors scheduled a planning conference in Woods Hole to make decisions for the Navy project. Charles and Shirley planned to take the train up to New York, where Shirley would stay at her parents' apartment while Charles continued on to Woods Hole for the meeting.

Unfortunately, on the day they were to leave, the alarm clock failed to wake them up on time! Charles immediately called the

station to see if the train would wait for them, but he was told no. Thinking quickly, he realized that their tickets would still be valid, no matter where they caught the train.

"We drove to the Miami airport and bought two tickets to Jacksonville," he remembered. "It was a quick flight. Once in Jacksonville we had to wait three hours for the New York-bound train to catch up!" The short flight was Shirley's first time on an airplane.

*Charles' birthday party, December 9, 1944*  
*Back row: James Kelley, Gordon Riley. Middle row: Mrs. Tommy Austin (Jane), "Thumper" Austin, Shirley, Sue Monk, Lucy Riley, Tom and Helen Magee. Front row: Charles, Val Worthington.*



*Charles and Shirley, "all dressed up to go to dinner and to the movies," September 12, 1943*

No longer needed for translation at the Office of Censorship, Shirley went to work for the Air Technical Service Command in Miami Beach, filling positions for them. "I found jobs that best suited you, or you suited the job, because manpower was very limited," Shirley explained.<sup>7</sup> But with so many veterans returning home, Shirley's job soon shifted to the U.S. Employment Service in Miami Beach, placing returning veterans into jobs.<sup>8</sup>

Meanwhile, Charles' Navy project was wrapping up. He and his fellow researchers had gained all the information from the Miami site that they needed, and the final report would be finished at the Woods Hole Oceanographic Institution in Massachusetts.

So in the fall of 1946, Charles and Shirley packed their belongings and drove north up the coast to live in Woods Hole.<sup>9</sup>

Arriving in Woods Hole in September 1946, the Weisses found a small house to rent on Buzzards Bay Avenue, less than a mile from Woods Hole Oceanographic Institution, where Charles would be helping complete the ship fouling research project.<sup>10</sup>

The Weisses' time in Woods Hole was brief, but pivotal. Here, Shirley found a job as assistant to the



## The Balinus Amphitrite

In July 1945, Charles spent \$100 on a small, ill-fated boat powered by an outboard motor. Naming it the *Balinus Amphitrite* after a species of barnacle he had been studying for the Navy project, Charles took Shirley on a trip around Biscayne Bay, only to have the motor give out. A few months later, a hurricane blew in while Charles and Shirley were in Woods Hole, and the *Balinus Amphitrite* was damaged beyond repair.



*"Life on our boat, the B. Amphitrite, was short and hectic," wrote Shirley.*



## Early Travels Abroad

Before they left Florida, the Weisses—ever the savvy travelers—took advantage of their close proximity to the Bahamas and Cuba. The war had limited boat travel to both countries, but in the summer of 1946, with the war in Europe over and their work in Miami complete, the Weisses saved enough money to visit Nassau in the Bahamas and Havana, Cuba.<sup>11</sup>

To get to Nassau, they booked an overnight trip on a small, Canadian-built steamer. The boat's ventilation system was not designed for the tropical climate, and Charles and Shirley were more comfortable sleeping in chairs on the deck than in their stuffy cabin. Cuba was easier to access: The Weisses boarded a Pan American flight at Miami Airport and landed in

Havana less than an hour later, where they were met by the family of one of Shirley's work friends.



