

Those early days as we remember them Part III



This lunch bunch, all veterans of the noisy (metallurgical) half of old Site B, shared reminiscences of 25 years ago with an Argonne News reporter for the benefit of this series. From left around the table are: J. Howard Kittel, EBR-II; George B. O’Keeffe, MSD; Helen Harman, the News, PER; John L. Armstrong, DES; David E. Walker, EBR-II; James F. Schumar, MSD; and Maurice D. Odie, MSD.

They — six men, each with 25 or more years at Argonne — gathered by prearrangement in the West Area Cafeteria. An Argonne News reporter was already there. Any inhibitions born of the tape recorder ostentatiously (but efficiently) occupying the center of the big table soon evaporated. The men had come together to share memories of the period just before and after July 1, 1946, when the Metallurgical Laboratory became Argonne National Laboratory.

At that time James F. Schumar was Acting Director of the Metallurgy Division. When Frank G. Foote joined the Laboratory as the division’s director in July 1948, Schumar served as Associate Director, MET, until March 1960.

John L. Armstrong, then as now, was involved in the design of experimental test apparatus. David E. Walker was a Staff Sergeant in the Army assigned to the Laboratory as a member of the Special Engineer Detachment but was soon (December 1946) to become a member of MET’s regular staff. J. Howard Kittel was on loan to the Met Lab from the National Advisory Committee for Aeronautics but became an Argonne staff member in September 1947. George B. O’Keeffe and one or two others had been asked to come to the Met Lab with Frank G. Foote in July 1943 when the operation at Massachusetts Institute of Technology was transferred to Chicago. (Dr. Foote returned to MIT in 1946 for a two-year period.)

Maurice D. Odie had been transferred to the Metallurgy Division from another operation at the Met Lab, as a technician.

James F. Schumar, Senior Metallurgist, Materials Science Division (MSD): To me the period around July 1, 1946, is the most fascinating in all of Argonne’s history. Because at that time a whole new philosophy and surge of motivation swept the Laboratory. The Metallurgical Laboratory had been organized under the Manhattan District for wartime purposes — to learn to work with plutonium so that it could be used in a weapon that would end the war. That chapter was closed. Now what had long been just a hope was actually going to happen. The talent and drive responsible for the Met Lab’s success were going to be turned to peacetime endeavors, to research, science, and engineering in humanitarian uses of atomic energy. Ideas for projects ran strong and now we can look back and see that most of what Argonne has accomplished since that time, and much of what we’re still working on, already was being thought about at that time.

John L. Armstrong; Engineering Specialist, Design and Engineering Services (DES): Yes. It was like going from

one room into another. In 1945, when the bombs were dropped and the war was over, there was a big cut-back in personnel and we just didn't know what the next step would be.

Schumar: The University wanted its classrooms back, its buildings and facilities. The companies from which the Met Lab staff had come wanted their people back.

Armstrong: One of the head engineers at DuPont for the Hanford reactors told me there was no future in atomic energy. A lot of people did go out and look for other jobs. Of the five in our drafting room, I was the only one who survived. I was glad to be there. Now we knew we had a peacetime mission.

David E. Walker, Associate Metallurgical Engineer, EBR-II Project: I sure wanted to stay on. I'd come from a small school in Pennsylvania Grove City College. At the Met Lab I found myself working among people I never thought I'd meet. Here the consultant I talked with was George Kehl of Columbia University, author of a textbook on metallography laboratory practice and physical metallurgy I'd studied in getting my bachelor's degree. And although I didn't get to talk to him, Farrington Daniels of the Daniels Pile at Oak Ridge was one of the authors of a book on physical chemistry I had studied.

J. Howard Kittel, Senior Metallurgist, EBR-II Project: But there was always a tremendous morale and spirit at Site B, which you who'd been there longer than I perhaps took for granted. I was loaned to the Met Lab from the National Advisory Committee for Aeronautics (NACA, later the National Aeronautics and Space Agency, NASA). Nuclear energy was of great interest for the propulsion of aircraft and I was sent to learn about the metallurgy of nuclear materials. At NACA we had terrazzo floors and beautiful equipment. We also had formal procedure channels for every aspect of our work. You can imagine my dismay when I first saw Site B. It was dirty, mice and rats ran in the halls, there were smells and noise and soot. But it took only a couple of weeks of being there and getting acquainted with the fellows to appreciate the great *esprit de corps* of the place. I managed to stretch my stay to three years, then returned to NACA only long enough to fulfill my obligations before returning to what by then was Argonne. In those days it was a pretty informal place. If we needed a piece of equipment, we told someone down the hall and many times it would be there the same afternoon!

