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JOHN GIESE

This is a oral contribution by John Giese. It was recorded on 13 October 1984.

I came to Princeton strictly by accident. During my last two academic years (1934-36) at the University of Chicago I became acquainted with Herb Shapiro, an NRF [National Research Council Fellow] in physiology (?) and recent Princeton Ph.D. in an appropriate field of biology. We attended a one-quarter junior level course in electricity and magnetism, lived at International House, and had mutual friends among the graduate students in mathematics. As the time to apply for admission to graduate school approached Herb suggested that I try Princeton as well as Chicago.

My application to Princeton expressed an interest in mathematical physics. In retrospect that was a grave error, since my minor in physics was very weak (B's in Victorian subjects). Applied mathematics would have been much better. Both Chicago and Princeton accepted me. Princeton offered tuition and a stipend of \$600. When I told Prof. G.A. Bliss that I had decided to accept Princeton's offer he asked whether my reason was just the money. I replied that after living for 21 years in Chicago I wanted a change of scene.

At Princeton I took some courses in physics as well as mathematics. Nothing clicked for me in physics, and I drifted into mathematics. In my second year I took Dean Eisenhart's course in Riemannian geometry. During the second semester I concocted an alternative proof of a theorem in his book about the embedding of conformally-flat spaces in flat spaces of two or more dimensions. A couple of days later, as we walked back from lunch to (the original) Fine Hall, he said "Why don't you try to characterize the conformally-flat spaces of class one?" Eventually that became my dissertation. In 1938-39 I attended Dean

Eisenhart's course on continuous groups. I think that toward the end of the second semester the discussion diverged to his recent and ongoing work on transformations of variables that would change certain partial differential equations into forms that could be solved by separation of variables. This experience may have influenced me subconsciously when I worked on a paper "Compressible flows with degenerate hodographs" that appeared in *Quart. Appl. Math.* in 1951.

During my first year in Princeton I graded papers for H.P. Robertson and operated a mimeograph machine to reproduce course or lecture notes. The major problem in the latter task was sorting the mimeographed output into individual properly ordered sets, but there were always enough graduate students available and willing to help with this chore. All we had to do was to arrange the stacks of duplicates in order on the edges of the very large table in the Fine Hall common room and then to walk around picking one page from each pile. Of course it helped to assure the presence of a larger number of volunteers for a quick sort if you did the job shortly before tea-time.

During the remainder of my eventually five years in Princeton I performed minor clerical work for the editors of the *Annals of Mathematics*. I marked manuscripts to impose the journal's standard typographical style, distinguished '1' (one) from 'l' (ell), identified sub- and superscripts and foreign characters, and tallied them on a special form to help the printers set up their monotype machine for this job. I also examined the corrected galley proofs to clarify changes, if necessary, and to bring to Prof. Bohnenblust's attention galleys that involved excessive amounts of changes. Finally I examined the page proofs to assure that figures and tables were properly placed, galley corrections correctly performed, and page breaks made at esthetically acceptable places in the documents. Ordinarily authors were supposed to submit papers in typewritten form, as required by Princeton's contract with the printer. However, when Jesse Douglas submitted his paper, "Minimal surfaces of higher topological structure" (*Annals of Math.* 40(1939), pp. 205-298), it was literally a manuscript, beautiful page after page of almost mechanically uniform script, almost like copper engraving. Bohny submitted a few sample pages to Waverly Press to persuade them to waive the requirement for typewriting in this case.

During my fourth year I also taught a section of analytic geometry. In 1940-41 in my first full time job at Rutgers I taught 18 hours a week for \$1800 a year. I lived very frugally in New Brunswick, where I ate for an average of \$1.75 a day, paid \$4.00 per week for a room at the home of a Rutgers English professor's widow, went to New York for dates once a month, bought a few mathematics books, saw innumerable movies, and still managed to save almost half of my first year's salary. In May or June 1941 I was informed that Rutgers would not renew my contract because most of the prospective students would be drafted. At the beginning of September I received at my parents' home in Chicago instructions from my draft board to go for a preliminary physical examination. A few hours after that examination Dean Eisenhart called to offer me a job, since Princeton as well as a great

many other institutions had contracted with the armed forces to train many prospective recruits in mathematics and other subjects. I said that I would like to accept but thought I was about to be drafted. Eisenhart said that I should come anyway.

During my fifth year (1941-42) in Princeton I wound up with three half-time jobs: clerical work for the *Annals* teaching at Princeton; and teaching at Rutgers. To travel between Princeton and New Brunswick I bought a new 1941 Plymouth four-door sedan for \$989 cash. It served me and my eventually acquired family for about fifteen years. They don't make cars like that any more!