Charles and Shirley in Havana, Cuba, 1946

editor of the *Journal of Meteorology*, a publication of the American Meteorological Society. Editing manuscripts for the technical bimonthly journal,<sup>12</sup> she learned how an academic journal worked from the inside out—knowledge that became extremely useful later, when she began publishing her own academic articles.<sup>13</sup>

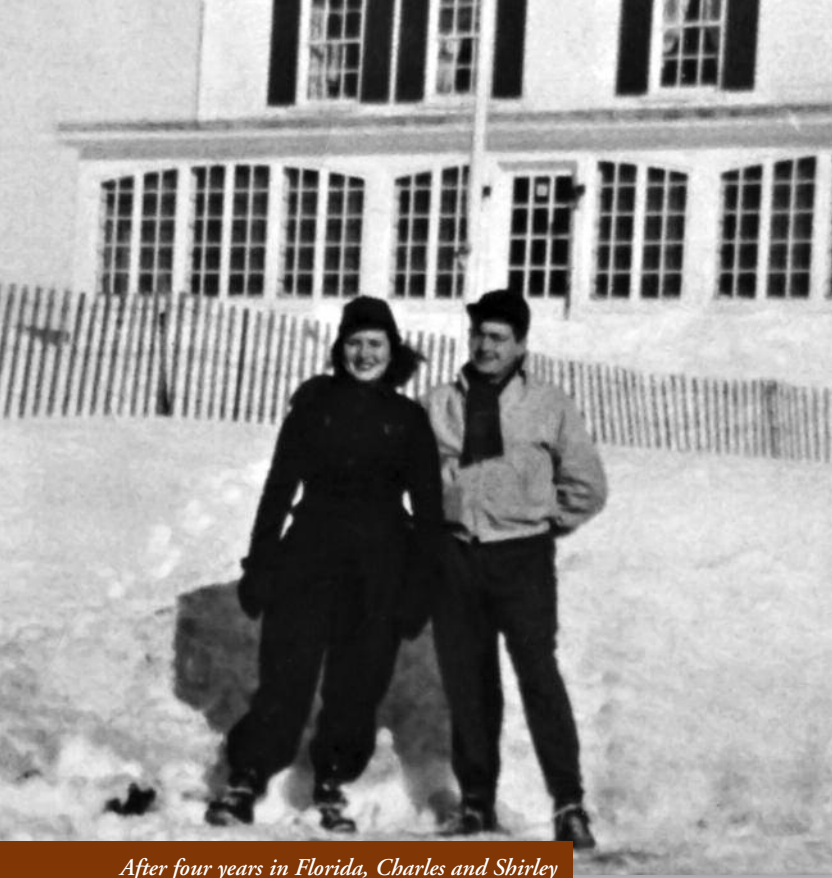
With the ship fouling contract coming to an end, Charles' last year working at the Oceanographic Institution was spent finishing up the project and considering his next steps.<sup>14</sup> Since he had put his education on hold to work on the Navy project, it was generally agreed that Charles should go back to graduate school and continue working toward his doctorate. Though his mentor Alfred Redfield encouraged him to finish his doctorate at Harvard—even suggesting that his work on the Navy project could count toward his degree—the faculty at Harvard were not inclined to apply Charles' Woods Hole work toward his degree.<sup>15</sup>

Instead, another mentor, Charles Renn, invited Charles to work on a project with him at the Johns Hopkins University. Renn was on faculty in the Department of Sanitary Engineering at Hopkins, studying pollution problems in the Baltimore Harbor. He saw Charles as the perfect fit for the role of biologist on his team.<sup>16</sup>

So it was that after only a year in Woods Hole, in September 1947 the Weisses packed again and drove to



Shirley's 25<sup>th</sup> birthday party



*After four years in Florida, Charles and Shirley braved the New England snow together. Here they are shown enjoying a ski trip in New Hampshire.*

Baltimore to pursue Charles' degree.<sup>17</sup>

In Baltimore, Charles became a doctoral candidate under Renn in sanitary engineering and under William McElroy in the biology department. Charles and Shirley found a temporary apartment to rent just a few blocks from Johns Hopkins, but after two months they moved to a small house in Glen Burnie, a suburb south of the city.

With Charles hard at work on the Baltimore Harbor project and degree requirements, Shirley began looking for a job in which she could put her intellect—and her degree—to work. She found it working as a research analyst and assistant to the director for the Maryland State Planning Commission.

