

From Atom Measurer to Egyptian Trumpeter

By Robert M. Hazen

THE PROBLEM is keeping track of the data. Since childhood I've wanted to be both a scientist and a musician. Thanks to Washington I haven't had to decide on only one career.

The week commences as usual with our 4-year-old alarm clock, Benjamin, who is soon joined by his younger sister, Elizabeth. Margee and I drag ourselves out of bed and grab a quick breakfast. By 7:30, Larry Finger, my co-carpooler, and

are on our way to the Geophysical Laboratory of the Carnegie Institution of Washington. We form the X-ray crystallography section of the "geewhiz" lab, which is devoted to research in physics and chemistry of the earth and other planets. Larry and I have been devising methods for measuring crystal structures — arrangements and spacings of atoms — on materials at the high temperatures and pressures found within the earth. These experiments will give us new insights into how atoms bind together and why certain minerals exist.

Experiments may sound exotic, but the day begins with routine. I open my mail and answer most of it. I have a manuscript to review, and in spite of phone call interruptions the review is completed by late morning. Noon hour includes a short walk to the bank and a quick reading of Science with my usual brown bag lunch.

After lunch I settle down to some research. We are just completing a study of a mineral structure at high temperature and pressure. Computer analysis of the data goes well, and we're ready to start a new set of experiments. We leave the lab promptly at 5, however, for we have a long day tomorrow.

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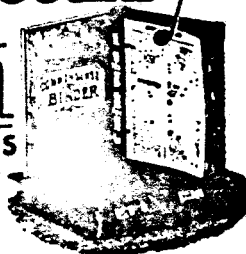
Larry and I are on the first flight out of National Airport, a short hop to MacArthur Airport on Long Island. We arrive at Brookhaven National Laboratory for the "users' meeting" of the National Synchrotron Light Source (NSLS). Two

hundred scientists have converged on Brookhaven to learn the latest news on this remarkable piece of hardware.

Lectures and demonstrations by the synchrotron designers occupy most of the morning. We are told that this facility will provide

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PERSONAL GLIMPSES OF WASHINGTON



one of the most intense sources of X-rays on earth — just what we need for some of our experiments. After lunch and a tour of the construction we break up into smaller groups to plan research and budget strategies. At least 18 months will pass before the first X-rays are produced, perhaps much longer if government sponsorship is reduced. Still, there is much to do, for now is the time to design experiments and apply for grants (hardware, computer time, travel — science isn't cheap!). After a full day of meetings we fly home, convinced that the NSLS will open new doors for our research.

As I arrive home, Margee runs out the door to an orchestra rehearsal, which provides a much needed break from mothering. I have my first chance of the day to sit down with Ben and Elizabeth. It's storytime and we manage to get through three books before everyone is ready to collapse.

I am all but asleep when, BRRR . . . NG! My other hat is calling. Yes, I can make a rehearsal tomorrow at 10 a.m. Yes, I am free Thursday and Sunday nights. So tomorrow I become an Egyptian trumpeter in Boston Opera's Wolf Trap production of "Aida."

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An early trip to the lab to pick up yesterday's mail and messages, and then to Wolf Trap. Washington is a great town for part-time professional musicians. Many big pieces require extras, and there is no music conservatory to supply that

need. So if there is a Berlioz "Requiem" or "1812 Overture" in town, I'm likely to be there up in the rafters.

Wednesday's rehearsal, a three-hour call, stretches out to eight. I am one of six on-stage trumpeters who is given a long herald trumpet. We take three hours just to get used to the instruments, memorize music and find a costume. I never played trumpet in Egyptian regalia before and I feel like a cross between Gabriel and Steve Martin.

A crisis arises: Sarah Caldwell says, "Off with the beards!" Egyptians apparently did not wear facial hair, but all six of us do. Authenticity, however, is no match for vanity, and the beards are safe.

The afternoon is set aside for a four-hour dress rehearsal. I must call home and the lab to change schedule, but fortunately everyone is flexible.