Language exams at Princeton were rather casual. When I went to Prof. Bochner for the German exam he opened a book and asked me to translate the first paragraph. I looked at the cover to discover the general subject and then began to speak. After about three sentences he said, "Okay, that's enough." My French exam was rather impromptu. Bohney caught me in the hall one day and said, "Come to my office for your French exam!" Then he gave me a book and told me to open it at random and to translate the left-hand page. Again we stopped at about the third sentence, even though I had to ask him for the technical meaning of 'allure'.

Here are some items from the trivial side of graduate students' life in the Thirties.

To begin, I had roommate D. Ransom Whitney, who subsequently attended Ohio State University and who eventually became chairman of the department of statistics there and remained there until his retirement a few years ago. Whitney was a talented softball player. As a matter of fact, he was a lightning pitcher, so that he quite frequently struck out batters of the opposing team. I believe you once told me, some September when you and perhaps Alice and I were driving from Chicago back to Princeton, that at the annual departmental meeting to assess graduate students and to decide which ones you wished to encourage, Dean Eisenhart said, "Well, we absolutely have to have Whitney, because how can we beat the chemistry department otherwise?" (in the annual softball game).

What awed me in my earliest years at Princeton was the fact that there were a number of Rhodes Scholars and Commonwealth Fellows on hand. I can remember that Carl Allendoerfer and Arthur A.F. Brown, A-squared F. Brown, were Rhodes Scholars, and I thought also that Fred Ficken was one. With regard to Commonwealth Fellows or non-fellows, while I was at Princeton there were a couple of graduate students of physics, one of whom was M.H.L. Pryce, with a 'y', who I guess became a Nobel-Prize winner in physics. The other Price, with the 'i', owned a Chevy two-door sedan, vintage who knows what, very early '30s. I can recall that on one autumn day he stopped to pick me up on my way back to the Graduate College for lunch. He then drove along in a very dashing and sort of breathtaking way. Presently we came to a point where M.H.L. Pryce, came in sight, trudging toward the Graduate College as well. So "i-Price" said as he saw "y-Pryce",

"Oh look, there's Maurice. Shall we run him down?" I'm not sure, but I think that this same "i-Price" was the man who nearly achieved immortality by coming close to running down Albert Einstein.

As long as I'm thinking about Britons, I'll say that I can remember that your [=Tucker's] Ph.D. student, Shaun Wylie, sort of amazed me one day by going rock climbing on the walls of the Graduate College. I don't remember how high he managed to get, but I don't imagine he went all the way to the top of Cleveland Tower.

To return to the subject of baseball, I can recall one late-spring evening on which it was resolved for some reason or other to stage a baseball game between two teams of graduate students—an "East" versus "West" game. As it turned out, the ground rules were that by special dispensation Philadelphia was to be included in the "East".

One of my former bosses at the University of Delaware, David Lamb, a Ph.D. from the chemical engineering department at Princeton who eventually became chairman of the department of statistics and computer science, told me an anecdote concerning the early years of the Princeton graduate school. In the building in which graduate students were housed there was a big attic in which the former owners had left various items, including a stuffed peacock. At some point it was suggested to the trustees that the graduate students were living much too well, so some member of the board was instructed to visit the graduate students' dormitory to check up on the matter. It was known that this inspection was to occur, and somebody or other prepared for the inspection. They had a roast turkey or something over which had been draped the skin of the stuffed peacock that had been stored in the attic. One of the graduate students that was in on this prank looked up and said, "Oh no, peacock again. What a bore." I trust that the trustee understood this was a joke, otherwise he shouldn't have been a trustee.

Dave Lamb also said that the waiters who served us in the dining rooms of the Graduate College, many of whom were Greek, had been brought to this country by some Princeton archeologist who had hired them to help on a dig someplace in Greece or Turkey, and somehow he managed to bring them back, or attract them back, or sponsor them to come to the United States and got them jobs working at the Graduate College as houseboys and waiters. In this connection I can remember that at some luncheon in the late '30s the waiter came around to one of my neighbors, since we were almost through with the main part of luncheon, and said in his habitual way when he wanted to find out what you wanted for dessert, "Cheese or fruit?" The person to whom he said this asked, "What kind of fruit?", and the waiter replied, "Cupcakes." Well, I suppose you have to be a member of the fraternity to think that's funny.

One of the famous mathematicians who came to Princeton while I was a graduate student was Paul Erdos. There are numerous humorous anecdotes about him. He was constantly thinking about mathematics and would quite frequently get so wrapped up in his thoughts that he would

do something or say something that seemed quite ridiculous. It's well known that Arthur Stone, Erdos, and Kakutani in the summer of, shall I say 1941, or possibly—no it couldn't have been any later—in the summer of 1941 took a vacation trip which put them someplace on Long Island. Stone was driving, and Erdos and Kakutani were talking about mathematics in the back seat not paying much attention to where they were going. Stone himself became absorbed in what they were talking about, so he somehow blundered onto a road off the main highway that led eventually to a gate in a fence. The gate was open, and he drove on. There were signs eventually that said "Restricted Area - Do Not Enter", but he kept driving. Presently they were stopped by a security guard who said, "What are you doing here?" and "Who are you?" and "Where do you come from?" and so forth. It turned out that these were three foreigners, from England, from Hungary, and from Japan. So I'm sure that you recall the punchline of the story, that when Erdos was asked to explain why they had failed to notice the signs forbidding them to enter, how could they possibly have failed to see these things, Erdos replied, "I was thinking of a theorem." As a matter of fact the episode got written up in the next day's *New York Times*.