"I was the Girl Friday," Shirley laughed later. The only woman on the staff with a non-clerical position, Shirley conducted economic and sociologic research, launched and edited the Commission's monthly newsletter, and participated in meetings of the state planning

board. With new things to learn about planning every day, Shirley threw herself into the work wholeheartedly.

"It was a wonderful learning process for me," she said later. "The whole function of state planning was to do these proven programs for the state—which meant planning the mental institutions, planning the colleges and universities, the health clinics, and the state roads."<sup>18</sup>

Meanwhile, Charles was hard at work on his doctorate at the Johns Hopkins departments of biology and sanitary engineering. Responsible for sampling and collecting data for the Baltimore Harbor pollution project, he was learning more each day about the research process.

"At each step I was doing more and more research and asking more and more questions," he said later.

With seven years of practical research experience behind him, Charles easily slipped into the nuances of doctoral research, finding problems that could be explored with a few well-designed experiments. He began researching his dissertation on how stream sediments suspended in water flowing into an estuary remove bacteria from the water when the bacteria adsorb on to silt particles.<sup>19</sup> At the same time he began publishing his first academic articles:

## Life in Baltimore

While living in Florida, Charles and Shirley had grown used to the privacy of having their own house rather than an apartment. When they moved to Baltimore in 1947, they found that houses in Baltimore were too expensive—but in the suburb of Glen Burnie, homes were new and affordable for students. The Weisses bought their house there for \$8,000, and Charles

bought a push mower to keep the grass trim.

Charles and Shirley drove into the city together every morning, going their separate ways until evening. As a graduate student, Charles had access to the Johns Hopkins Faculty Club, and he and Shirley often ate dinner there to avoid the traffic rush before driving home.





*Charles posing for a photo in his Johns Hopkins laboratory while working on the Baltimore Harbor project*

He published his first single-author article (on research from the ship fouling project) in 1947 in *The Biological Bulletin*, followed by seven more articles on ship fouling in 1948 in *The Biological Bulletin* and *Ecology*. In 1949, Charles published his first article from the Baltimore Harbor research in the *Journal of Cellular and Comparative Physiology*.<sup>20</sup>

Living with a doctoral candidate, Shirley began wondering whether pursuing an advanced degree might be feasible for her. She knew from watching Charles what graduate work involved, and at the planning department she saw that people with advanced degrees could go further in their fields. In the fall of 1949 she decided to test the waters, and she enrolled in graduate-level courses in political economy at Johns Hopkins.<sup>21</sup>

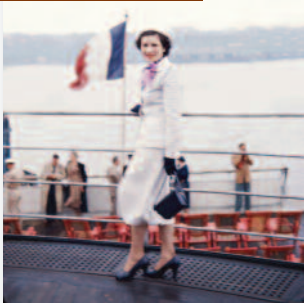
Then, in the spring of 1950, a job literally fell into Charles' lap. The director of the new Water Pollution Control division of the U.S. Public Health Service had been staying at a hospital in Baltimore just across the street from Johns Hopkins, "but being in the hospital didn't stop him from staffing his new Drainage Basin Office," said Charles.

"He got in touch with Abel Wolman, the chair of the sanitary engineering department, and asked about qualified personnel for the position of basin biologist. I very quickly found myself being interviewed at his bedside, and left with job in hand!" Charles remembered.<sup>22</sup>

Charles' new job was as the basin biologist in the New York office of the U.S. Public Health Service. His division—Water Pollution Control—was responsible for implementing the new Federal Water Pollution Control Act, passed by Congress in 1948.<sup>23</sup> The Act had



*Shirley aboard the  
Ile de France (shown above)*



divided the entire country into “water pollution control basins,” with each basin identified by river drainage systems. The New York office was responsible for the North Atlantic Drainage Basin, which included the Hudson, Delaware, Susquehanna, Potomac, and James Rivers.

“We were responsible for establishing who was doing what on these river systems to create unsatisfactory water quality conditions,” Charles explained. His research experience and training made him a natural for the basin biologist position.

