

a Fulbrighter in Baghdad

By Louis R. Weber

"TO BRING ABOUT better understanding between the United States and other countries through an exchange of professors, research scholars, teachers and students," I read on the wall of the modest suite of offices of the Fulbright Foundation in Iraq. My spine tingled as I read these words, for nearby was my name with "College of Arts and Sciences" as my assignment. With this, the first year of the complete Fulbright Program in Iraq, this statement presented a challenge as well as an important responsibility.

Friendliness towards other nations was an important part of my education in the family and elsewhere. The earliest magazine title that comes to mind was "Over Sea and Land." The problems of many of the earth's peoples were studied before I realized that the title was four words and not one. The meat packing districts and the markets of my home town, St. Joseph, Missouri, supported many of the world's races and the friendliness with which my father greeted these people is bearing fruit in Baghdad today. My mother expected all of us to continue our world education at Park College, for one does not room across the hall from a Japanese or eat with a Korean without realizing that each has something very distinct and important to contribute. But, according to the Chinese proverb, "To see once is better than to hear a hundred times." Yet it was now difficult to believe that moments before we had ascended from the arcade of small shops known as Al Rashid Street in Baghdad. After I had dodged a caravan of horses, the small green door with the brass plate looked almost strange. Only one hundred hours before, we had said good-bye to our family in New York all because we had seen an announcement a year before in *Physics Today*: Fulbright Fellowships would be available and applications were welcome.

Physicists are generally looking for optimum conditions. My sabbatical leave was several cycles past due since the Army Specialized Training Program during the past war and the heavy enrollment of veterans had required all of our time and energy. Our daughters had completed their college work and were married; a professor friend was available to assume some of my teaching load; another professor was willing to take

over the administrative work of the department; our health was good and our age just right.

The Middle East not only seemed an important and vital area but offered the advantage of college subjects taught in English. All of the books readily available concerning this area were scanned. Some were more than twenty years old. One day we looked on our bookshelf to discover Justice Douglas' book, *Strange Lands and Friendly People*. We have found the title "too much" (very) true, as the Arabs say.

Extend the Mediterranean Sea eastward and project the Persian Gulf northwest. Baghdad, a city of probably 800,000, lies at the intersection, 521 miles east of Beirut, in an area formerly known to most of us as Mesopotamia (two rivers). To the average person, Baghdad brings back memories of flying carpets, magic lamps, and thieves. But to those of us who have been privileged to live here only a few months, one senses the tremendous challenge of a country like Iraq, seeking to regain its status of 750-1258 AD under the Abbasid caliphate and especially that period of Harun al-Rashid (786-809 AD). Not only were scientists, poets, philosophers attracted to Baghdad, but a library, academy, and hospital were available.

The College of Arts and Sciences, now in its fourth year, is one of nine colleges in Baghdad. It is hoped before long that these colleges of Law, Medicine, Engineering, etc., with a total enrollment of approximately 5000 students, will be united in their efforts as the University of Baghdad. It is believed that such an institution could make valuable contributions in the fields of Middle Eastern history, Arabic studies, archaeology, and anthropology. Research would also be stimulated in the sciences, since it is very limited at present.

The physics laboratory was a pleasant surprise. Four rooms of modest size had been outfitted last year on the second floor of the Engineering College laboratory. Cabinets and tables, locally made, were ample. Gas, water, and electrical outlets (220 volts, 50 cps) were available on the wall benches. This achievement had resulted from the heroic efforts of Dr. Albert Baez, as a member of Unesco. The cabinets were literally filled to overflowing with equipment, all of which had





Professor Weber (at right) with an advanced group of physics students at the College of Arts and Sciences in Baghdad, Iraq. On a sabbatical leave of absence from his post at Colorado A & M College, Professor Weber lectured in the Baghdad school during the last academic year under the Fulbright program for educational exchange.

been ordered one or two years previously. I had brought a few items with me that took little space: thermocouple wire with calibration tables; a thermistor, germanium rectifiers, transmission gratings, lenses. Imagine my surprise to find among many items: several hundred lenses; forty large prisms of optical quality for spectrometers; two spectrometers; twenty duNuoy balances; seven measuring microscopes; ten polarimeters; a refractometer; forty each of Boyle's Law apparatus, portable galvanometers, analytical balances, stop watches, vernier calipers. Calorimeters were present of every description as well as three hundred thermometers. Although there was a fixed and a variable audio oscillator as well as three cathode ray oscillographs, there were no components commonly associated with electronic circuits. With only a dozen burette clamps, I suddenly realized how dependent one is on table, rightangle clamps, etc. But where were the voltmeters and ammeters? Two small millivoltmeters and one microammeter constituted the full meter supply. Many of these items to fill in the gaps had been ordered by Dr. Baez and they have finally arrived as this paper is being written. We studied electrical circuits with galvanometers improvised as voltmeters and ammeters.