Sometime around 1943 Erdos came to Purdue, where I was then working. At Purdue he found a number of people who shared interests with him and who were stimulated by him to work on certain matters. One of them was Ivan Niven. I can remember that either Ivan or Betty Niven mentioned to me once when I saw them sometime later, 1946 or there about, that when Erdos left Purdue he continued to correspond with Ivan about some problem, and he once sent Ivan a postcard which had as its first two sentences: "Dear Niven, How are you? Let 'p' be a prime." I guess Betty and I thought this was a ridiculous or startling change of subject.

Erdos told many of his friends and acquaintances that when he was a child he found books in English around his parents' house, and he started to read them. Without any training in English he decided that English might be pronounced according to Hungarian rules. Eventually his parents told him that this was not the case, and eventually through travel and perhaps study he learned to make better approximations to the correct pronunciation of British or American English. However as a game or as an amusement he would occasionally refer to things in this English with Hungarian pronunciation that many of us came to call "Erdese". The primary rules for pronunciation of Erdese were to pronounce every 'c' as 'ts' and every 's' as 'sh'. This would lead you to such things as pronouncing the word for icicles as 'itsitslesh'. Or the use for used cars as 'ushed tsarsh'. Sometimes Erdos would speak Erdese to people who were not familiar with that language. He once went into Viedt's for breakfast and told the waitress that he wanted to have "grappefruit, juitse, and shaushage" for breakfast. That's grapefruit, juice, and sausage.

There's another Erdos story that makes him out to be the stereotypical absentminded-professor. Gail Young told me that Erdos went on a speaking tour of sorts, by train in those days. He wanted

to work on a problem while he was traveling, and he got down his suitcase and removed from it all of his clothing to get at his paper and pencil. The train arrived at the terminal and everybody got off except Erdos. Presently the traincar Erdos was in- was off in the middle of the railroad yard someplace, and I suppose the cleaning people came around and found him still in the car. They said "You have to go." So he got out and had to trudge all the way back to the station carrying his essentially empty suitcase in one hand and all of his papers and clothes in the other hand. I suppose it's an indication of the intensity of his absentmindedness or mindedness, or his total absorption in whatever the problem was.

It's a little bit hard to get off the subject of Erdos. I once went to a seminar on I-know-not-what subject by Erdos. Lefschetz came in after Erdos had been going for about 5 minutes. After a few more minutes Lefschetz said, "Stop, you're making a mistake." Erdos tried to argue a little bit, but presently Lefschetz gave enough of an argument to persuade Erdos that he was wrong. I can't remember whether that ruined the seminar, but I suspect it didn't.

Nowadays it's not uncommon for ordinary people to get into situations in which there is some prospect of physical violence. It's generally thought that in the good old days this rarely occurred. Even in Princeton in the '30s, it was possible. I can recall that there was a graduate student of chemistry who had been an ex-, who-knows-what, welterweight boxing champion, or at least something close to that. One evening as he was walking home from the lab back to the Graduate College he encountered a group of undergraduates who had drunk too much beer at the Nass that night and were feeling boistrous and then aggressive. So they didn't want to yield space on the sidewalk to the chemist. He felt that the way in which they were doing this was somewhat offensive, so presently one of the undergraduates took a swing at the boxer. Since the swing showed promise of leading to a bigger fight, the chemist decided to that he had to stop this, so he swung hard at one of his tormentors and may even have broken the guy's jaw. In any event, the next morning, Dean Eisenhart as Dean of the Graduate School called this guy in to explain what had happened. After the chemist explained what had happened, Dean Eisenhart was supposed to have said, "Well, okay. I understand what happened. I think that this doesn't require any further attention. Don't do it again. And off the record, you did the right thing. I would have struck back myself."

I don't know whether your other interviewees will mention anything about social life in Princeton. In my own case, toward the end of my first year at Princeton I bought formal clothes to go a formal dance at the Graduate College. During my subsequent four years at Princeton I attended dances of the Spat and Slipper Club and the Little Club. These dances seemed remote from mathematics, but I am pretty sure that you attended them. I can remember that Marston Morse went to the dances fairly regularly. In addition to this I think that I went to one of the dances at the Little Club to which came, during her first season in Princeton, the second Mrs. von Neumann, with whom I even danced.

Well, that's about all that I can think of. I wish I could have given you more solid material than this.