George O'Keeffe, Engineering Technician Senior, Materials Science Division: It was informal all right. At one point what I was doing required melting lithium in an Armco iron pot. Lithium, of course, reacts strongly with water. So, since we wanted to reuse the pot and it had to be cleaned, instead of doing this out in the yard I took it over to Lake Michigan, tied a rope on the handle, threw it as far as I could out and into the water, let the reaction take place, then hauled it in and took it back to the lab.

Kittel: Everyone just did things without a fuss, the best way he knew how. I remember my first encounter with Jack (Armstrong). I'd planned a new experimental set-up and asked him to design the equipment. A couple of days later I bumped into him in the hall. He said he was sorry to be keeping me waiting. I said, "Don't worry, I know it takes time to make the drawings for something like this." "Oh," Jack countered, "I got the drawings made right off. The job's in the shop but won't be ready until tomorrow." He was apologetic because the equipment hadn't been both designed and fabricated within two days!

Maurice D. Odie, Scientific Assistant, MSD: George's was one way to keep from adding to the smells and noise of Site B. I couldn't always manage as well. I was a technician in metallography, doing metallography on gallium with dry ice. Every so often my nitric acid alcohol etching mixture would fume up into a horribly noxious, chocolate brown cloud!

Walker: That was a strange situation, with the metallurgists in the front of the building and the biologists in the back ... The two were pretty far apart in their views and work.

Odie: Mostly it was their smells we couldn't stand, and our noise they couldn't stand.

Schumar: One of the smells we contributed actually was good, like a lot of geraniums. It wafted through much of Site B and came from the Dow-Therm that Larry Kelman and Lowell Lloyd used as a heat exchange fluid in connection with their — didn't we call them thermal harps? They were dynamic loops in the shape of harps and were used in sodium potassium (NaK) corrosion studies. Every time Larry asked Jack to design one, Jack would say, "Now look, this will be expensive — about the price of a Cadillac" — around \$3,200 at that time. That's how we measured costs in those days.

Kittel: There was concern that the metals in a reactor, in a sodium-potassium environment, would stick together. So Jim (Schumar) said, "Why don't you do some studies on solid-state bonding of similar and dissimilar metals in NaK?" And that became my first assignment.

Schumar: One of the interesting things we found out about sodium potassium in the molten condition is that it will clean the surface of other metals.

Walker: Then there was the electropolishing of uranium. Dr. Zinn and the others at Site A always had thought of uranium as being black, like coal. That's the only way they'd ever seen it. Then Bob Noland, for whom I was working, and I, in the course of trying to electroplate uranium — a tough job because of the material's chemical activity — discovered a way of electropolishing it. Electropolished, it was as bright as stainless steel, really metallic, not at all like a lump of coal. Jim showed a piece to Wally Zinn, who was so amazed he showed it to all of his staff. Jim left the sample with him, but the next time Zinn looked at it, it had turned black again. To stay bright it had to be sealed in a really dry, inert atmosphere.

O'Keefe: This makes me think of the foundry we had. Not all of the mice and rats running around the place were of the city and sewer variety. Once in awhile we'd see a white one, a fugitive from Biology's animal colony. I cornered one in the foundry one day and thought I'd do a good deed. I carried him by the tail to the biology section. A girl there took him from me and called him by name. "Why Horace," she said, "you naughty little boy!" Then she promptly broke his neck and threw him away. "He's been roaming around the building and no longer can be used in a controlled experiment," she explained. That was the last mouse we returned!

Walker: We never did get used to some of Biology's ways of doing. Remember how the machine shop opened on a little yard? In summer some of the machine tools were set up out there. One day some of the shop men were eating lunch on a bench in the yard, enjoying the sunshine, when one of the biologists came along and asked to use the band saw. "I'd like to cut something with it," he said. Someone told him to go right ahead. The biologist opened a box of dry ice and took out a rat, frozen solid. He set it up on the band saw and began slicing sections, about a quarter-inch thick, out of it. It didn't take the shop men long to empty the bench.

O'Keefe: Well, maybe Biology had some right to complain about our goings-on too. We were working a lot with highly reactive materials: sodium potassium, lithium, and so on. And we had many fires. They weren't serious fires, and we had our own fire department who knew how to deal with them, but they produced a lot of very caustic smoke. Of course water on some of the materials we were working with really would have spelled catastrophe! I didn't think Frank Foote, the division director, was serious, but he told me that if ever we had a real fire and the City Fire Department came, my job was to run out with an ax and cut the hoses before they sprayed water into the building.