THE TEN DAYS between my arrival and the opening of the college year, October 1, found me at the laboratory, assessing and arranging the equipment. It had been unpacked and stored with little regard for use. There were three assistants to help me in this task. Unlike the assistants in the United States, these young men and women have had no courses in physics; one is a graduate of the Law College while the other three have not attended college. They have been most friendly and cooperative in every project I have proposed. Assistants are personally responsible for each piece of equipment and keep each laboratory doubly locked. Until I had convinced them otherwise, it was necessary for me to reopen the door of one room of the same laboratory several times within an hour. Furthermore, like the students, they come so well dressed that one at first hesitates to ask them to do any manual construction work in the laboratory. This was soon

remedied when I told one young man that it is customary to remove a dress coat when sawing a board. Mrs. Weber smiles at this. She remembers how graduate assistants had to be coached to wear ties when supervising a laboratory in the United States. The students' dress, I might add, is a pleasant change from the blue jeans so prevalent the last few years.

Each day several students visited the laboratory. On these occasions, I not only learned their names but determined their ability and knowledge by asking a question pertinent to their field of specialization. They seemed to enjoy this immensely and often returned with other students to meet me. By the time college opened, I not only knew the equipment but most of the students in the upper courses. This preliminary preparation enabled me to begin the year feeling like a permanent member of the staff.

The staff members have become better acquainted with me from observing, helping, and using pieces of equipment or ideas that I have suggested. When one of them who had been here last year asked me where a certain instrument was in the cabinets, I felt highly complimented. As time went on, the experiments planned for my course were adopted in modified form for other courses. Since some of these experiments required improvised equipment, I felt that a definite contribution was being made. There is little incentive or time for regular staff members to improvise or make simple equipment since they generally feel that they must teach in two or more colleges to obtain a salary compatible with living requirements. Thus, most of the instruction is technically part time.

New equipment is being received all the time and we have had the privilege of ordering many instruments and general equipment to fill out the gaps we have found. The equipment now on hand is not always in a condition to use. Suspensions in one-third of the forty portable galvanometers were found still clamped when the suspension adjustment was moved to "Free." Since these instruments were badly needed and it would be months before they could be returned to the

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manufacturer, I broke the seals and found that only minor adjustments were necessary. Of six inductors (earth), three were "open" at the commutator segment connection. I should like to make a plea to all suppliers of equipment going to foreign laboratories: check and triple check the equipment. Pack the instruments carefully.

It is now 9:30 a.m. Since I have a lecture at 10 a.m. at Adimiyah several kilometers away, I must walk from the laboratory back of the Engineering College at North Gate and board a modern bus on the highway one hundred meters distant. When college opened, the enrollment exceeded the room available in the College of Arts and Sciences at North Gate. The science departments were accordingly moved to an old secondary school at Adimiyah which is being remodelled to accommodate the various laboratories. The physics laboratory has not yet been constructed in this building. I generally choose a seat on the bus next to an Iraqi who looks as if he could speak English. I have found all of these people most friendly. Most of these brief encounters have been most valuable in helping me know the people. Some of them have led to invitations to the home. Judge Ziada, who had just returned from the United States with his Turkish wife after several weeks in New York and Washington, was a bus seat companion one morning. Later in the Ziada home, we learned that Madame Ziada taught piano at the Institute of Fine Arts.

The judge asked me what I had in the pulp board box under my arm. I showed him two spools of wire, a galvanometer, and a small storage cell that were to be used in the lecture to demonstrate electromagnetic induction. I explained that there was still no storage room for lecture equipment—not even a lecture table; that I would carry the equipment back to the laboratory after the lecture since it would be needed in the laboratory that afternoon.

I entered the amphitheater that morning and in a few minutes students began to trickle into the room. Soon there were forty-four students in the reverberant chamber which could accommodate three times as many. It was hard to believe that so few weeks before, the names of the students seemed too difficult to pronounce, let alone remember. For recording grades, I had assigned them numbers. It seemed a less ambiguous way in the face of so many Abduls and Mohammeds. Now I knew all their names and their numbers as well. As each came into the room there were greetings and some came for a personal handshake. At the opening of the college year, it seemed best that I should take the second year physics course. The eighteen students enrolled all take the same courses and have chosen mathematics as a major. With integral calculus as a background, they were highly indignant when the faculty committee asked me to add fourteen second year chemistry students to my class. These students were just beginning their integral calculus. When they entered the amphitheater, the first group walked out.

I had told them that it would be a physical impos-

sibility to set up a complete new course for them since Professor Harrington of Drew College, and myself, were the only qualified lecturers available. My colleague, under Unesco, was lecturing to the large first year class and acting as head of the department. Later, as I boarded the bus that morning, one of the most brilliant students in the original group sat down beside me. I told him that I was sorry that his class had not remained in the hall; that I would endeavor to separate the classes in the two-hour discussion group each week and give them problems suitable to their background. Furthermore, I told him that he would be adequately challenged every day. Need I add that this Palestinian student shook hands with me and everyone was in class next day? But this is not the end of the story. Three weeks later, the third year chemistry students joined the class. Having been asked to sit with the Board of Studies, consisting of five department heads, I inwardly shuddered when this matter was brought up and my opinion asked. But the results have been surprising. The students in this third year group, with their greater maturity and experience, have stabilized the class and frequently comprehend principles and applications more quickly than those with more mathematical background.