Asked to report for duty in the Manhattan office as soon as was feasible, Charles began traveling to New York during the week and coming home to Baltimore on weekends; this schedule allowed him to start his new job and complete his

doctorate at the same time. Staying at his parents’ house in Newark during the week, he also began looking for a suitable apartment. Shirley met Charles at the Baltimore & Ohio Railroad station every Friday and dropped him off at the Pennsylvania Railroad station every Sunday for the trip back to Newark.<sup>24</sup>

This routine lasted for two months and allowed Charles to do “one of the most amazing things of all time,” Shirley said. “He finished his doctorate in three years!”<sup>25</sup>

With Charles’ doctorate in hand, the Weisses packed up and moved to East Orange, New Jersey. Their new apartment was close to Charles’ family and within easy walking distance of the Lackawanna Railway station and commuter trains to lower Manhattan, including “the delightful ferry ride across the Hudson and a short walk to 42 Broadway,” Charles said.<sup>26</sup>

Although Charles’ new office was located at 42 Broadway in Manhattan, it was not as glamorous as he would have liked.

“I could look out a window to see the Hudson River, but *my* office didn’t have any window views. I looked out on an elevator shaft!” he laughed.

Shirley, on the other hand, had a much nicer office situation in a three-story townhouse. After asking around about jobs in planning, economics, or publishing, she had found a job with the housing and planning consultants Harrison, Ballard & Allen, a well-respected firm that had just finished the rezoning of New York City. With her background in state planning and economics, “they were very interested in having me as a consultant,” Shirley said.

Working as a consultant for a respected firm, Shirley sensed herself coming into her own, professionally. The work was exciting and engaging—Harrison, Ballard & Allen had just secured a large contract with the city to study the impact of waste from lower Broadway up to 77<sup>th</sup> Street—and Shirley was more than competent to handle the work and responsibilities given her.<sup>27</sup>

Plus, the office had all the glamour, bustle, and excitement one would expect of a New



York City office. Harrison, Ballard & Allen took up the first and second floors of a three-story townhouse on East 77<sup>th</sup> Street; the third floor was an office and photo set for Mr. Ballard's wife, who was the fashion editor for *Vogue*.

"These were the days of the Dior models," Shirley recalled. "And so there we were on the second floor—writing reports, consulting—and up and down came these fabulous people.

"One might say this was the sort of thing that would only happen in New York!"

The constant flow of Dior models into Shirley's office building did more than just lend a fashionable atmosphere to the work environment: They also reawakened Shirley's longstanding desire to go abroad. Shirley's close friendship with Gary and her French studies had long ago inspired her desire to see France. She had planned to study abroad in college, but the war in Europe had made that impossible.<sup>28</sup> But circumstances were different now, and she and Charles could now plan their long-delayed trip to France.

They sailed on May 23, 1951, aboard the *Ile de France*. To save money, they had booked an inexpensive interior cabin with no windows and no separate bathroom facilities—but very quickly, they discovered that paying the ship purser an extra \$50 would improve their conditions considerably. "So we ended up in a very nice room with our own bath," Shirley remembered.

Onboard ship, Shirley and Charles found they were much younger than most of the other passengers, who called them "the newlyweds." And though she and Charles had been married nine years, Shirley said, "It was *like* being newlywed!" Shirley and Charles spent the five-day voyage to France meeting fellow passengers, walking the decks, practicing French, and planning for the gourmet delights they would experience in France, especially the wines and cheeses.

They arrived at Le Havre, France, on May 29. When they disembarked, "It was as though all the books I'd ever read and studied on France were coming to life," said Shirley.<sup>29</sup>

As Shirley and Charles explored the streets of Paris together, passersby often mistook Shirley for a native Parisian.

"The Parisians would hear her talk French, and their eyes would go up, because she didn't have an American accent—she had a French Parisian accent," Charles said.<sup>30</sup>

In Paris, Shirley and Charles made sure to attend an opera at the famous Paris Opera House—their first opera together since the war had ended. Then they rented a car and drove down the Rhone Valley all the way to Nice, and back. Departing for home from Southampton, England, on June 23 aboard the RMS *Caronia*, Charles and Shirley were already planning their next trip abroad for the following spring.

