

# Physics Matters

Department of Physics 1997-98

In this issue of Physics Matters, we are pleased to share with you stories and reminiscences by the late **William Band**, former professor and department chair, and the late **Al Butler**, former professor, in our continuing series on the department's history. Although they are no longer here to offer their counsel in person, the commitment Butler and Band espoused is still alive in the department's excellent teaching, research, and esprit de corps.

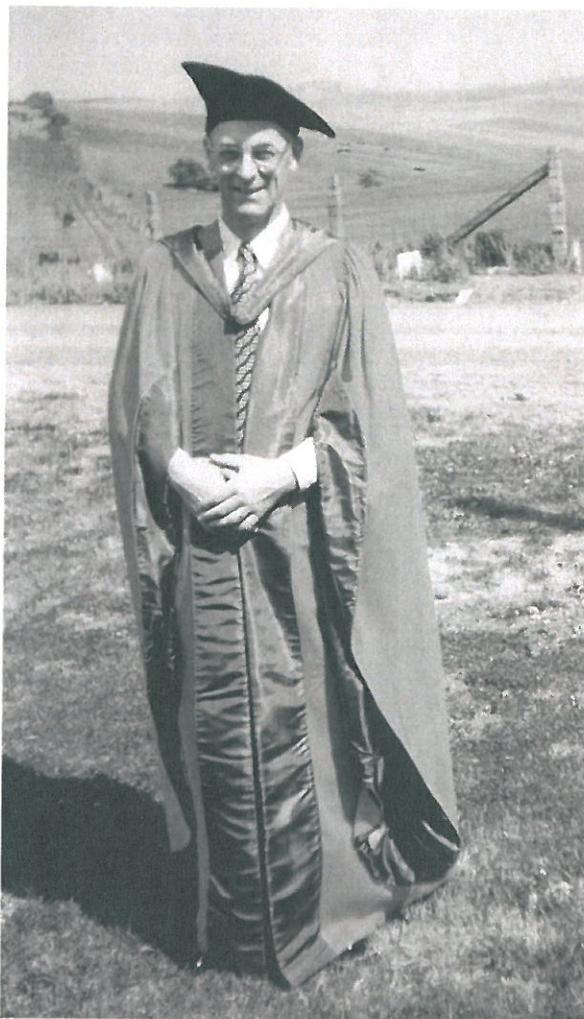
## Washington State College, 1949 - 1959

by William Band

Accepting the appointment in Pullman, Washington, created one of those happy coincidences that frequently delight the unsophisticated observer of history: the Chairman of the Physics Department at WSC, **Dr. Paul A. Anderson**, had been Chairman of the Physics Department at Yenching University 1925-1928, and his leaving China had been the cause of my being invited there in 1929. I had not known Paul Anderson then, and had no idea where he had gone, until I met him in Pullman. He had in fact been at Harvard and in Berlin before going to WSC in 1931, where he had been Chairman ever since. When I arrived in 1949, he told me he would be delighted if I would again take over his responsibilities as Chairman, but it was another four years before I could be persuaded to act in his place while he took a spring sabbatical in 1953.

It was during that spring that I came directly in contact with the contest between philosophies of university administration. For twenty years Paul Anderson had tended to operate on the basis of the Harvard tradition—which I believe was very British, where the Chaired professors as a group were the supreme university authority and the Chancellor a figure-head. I had become familiar with the American system at Yenching: a “dictator” President answerable only to the Board of Regents, and had enjoyed the personal relationship between President and Chairman that was possible in such a small institution. Of course in a small institution it makes little difference what system is used, the decisions can be reached by consensus in any case—which is another way of saying that “common sense” prevails.

But in the 1950's, WSC had already grown beyond the size where common sense could be expected to operate freely. “Rules are Rules,” and it is unrealistic to expect any clerk in a bureaucracy to depart from the



William Band on the Washington State College campus, May 1951. Photo by Bert Brown, whose own recollections appear on page 8.

rules, no matter how stupid they may be in the face of an unforeseen situation. And the rules for a State tax-supported enterprise are very different from those for a privately endowed institution. When **President Wilson Compton** retired in 1951, I had the impression that an era of comparative autonomy for departments was about to end. Indeed the new Administration

See Band page 2.