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At the lab by 7:40, I check yesterday's mail first. One paper is accepted by a chemistry journal, but another needs major revisions.

The hours of writing, editing, reviewing and rewriting scientific articles frequently exceed the time it takes for the experiments.

Then phone calls — a friend/mineralogist from Cambridge University is visiting from England and will arrive Saturday. A regular stream of house guests is a pleasant consequence of Washington residence.

Figures and tables must be proofread for the Carnegie Institution's annual report, reprints must be mailed to colleagues overseas, and a visitor needs help running a computer program. Only a five-minute lunch break today, but it is after 2 before I set foot in the X-ray lab. The next three hours are spent at a microscope searching for good 1-one-hundredth-inch crystals of diopside, a common rock-forming mineral, for X-ray studies at high pressure and temperature.

Home for a quick dinner and we head to Wolf Trap. I seldom think about the audience when playing. Tonight is special, though, because Margee and a friend are coming to sit on the lawn.

Life as a trumpeter is usually spent waiting hours for a few minutes of glory, and tonight is no exception. But we enjoy sitting backstage, trading anecdotes and watching the cast hustle about. A near disaster occurs as one of the six herald trumpets breaks in two — an old solder joint has failed. Science

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rescues the arts in the form of super-glue, and the show goes on.

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My first half hour at the lab is devoted to practicing for a wedding tomorrow. I try to play before most people arrive. No one has complained, at least so far.

Friday

The day's routine is punctuated by a refreshing hour of lunchtime volleyball. The lab has a court on its grounds, and on beautiful days like today the exercise and good company are a real lift.

Afternoon is spent in the exacting task of crystal mounting. Sharp needles are used to push tiny chips of minerals into position for study. A small slip and hours of work can be lost, but all goes well and a new set of X-ray experiments can begin. It's too late to start today, so we leave a little earlier than usual.

Margee and I enjoy a dinner party with friends. They and several guests are English, and all of us have lived in England for extended periods, so the conversation is trans-Atlantic and nostalgic.

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A very slow start today: 8:30 before we make it to breakfast. Soon a friend and his family arrive for a morning of cherry picking from a tree at the side of our

Saturday

house. Margee promises cherry pie for dessert.

Saturday is usually a work day for musicians, and by noon I head to Grace Church in Georgetown. It's a beautiful day for a wedding, and the Vivaldi concerto for two trumpets is a festive recessional.

Home via the Smithsonian to pick up Andrew Pucalis, our Cambridge friend. A hamburger and corn-on-the-cob cookout provides an ideal forum for catching up on old friends, while keeping an eye on the youngest and most active members of the group.

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I drop Andrew at the bus stop for a day of sightseeing, and proceed with Elizabeth for some shopping. It's hot and humid today, but the yard demands our

Sunday

attention. We quit yard work early for a family get-together at Margee's grandmother's. Our family is lucky to have four



By Gerald Martineau — The Washington Post

Robert Hazen, 31, holds degrees in earth science from MIT and Harvard University, and has published more than 50 research papers in mineralogy. He has studied symphonic trumpet with faculty of the New England Conservatory, and has performed with many orchestras including the Boston and National Symphonies. He and his family live in Bethesda.

generations living within a three-mile radius. We take advantage of that proximity often. Andrew joins us, a little wet from a sudden squall, but in good spirits from his day on the Mall. After a delicious meal, I leave for the second performance of "Aida."

Northern Virginia was hit by severe storms late this afternoon, and at 7:30 Wolf Trap is still without power. We grope about for costumes, instruments and makeup, but the theater is not safe. Sarah Caldwell calls all of the cast and orchestra together backstage, and as she announces the inevitable cancellation an awkward silence falls over the dejected performers. "We love you, Sarah!" comes a shout from the rear, and an emotional round of cheers and applause from Bostonians and Washingtonians alike mark the end of this year's Boston Opera tour.