For their second trip, the Weisses were eager to see more of Europe. So in the spring of



*"It was as though all the books I'd ever read and studied on France were coming to life," said Shirley.*





*"As Shirley and Charles explored the streets of Paris together, passersby often mistook Shirley for a native Parisian."*

1952 they sailed aboard the *New Amsterdam* from Hoboken, New Jersey, to Rotterdam, one of the busiest ports in Europe. They picked up a rental car and drove through Holland, Belgium, France, Italy, Switzerland, and back to Paris. Then from Paris, they flew to Norway, Sweden, and Denmark.

"All this time I was carrying eight currencies, because in those days the exchange rate was favorable if you bought foreign currencies in the United States." Shirley laughed later. "So I had these eight currencies to worry about."<sup>31</sup>

Returning to work after their 1952 trip abroad, Charles began hearing murmurs around the office about budget cuts. Congress was in the midst of tightening up the national budget, and the Public Health Service's projects—and jobs—were on the chopping block. Charles' job, he soon found, was one of those scheduled to be cut.<sup>32</sup>

Charles began asking friends and colleagues if they knew of any open positions. Since he was well known in the Baltimore academic circles for his work at Johns Hopkins, he soon secured a position as a biologist at the Army Chemical Center in Edgewood, Maryland.<sup>33</sup>

Thus in November 1952, the Weisses moved back to Baltimore, this time to an apartment in the city.<sup>34</sup>

Shirley contacted her former employers at the Maryland State Planning Commission and was soon hired back—this time, not as a Girl Friday. Her experience at Harrison, Ballard & Allen was impressive, and they hired Shirley as a planning economist.<sup>35</sup>

For the next four years, the Weisses lived and traveled out of Baltimore, enjoying the arts and music that the city offered



*Charles and Shirley aboard the Queen Mary, August 1953*

### *The Benefits of Traveling*

"This is a little French expression that I learned and it goes this way: 'Quand on est plus âgé, ce n'est pas les choses que nous avons fait qui forme le regret. Ce sont les choses que nous n'avons pas fait.' Translated, that means, 'When you're older, you don't regret the things that you have done. What you regret are the things you haven't done.' As a result of that, each year we would plan our next year's trip."

—Shirley Weiss



and learning more and more in their jobs. They continued traveling every year, generally planning their trips for the spring or the fall (before or after the peak of travel season) to save money.<sup>36</sup>

Their second time living in Baltimore, Charles and Shirley took full advantage of the abundant art, music, and theater available in the city.

“Baltimore was our real love at that time,” Shirley said later.<sup>38</sup>

Baltimore offered many excellent venues for music and theater, as did nearby Washington, D.C.; without a busy graduate student schedule to deal with, the Weisses were now in a position to enjoy as many performances as they wanted. And they were still close enough to New York City to travel there on weekends to visit family and attend musical performances.

Charles’ job in the Sanitary Chemicals Branch of the Army Chemical Center involved evaluating specific chemicals and their impacts on water systems as part of the Army’s studies of chemical warfare techniques and defenses. Because the nerve gasses that the Army was interested in as military weapons were similar to several new insecticides, Charles began developing a procedure for detecting very small amounts of phosphorus insecticides in water; his procedure involved testing small fish for exposure to the contaminants. Charles did not know it at the time, but his technique for testing for specific water pollutants would later prove very advantageous for him.<sup>39</sup>

In general, however, Charles found his work at the Army Chemical Center “fairly confining, mentally.” By his fourth year there, he was ready for a move.<sup>40</sup>

Then, in October 1955, the phone rang. When Charles answered it, he was surprised to hear a man named Daniel Okun on the other end of the line. Okun introduced himself as the head of the Department of Sanitary Engineering at the University of North Carolina at Chapel Hill’s School of Public Health.<sup>41</sup>