## Greetings from the Chair

We sent two teams of physics majors this year to the *NASA Reduced Gravity Flight Teams* program in Houston. The adventurous eight are named on page 10. As I write this, they have all returned safely and are now analyzing their data. This year the teams organized a Pasta Buffet and sold tickets to most of the faculty and their peers to help raise money for the trip. A KING-TV reporter from Seattle's NBC station accompanied the groups during their stay in Texas.

We have added some wonderful people to the physics staff. Teri Car-

ington is our new fiscal specialist II. Teri previously worked at Texas A&M. **Robert Jackson** is our new scientific instructional tech I. Robert has a bachelor's degree in computer science from Lewis Clark State College in Lewiston, Idaho.

**Yogi Gupta's** Institute for Shock Physics is starting to take some form. A new addition to the Physical Sciences Building will house Yogi's operation. There will also be money for lecture hall and classroom modernization. The space that Yogi vacates on the ninth floor of this building will be used for a modest expansion of the department.

The department is now proceeding with three faculty searches. One is for a position in physics education. The two other positions are a senior theorist and a junior experimentalist, both of whom will be associated with the Institute for Shock Physics.

The department joins me in wishing you all the best.



Michael Miller



Michael Miller, Chair  
Department of Physics

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Band from page 1.

under **President C. Clement French** set about tightening up the organization in a very efficient way. I had great respect for Dr. French, and still do, and now believe that his objectives were in fact correct. But at the time, several departments, including physics, had enjoyed control of their own research funds secured from private philanthropic sources, and many had separate departmental libraries. Physics was unique in having a machine shop which primarily served physics, and only secondarily the rest of the campus. The research grant funds were quickly brought under university control, but it took ten years to persuade physics to open up the machine shop and twenty years before the university library services were centralized. University professors are notoriously inhospitable to change. But to return to 1949.

My contract with WSC was for the usual nine-month academic year, and Paul Anderson introduced me to the possibilities of grantsmanship in securing extra pay for the summer period. In those days the Office of Naval Research had a very liberal attitude

towards research proposals—they were more interested in supporting creative individuals than in paying only for predictable results of practical importance. Senator Proxmire had not yet emerged on the scene. My summers were funded by O.N.R. for five years (1950-54). Travel expenses were also provided that enabled me to visit my former colleagues at Chicago each spring vacation, and to attend the American Physical Society meetings at Washington, D.C. in March 1951, and at Rice Institute, Houston in December 1953; also a symposium organized by Carnegie Technical Institute in Pittsburgh on statistical mechanics, March 1953. Most of the trips were by railroad; I remember the "North Coast Limited," and the "Empire Builder" between Chicago and Spokane, and the "Texas Zephyr" between Denver and Fort Worth.

During the academic year my teaching duties involved courses in Theoretical Physics for seniors, Quantum Theory and Statistical Mechanics for graduate students, and supervision of as many Ph.D. and M.S. candidates as wished, who could demonstrate

adequate mathematical preparation. My first Ph.D. was **R. P. Singh** (1955) who became Head of Physics at the Indian Institute of Technology in Bombay. Four other students completed their Ph.D. work in 1960, including **Don Curran** and **Don Doran** who both became Division Directors in the Poulter Laboratories at Stanford Research Institute. They were supported by research grants from S.R.I. from 1957 to 1958, and by grants from the National Science Foundation from 1958 to 1962, and a grant from Research Corporation during the same period.

Research results obtained during this ten-year period were published in twenty papers: nine in the *Physical Review*, the others in the *American Journal of Physics* (5), *Journal of Geophysical Research* (3), *Journal of Chemical Physics*, *Journal of Physical Chemistry*, and the N.B.S. Bulletin (1 each). Thirteen of these papers were done under the navy contract, and there were also eleven otherwise unpublished Technical Reports to the Navy. The two textbooks written during this period were both published by D. Van Nostrand, *Introduction to Mathematical Physics*, 1959 and *Introduction to Quantum Statistics*, 1955.

Although Pullman is definitely not on the recognized tourist routes, we had some funds for inviting lecturers, and among others, we entertained Henry Margenau and Walter Brattain several times, Harold Urey, Willard Libby, Linus Pauling, and George Gamow.

As President of the WSC Chapter of the Sigma Xi Scientific Research Society, 1954-55, I was privileged to introduce the Curator of the New York City Museum of Natural History, Dr. Schneirla, when he lectured on "Field Studies of the Army Ants," January 6, 1955; and I was host to Dr. Ralph Lapp when he addressed a university convocation on Nuclear Energy, January 28, 1955.