But I can hear someone ask, "What are the students like?" They are very friendly, critical, frank, independent. They have presented me with the greatest challenge of my entire teaching experience. After my first lecture, they criticized me for not spending the time working problems for them. I told them why the particular ideas had been stressed and have chosen this technique of appealing to them throughout the entire course. The Arabs have a proverb: "Appeal to an Arab and he will give you his clothes." Now, as I write this, these same students treat me as if I were just one step below God. Every lecture thus is a real experience in attempting to maintain the high pedestal on which they have placed me. There are the lighter sides, too. Frequently, I will write two questions on the board, one of which is more difficult and especially designed for those with greater mathematical preparation. At the end of the five-minute period, it is practically impossible to collect the papers. They all wish to hold on to them for thirty minutes. I have solved this to a large extent by starting to count one, two, three,—drawing out the last word. Most of the papers are in when this little game is concluded.

The students had a habit of coming into the lecture up to ten minutes beyond the hour. Some professors have told me that they lock the door when the lecture starts. It is a quick solution I admit. However, I have again appealed to the students and have been more than happy with the results. The problem of getting the students to do individual work is probably the most difficult to solve. In a culture where one sheep must be killed so that a stranger may have food, even though that sheep be their sole possession, the students share their notebooks, experimental results, brains. As a result, five or six students of the forty-four do most of

the thinking for all the remainder. How to share one's abilities (which I fundamentally believe to be good) but at the same time to clothe those ideas with an individual treatment and an added creative effort, seems to be beyond the comprehension of most of them.

ALTHOUGH the college library is very inadequate, there are at present about one hundred excellent books in the field of physics. However, practically no students in the science courses were in the habit of using the library. After bringing several books to the lecture room, as well as the four journals available from the American Institute of Physics, I have been quite pleased to have several students report on their library reading. The time that American students spend outside the classroom in study, the Iraqi students largely spend in the classroom or laboratory, most of them carrying 31 or 32 hours. Thus a student in my course has five lectures, one three-hour laboratory, and a two-hour problem and discussion group each week. Between classes, he sits in the college hallway drinking tea, chatting with other students, or playing pingpong. In American colleges, we often must encourage small talk among students. Somewhere between the American and the Middle East plan would be optimum, I believe.

Although the best students come from every part of Iraq, the majority of them come from the northern part: from Mosul, Kirkuk, Suleimaniya. Remembering the past studies in the United States that good instructors are generally the sources of good students, Mrs. Weber and I visited the physics teachers in these towns and others. We found them well trained, alert, and very personable. Nearly all of them were married and had families. Most of them are graduates of the Higher Teachers' College of Baghdad. Except in Mosul, the laboratories are extremely modest in equipment. Baghdad College, a private secondary school, has an excellent laboratory and library. Out of twenty-five secondary school graduates chosen this year to study for the General Certificate Examinations for study in London, the three towns mentioned above contributed one-half the class. Five students are from Baghdad.

The faculty meetings in the College of Arts and Sciences are attended by about thirty men and one woman. About half of the staff are Iraqi who have

received graduate degrees in Europe or America. The rest of the faculty members are mostly Europeans, some under Unesco. Professor Harrington (Unesco) and I are the only United States citizens, I believe. Every problem brought up by our Dean Duri is given free discussion. We have endeavored to contribute constructive ideas when these opportunities have been presented. Without any request on my part, Sunday was left free of classes for me. This overture has been most appreciated by Mrs. Weber and myself, and we have used the time to participate actively in the Church. We feel that a true understanding between our host country and the United States is impossible without active spiritual elements.

The semimonthly meeting of the Physical Society of Baghdad, attended by an average of ten instructors and professors of physics, has been most valuable in the exchange of ideas and the promotion of friendly relationships. We have also been privileged to amplify student understanding in informal gatherings in the home. Incidentally, the students taught us how to make good tea!

We sincerely regret that the year is fast coming to an end, but our laboratory at home needs our attention. To the Fulbright Foundation in Iraq for their stimulating and sympathetic cooperation, to Dean Duri, an appreciative and most helpful host, and to Professor Harrington for giving me a free hand, I am most grateful. Mrs. Salam, who helped me most generously in adapting our laboratory equipment, is to be commended for her faithfulness in her assignment. Mr. Showki, Mrs. Ameldo, Mr. Sadiq, and Mr. Hamid, as laboratory assistants and helpers, enabled me to carry out many ideas, otherwise impossible. Their friendliness and cooperation far exceeded my expectations.

To those of you with a genuine love for teaching, considerable experience, good health, and an extra portion of patience and patience, I heartily recommend a Fulbright Grant in Iraq. As Mrs. Weber and I walked through Abraham's village at Ur of the Chaldees some weeks ago, we realized that Abraham as a prophet had left his beaten path in a sophisticated civilization to share his ideas with others. We have been glad during these months to help repay a debt over four thousand years old.