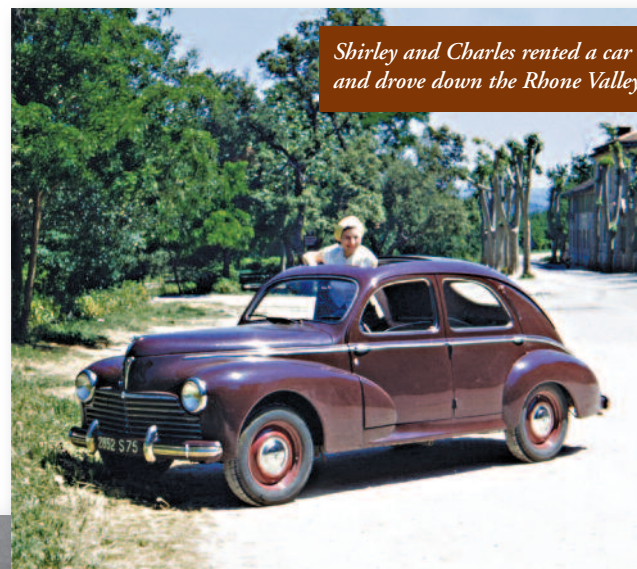
Okun had a job that needed filling: a position providing academic support to the department’s four faculty members. It would be a two-year appointment involving graduate teaching and independent research. Colleagues at Johns Hopkins had suggested Charles’ name as a possible candidate, and Okun wanted to know: Was Charles interested?

Charles, ready for a move to a more challenging job, was definitely interested.

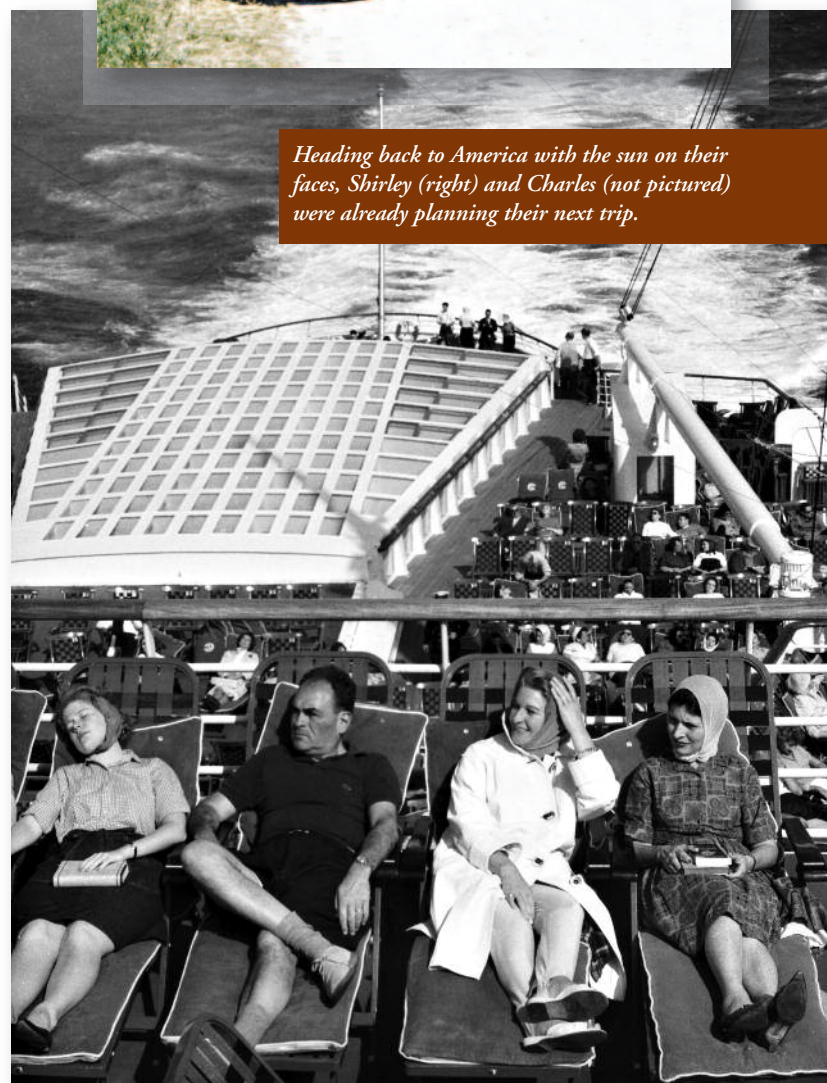
Okun soon sent an official letter inviting Charles to apply for the position. Later that month, Charles and Shirley traveled to Chapel Hill for Charles’ interview.