But for me the most significant social event was probably the A.P.S. Meeting, July 6-9, 1954 at the University of Washington in Seattle. It was on the 2 1/2 hour cruise on board the Marine Research vessel H.M.C.S. Cedarwood on Lake Washington that I had a long talk with **George Duvall** about his work at the newly organized Stanford Research Institute. It was a direct result of that conversation that he invited me—the invitation was by 'phone on May 16, 1955—to join the summer staff at S.R.I. beginning June 17, 1955.

But first let me go back again to 1949. Since 1946, WSC had been expanding rapidly in response to a flood of returning World War II veterans with G.I. educational benefits. The College had bought about two blocks of unfinished two-story houses from a bankrupt speculator, and was renting them to new faculty. These were already filled, and there were twenty more new faculty coming in at the same time

as ourselves. The College was then erecting about that number of prefabricated bungalows for our temporary occupancy, which would be ready for the school year. But in our anxiety to leave Chicago, we arrived a month earlier than was expected. All the senior faculty were out of town at their favorite summer resorts. We spent five days in a student dormitory, two weeks in the apartment of the physics secretary while she took her vacation, ten days at the Lodge Motel before finally getting into one of the new little homes on September 17, 1949. It was on the outskirts of town with a beautiful view over the Palouse countryside. We stayed there for two years, when the College decided to sell off the unfinished houses they had been renting, and we signed a Real Estate Contract for Lot 31 Sunset Heights Addition in June 1951. The Mortgage rate was 5%, and the minimum monthly payment \$92.17, and we took advantage of the open-ended nature of the contract to complete the purchase in ten years. And who was our next door neighbor? **Dr. Harold W. Dodgen** with whom I had shared office space in 1946, and who had left Chicago a year before we had for a destination then unknown to us.

At least four of our younger new friends elected to buy lots and build their own homes during summer vacation, and we felt encouraged to undertake to finish our basement and redecorate the whole house ourselves. This and subsequent maintenance of the house, the creation of lawns and the planting of shrubbery and a flower garden, provided us with most of the physical exercise and mental relaxation we needed. Over the past thirty years we found the climate, with its balanced seasons, most invigorating and far healthier than anywhere else we ever experienced. We were highly amused to receive occasional comments from old friends from China who had located in the eastern States, wondering why we had chosen to settle in such an isolated part of the country. And we found it easy enough to resist temptations which came our way to move in their direction: in November 1956, when Illinois Institute of Technology offered me a position as senior scientist with a "name your own salary" inducement; or in October 1959, when the University of Buffalo, N.Y. asked me to consider Chairmanship of their physics department.

Our Palouse country together with the adjacent North Idaho Wilderness is well known as a Sportsman's Paradise. Fortunately one does not have to hunt or fish in order to enjoy the area. But "progress" is encroaching even here: the old Riparia Ferry over the Snake River has been replaced by a highway bridge, and one no longer sees a horse-drawn plough turning over the earth at the numerous Pullman housing developments.

## Around the Department

**WSU** Tri-Cities physics professor **Lai-Sheng Wang** has been named an Alfred P. Sloan research fellow for his work in physical chemistry. The fellowship award carries a grant of \$35,000. Lai-Sheng has also been selected as the 1997-98 Westinghouse Professor for Materials Science. His current research focuses on the study of atomic clusters created by lasers. These exotic molecules include metal and semiconductor oxide clusters, pure metal clusters, and metal-carbon mixed clusters. Lai-Sheng holds a joint position as an affiliate senior research scientist in the Environmental Molecular Sciences Laboratory at Pacific Northwest National Laboratory in Richland. Lai-Sheng was tenured and promoted to associate professor this year.

**Tom Dickinson** was awarded a \$544,500 grant from the Department of Energy. Tom will use the three-year Environmental Science Management Program grant to carry out studies for understanding several chemical-analysis techniques used to determine the composition of toxic wastes. His fundamental research will help scientists devise a way to consolidate waste into a solid, more inert state, such as glass cubes, that won't leach into the ground once they're permanently stored. Dickinson's work will be done in collaboration with Michael Alexander, scientist at the Pacific Northwest National Laboratory in Richland.