Schumar: But we found out one day he really meant this. The Chicago Fire Department did arrive one day. A neighbor, seeing white smoke coming from Site B — we were cleaning up some sodium potassium-contaminated apparatus — had called in an alarm. But George was spared the axing job because the guard at the entrance of Site B followed instructions. Laying his gun on the counter, he said to the fireman, "If you come in, I'll have to shoot!"

Kittel: I guess we kept the neighbors in the apartment buildings around Site B pretty nervous over our disposal of NaK. We did this in a little courtyard in the back. It would react violently with water, often accompanied by explosions. We enjoyed all this, but the neighbors didn't. Especially when, as happened every once in a while, a window somewhere would break.

O'Keefe: We sure kept the neighbors guessing as to what we were working on. I lived in an apartment that overlooked the back yard of Site B and my mother lived with me. She was terribly curious as to what we were doing and I, of course, couldn't tell her. Then one day she said she knew, she finally knew. "You're making poison gas," she said with conviction. She'd deduced this from seeing the many tanks of argon and helium and what-have-you going in and out of the trucks.

Schumar: I remember one warm summer day when we were out throwing a softball around during our lunch hour. A man came along and asked one of the biology technicians who was standing there just what went on inside of that building. "Shh," she said in a stage whisper, "don't tell anyone, but this is where we make all the red tape for Washington." He seemed to take her at her word and went on his way.

Kittel: A good clue as to what the neighbors thought of us is this. Remember the Pontiac garage at 61st and Cottage? Several of us at Site B used to take our cars there for mechanical work. When we learned we were moving to DuPage I told the service manager I was sorry but that most of us wouldn't be coming around much longer. He said, "Well, I've enjoyed your business but I'm not at all sorry to see you go." I suppose I looked a little surprised. "We all know you're making bombs over there, even though the papers say you're not. I've just been hoping that when you went you wouldn't take us and the whole south side of Chicago with you." He was quite serious.

Walker: That reminds me of the forge we had in the foundry. Its foundations apparently went down to bed rock. When we ran the forge the vibrations would carry through this bed rock and come up, not in the immediate vicinity, but mysteriously at a point under an apartment building about a block away. Upon which dishes would fly out of cupboards, pictures would fall off of walls, tables would walk, and the tenants couldn't be blamed for thinking they'd been invaded by ghosts.

Odie: Remember Mrs. Rosen, who ran the little delicatessen and grocery next door?

O'Keefe: The one who used to change the dates on the milk bottles?

Walker: It was a handy place at lunchtime, but sometimes we'd eat with the students over at the Commons. Fermi almost invariably would be there too, rather than in the faculty dining room where most of the staff would be.

O'Keefe: He always had the same lunch, too, if you remember: a hot dog, piece of apple pie, and a glass of milk.

Kittel: Wasn't his assistant Leona Marshall?

Schumar: Yes — the only woman who was present at the first chain reaction, now Mrs. Willard Libby.

O'Keefe: About once a month we attended seminars, I think in Eckert Hall, and whenever possible the speaker was Enrico Fermi. All the leaders of the project would be there — people like Arthur Compton, John Chipman from MIT, Frank Foote, Al Greninger, Walter Zinn, Norman Hilberry, you could go on and on. Waiting for Fermi to begin, you could hear a pin drop. He could talk about the most complicated concepts in the simplest of terms. Some in the audience of course already understood nuclear phenomena, but I think I can say that after hearing Fermi everyone in the audience felt he did.

Armstrong: I did some work for Leo Szilard, another really brilliant man. He seldom sat still. If you wanted to talk to him, you usually had to follow him up and down the hall.

Schumar: We weren't without our characters at Site B. We had some fellows who never could work until 5 or 6 o'clock in the evening but then would work till 6 or 7 the next morning. And they were highly productive. They either just liked to work alone, or their work went better in a quiet, vibrationless building. What one fellow was doing required him to work when the temperature and dew point were down.

Walker: Not many women are metallurgists, even these days, but we had one at Site B, if you remember. She was Alice Smigelskas, now the wife of George Fischer of the Reactor Analysis and Safety staff.

Schumar: The Personnel people no doubt enjoyed having her on the staff, just as they did the military service people, because for them it wasn't necessary to write draft deferment requests. That was really a difficult job. They couldn't say exactly what you were doing, but neither could they give the impression that it was top secret. What came of it all could really be something to read.

Kittel: (to the reporter, indicating the tape recorder): Are you sure that machine is really working?

Reporter: Good grief! It better be!

She checked and it was. Someone glanced at the clock and there was a general scraping of chairs. Whether or not the flow of memories was over, the interview was.