## Playing the Royal Piano

“While touring the Royal Palace at Aranjuez, Spain, “The [Royal Palace] tour guide (of course all in Spanish) in the music room asked if anyone would like to play the royal piano. When no one offered, Shirley stepped forward and struck off her own tune.” —Charles Weiss, travel diary entry, September 4, 1954<sup>37</sup>



*Shirley and Charles rented a car and drove down the Rhone Valley.*



*Heading back to America with the sun on their faces, Shirley (right) and Charles (not pictured) were already planning their next trip.*





Shirley and Charles in their Baltimore apartment, Christmas, 1953

## All the Theater in New York City

On one weekend trip to New York, Charles and Shirley had planned to see a matinee performance on Saturday. While scanning the show listings for the evening, Shirley decided they should also attend an evening show of a different performance.

"Shirley, do we really need to see *all* the theater onstage in New York City?" a frustrated Charles asked her.

Shirley's reply was simple: "Of course!"

They arrived in Chapel Hill on a crowded football weekend in late October. The hotels were all full, but Okun had found them a place to stay in a private home. The next morning, Charles interviewed with Okun, two other faculty members, and the dean of the School of Public Health.

Charles felt that the interview had gone well, but even he was surprised the next day when, during the car ride back to the airport, Okun offered him the position.

"So I accepted it," said Charles. "Even though it was only for a two-year appointment, I felt, 'Well, let's make the shift and see what happens.'"<sup>42</sup>

"It was just like that," Shirley recalled. "We didn't hesitate. And it was agreed that we would come in January for the spring semester.

"When we started telling people in Baltimore that we were going to Chapel Hill, they practically said it was the southern part of heaven!"<sup>43</sup>



Aboard the RMS Queen Elizabeth, 1954

# Medical Tribune

world news of medicine and its practice—fast, accurate, complete

MEDICAL TRIBUNE

## TRIBUNE SCIENCE HIGHLIGHTS

### Enzyme Measured in Brains of Fish To Determine Safe Insecticide Level

Ever since Rachel Carson's *Silent Spring* hit the bookstores, a number of people who never gave the matter much thought before have been in a considerable swivet about pesticides.

So, naturally, has the chemical industry, which makes pesticides. Not too long ago, in fact, the industry set up an information for the sole purpose of putting on "into perspective."

Early granted that *Silent Spring* is more as an excitatory tract than an exposition—a sort of *Uncle Tom's Cabin* for pure food and water—but almost no one in a responsible position is denying that indiscriminate use of pesticides can cause some damage of degree

number of insect types resistant to DDT.

Although generally not as powerful as the chlorinated hydrocarbons, organic phosphorus compounds have proved 100 per cent effective against certain larvae in concentrations as low as 0.0125 mg. per L. of water. In some states, black fly and mosquito larvae control has been ensured by making concentrations as high as 1 mg. of parathion per L. of water in streams—about 10 times the concentration required to kill all the fish in the neighborhood if they hang around long enough.

Early in the organic phosphorus game it was known that the compound does its



North Carolina's Weiss: Fish brains give the index of insecticide "over-kill."

While at the Army Chemical Center, Charles began developing a procedure to detect insecticides in water supplies.