**David Citrin** was chosen to receive a Presidential Early Career Award for Scientists and Engineers. The award provides \$500,000 over five years to scientists who show outstanding potential for leadership. Dave's award is the third of its kind to a member of our department in the last five years. David's group pursues theoretical computer modeling of short pulses of light to determine how they affect and pass through semiconductors. The group is interested in the fundamental phenomena as well as applications. It is expected that this work may find application in such areas as the optical fiber telecommunication system. This system, which provides transoceanic telephone services, is expected to be 10 to 50 times faster in its next generation. His work on ultrafast light pulses and their effect on semiconductors may provide the fast switches required to operate the system at the proposed increased volumes and speeds.

**Mark Kuzyk** has been appointed director of the Program in Materials Science. Mark earned his Ph.D. at the University of Pennsylvania and was a member of the technical staff at AT&T Bell before coming to WSU in 1990. He holds three patents and has over 140 publications and one book. His research areas are non-linear-optics and polymer optical fibers.

**Dick Fowles** has been elected as an American Physical Society fellow. In a recent letter to **Mike Miller** he says, "We are well and enjoying retirement although I do miss the University environment. Because of the ferries UW is much less accessible than I thought. There's no way we will forget our friends in Pullman."

**George Hinman**, physics faculty member and chair

## President's Honor Roll

We are proud to announce the names of the following physics students who earned places on the President's Honor Roll for fall 1997.

Arthur Binner, Wenatchee  
Nathaniel Hicks, Cheney  
Jessica Mjelde, Longview  
Susan Richardson, Richland  
Dirk Robinson, Colville  
Chad Sprouse, Mountain Home AFB, Idaho

## Life after Pullman

Students earning Ph.D.s from the Department of Physics go on to a variety of careers. Some of the department's recent graduates are:

Leonid Muratov '94—West Virginia University  
Constantina Poga '94—Allied Signal Inc., Morristown, New Jersey  
Gregory Kaduchak '94—University of Texas  
Christos Bandis '94—WSU  
Thomas Asaki '95—Los Alamos Scientific Lab, New Mexico  
John Stroud '95—Coastal Systems Station, Florida  
Praveen Sinha '95—University of Wisconsin  
Richard Webb '95—Pacific Union College, California  
Chung-Po Huang '95—Quantronix Corporation  
Jianping Zhou '95—Industrial & Scientific Lasers, California  
Jaw-Jung Shin '96—National Taiwan University  
Jin-Kee Hyun '96—U. of Texas, Austin  
Christopher Kwiatkowski '97—Shock Physics Institute  
Gregory Taft '97—U. of Wisconsin, Stevens Point  
David Ermer '97—Vanderbilt University  
Bin Bai '97—Micron Computers, Idaho  
Hongbin Wu '97—Pacific NW Labs, Washington

of the Program in Environmental Science and Regional Planning, retired last spring after almost 30 years at WSU.

**Karen Gipson** received honorable mention for the 1998 Harriett B. Rigas Award for Outstanding Woman in Graduate Studies at the doctoral level.

**Arthur Binner**, physics senior, won a national Barry M. Goldwater scholarship for 1997-98.

**Nathaniel Hicks**, also a senior in physics, received a 1997-98 Goldwater scholarship and was among the first students to receive a Thomas S. Foley scholarship. The latter is awarded by the Foley Institute to students who are interested in careers in public service and have high academic standing. Hicks received a National Undergraduate Plasma Physics and Fusion Engineering Fellowship during summer 1997. He attended a week's orientation at the Princeton University Plasma Physics Laboratory in New Jersey, then worked for nine weeks with research scientists at General Tomics, a private corporation in La Jolla, California.

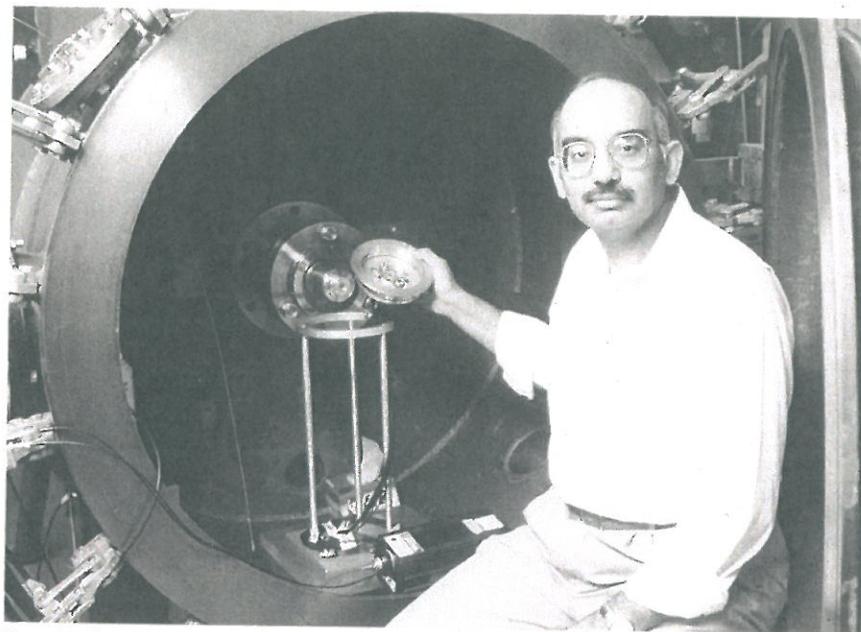
**Jessica Mjelde**, physics senior, received a \$500 Claire May Band Scholarship for summer 1997.

## Shock "Therapy" at WSU

Last fall, the U.S. Department of Energy funded a five-year, \$10 million grant at WSU to form the Institute for Shock Physics as part of DOE's strategic investment in selected scientific disciplines important to its science-based stockpile stewardship program. The research, which will all be unclassified and involve no nuclear materials, will assist the agency's science-based effort to maintain the safety and reliability of U.S. nuclear weapons in the absence of testing. The DOE selected WSU because of its nearly four decades of scientific leadership in this field, state-of-the-art research undertakings, and the noteworthy achievements of WSU physics alumni at the DOE Laboratories (Los Alamos, Sandia, Livermore). The Institute for Shock Physics, intended to be a long-term investment, will emphasize fundamental research to ensure a strong science and technology base in an inter-disciplinary research area that involves understanding of physical and chemical changes associated with very rapid compression of condensed matter.

The Institute for Shock Physics—an extension of the former Shock Dynamics Center—directed by **Professor Yogendra Gupta**, will be a research organization within the College of Sciences with faculty participation from several academic departments in sciences and engineering: physics, chemistry, mathematics, mechanical and materials engineering, and chemical engineering. Additionally, the institute will have a core group of senior scientists and research staff members working on a broad range of scientific problems. The goals of the institute are to emphasize excellence in fundamental research, ensure strong hands-on research training for graduate students and post-docs, foster interdisciplinary research projects, and develop strong ties with the DOE laboratories. The institute is expected to move to a new building—yet to be constructed—in 2001; the University has initiated the pre-engineering design phase for the building.

Gupta's laboratory includes sophisticated optical,



*Yogendra Gupta*

X-ray and electronic equipment. Its original "gun," built in 1968, fires four-inch-diameter projectiles down a 40-foot-long barrel at speeds of over 3,000 miles per hour. When the projectiles collide with the target, various sensors and recording equipment analyze the changes occurring at the molecular and atomic levels. Two other guns, one that can accelerate projectiles to speeds of more than 5,000 mph, are also part of the lab's facilities. Measurements are made over time scales ranging from picoseconds to microseconds.

Atoms-to-continuum understanding is the scientific theme for the planned research activities. With real-time shock wave experiments as the research core, related studies in six other areas will also be undertaken: static high pressure research; dynamic structural studies; high energy density physics; computational molecular dynamics; computational mechanics and material modeling at the mesoscopic and continuum level; and chemical engineering applications.

The participation of seven faculty members from various academic departments along with the senior scientists and other research participants—postdocs, visiting scientists from the DOE laboratories, graduate students, and support staff—will result in an exciting research environment and a strong inter-disciplinary organization.

## Teaching in the Air Force College Training Program

by A.B. Butler

I had a very great group of teachers to work with at WSC. Each of us seemed to know that we might save lives and help the war effort in a very real way.

In my job, I was known as the Supervisor of the Physics Department. I had an office in the Old Veterinary Building, which still smelled a bit of the animals it used to house. Things were pretty primitive and equipment was very scarce. Our experiments were made up to use what we had, and I made up the major exams that were used in the "lecture sections."

Lectures were held in Murrow Hall, in the two end rooms on the east side where the round sections are. Laboratories were in the Old Veterinary building, with the office on the ground floor on the west end.

Eugene Dixon was a graduate student with great ability for teaching, and he taught the 100 and 200 levels of regular physics down in Carpenter Hall. We had a very nice working arrangement: I was to teach at least one lecture section and was really panicked. The men would file into the room and stand at attention. Their officer would order a hand salute, and then I was to say "at ease" and "please be seated." I sure wasn't used to this in any of my previous classes, and I asked Dale Riggins, who taught a class just before, if I could observe. He was a little nervous at having me there, but agreed. I think he saw just how nervous I was!

Each group of men was tested by the military before and after this program, and each school was rated by departments as to their effectiveness in teaching each subject. Fortunately, the book which had been chosen before I came on the scene was simple, devoid of higher math, and easily understood. Apparently this helped our teaching, and our group ranked at the top of all physics departments west of the Mississippi in similar programs each time (I think). At any rate, WSC had each of its classes rate high, and so the school really gained a good reputation among the other schools.

Getting teachers was something of a problem. The only men you saw around were those who wouldn't be drafted for some reason. We desperately needed good teachers, and one day I saw Carroll Curtis walking across campus. I had known him when we were freshmen in Ferry Hall. He was a music major, clever, interesting, and an outgoing person, and I was sure that he would make a good teacher. I took him in tow to an

interview with Dean McCrary. He hadn't had any formal physics training, though he had worked in a print shop. After Carroll left the room, the Dean asked me whether I thought he knew enough physics to do the job. I remember saying that Carroll would make a great teacher and that I would teach him what physics he needed to know and that he was a fast learner and was greatly motivated. So he was hired, taught very successfully, and later went on to an advanced Masters' degree in mechanical engineering at the University of Idaho and worked for Kaiser Engineering. He certainly vindicated my faith in his abilities.

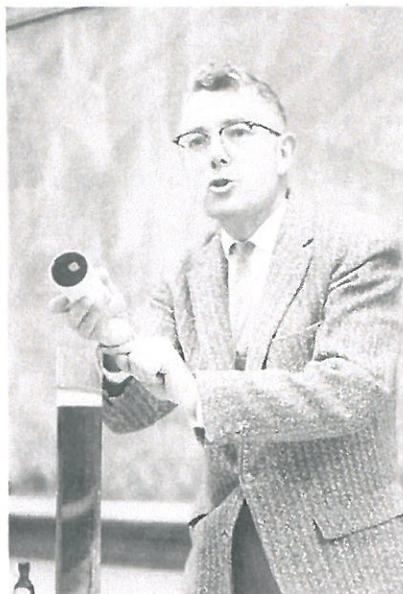
Just a bit more about Carroll. After retiring from Kaiser Engineering he taught Mechanical Engineering courses at Chico State in California. He became head of the department, and when they built a new engineering building, they named it the Carroll Curtis Mechanical Engineering Building. To my great sorrow Carroll died in the fall of 1992. But when I get down to Chico, I am going to visit that building.

The Air Force program was discontinued after a year, as the military could see that they had enough trainees to fill their needs. However, WSC was asked to handle a program called Army Specialized Training Reserve Program. This was a group of 17 year olds, who hadn't had boot camp yet, but who would eventually go into the Army Engineering Corps. This group was more difficult to teach. They didn't have the same drive to succeed that the Air Force men showed. However, we had the teachers from the Air Force program, and we succeeded pretty well.

I remember that Carroll Curtis came into the office one day and said that the kids couldn't make the connection between the electrical diagram on the laboratory

sheets and the equipment on the desk. So he and I set about fixing up an exercise where they just made electrical connections between a series of dummy pieces of equipment. It was just a practice exercise with the lab instructors checking OK or NG for each set-up. (See the psychology of the OK and NG spaces?) This meant a hectic lab period for the teacher, but the students really learned how to make the connection between the wiring diagram in the text and the real thing on the lab table. The wiring diagrams we used in practice were essentially the same as they would use during the rest of the electrical part of their class. We found that we had greatly decreased the damage to equipment as a result of this exercise. Things were hooked up properly. It was a good way of teaching this material.

All this time, Dr. Anderson, Dr. Stephenson, and Professor Fitzsimmons were working on problems dealing with radar propagation. None of us hardly saw



Al Butler in the late 1950s.

them and we certainly didn't know what they were working on. However, toward the end of the war, they were busy in making equipment in the shop. WSC had a pilot plant for magnesium production in the Chemical Engineering building. Any problems that surfaced back at the huge Willow Run plant near Detroit were worked at and solved there in Pullman. As a result, we had magnesium scrap from this pilot plant and could use it for various purposes. (In most of the country there was no way you could get scrap metal, so we were blessed.)

Much later I found out that the radar work involved determining the factors which determined how far radar could detect objects. Our team was in competition with other teams across the country, and they were successful in trials, so that they were given the contract to construct the equipment and to train the military in its use.

I was teaching in Old Science Hall and could hear the teletype in the next room that was used by KWSC (later KWSU) for their news coverage. When the bell on the machine rang in a certain way, it meant that a special bulletin was coming in. I remember hearing it one day during lecture, and making some excuse to go look, I gave them a question which would take time to figure an answer. I also had them consult with their neighbor. This took their minds off what I was doing, and I sneaked out to look at the teletype. This time it was a class stopper. I read the teletype and came back to announce to the class that Italy had just surrendered. The men in class were even more thrilled than I, for it meant there was less likelihood that they would have an extended military career.

When I first went back to WSC as Supervisor of that Air Force Program in physics, the man who was the "registrar" for the program saw me and asked questions about any advanced work I had taken toward an advanced degree. Lee Chronbach was a professor of education, and since there were no men in physics, and since I already had enough credits in physics for a minor, he suggested that I get a Masters degree in education. It made sense to me, so he told me to pick a topic that I could collect data on right away and a title which would be general enough that I could shift a bit if things seemed to demand it but which didn't encompass a great deal. I thought that studying what kind of preparation was important for success in beginning physics might make a subject I could develop. I could collect the backgrounds of the students in the Air Force classes without any problem and then see what kinds of mistakes they made on exams and see what correlations I might find.

This made sense to Dr. Chronbach; he suggested

that I use the IBM punch cards to put the exam results on. I would sort the cards and then wire up the tabulator to give me the statistical data I needed. He arranged for me to have a key to the computer room where Ava (my wife) and I punched out the exam answers of a whole class and made the necessary tabulations. Simple mathematics was the most important requisite for success in beginning physics, and I had the data to prove it.

However, one interesting thing came up in my discussions with the head of my committee, Dr. Stone. He thought I should run a triple correlation on some items. I had never heard of a triple correlation and tried to get out of it, without making a big deal of it. After all, you don't really argue with the head of your Masters' committee. So I got a book on statistics, looked up the formula for a triple correlation, wired up the tabulator, and sent the cards through. It really wasn't any big deal after all, and I gave the results to Dr. Stone the next day. I am certain that he didn't believe I really had

the problem figured out honestly. He had never done any correlation without filling several blackboards and taking a week or so of hard work. I carefully explained what I had done, how the results had shown up on the tabulator, and suggested that he come and see how the computer worked. I had him as a teacher before, and I think he really trusted me, but the power of this primitive computer was beyond his experience. So I was granted a Masters' degree, and as far as I know was the first one to use the computer in a degree program at WSC, at least in education.

Since I had taken summer school work in several summers as well as having extra credits from the fifth year work, I received my Masters' degree in the June 1944 graduation. This was not a large

graduation exercise and there weren't many men in the procession. Just a few advanced degrees were to be given out, and yet all the military were made to attend. All our Air Force men were up in the balcony and I suspect that they were bored nearly to death. However, I also suspect that I was the only person in the whole graduation group that they knew. So when I was called to stand and have the hood placed over me, all these men applauded and made quite a commotion. Dr. Holland, the college president, stopped in some surprise and said I seemed to have lots of friends. I think it really impressed him, and I thanked my class the next day and told them that I greatly appreciated it.

I think that everyone who worked in those military programs really did their part. I am sure that lives were saved by their work. With the high rankings WSC got in each part of their programs, all WSC alumni can be proud of their school's work during WW II.



Al Butler in the early 1990s.

## Alums –Where Are You Now?

For our next issue of Physics Matters, we would like to know where you are and what you're doing. Please drop us a line at Department of Physics, Washington State University, PO Box 642814, Pullman, Washington 99164-2814.

**Michael Bair** (B.S. '78) has "eagerly" accepted a position on the College of Sciences Board of Visitors and has been nominated as a potential trustee. "I am excited about participating as a board member and look forward to the challenges ahead." Michael is vice president for product strategy at Boeing.

**Peter McLachlan** (B.S. '89) is employed by Los Alamos National Lab as a staff scientist. He is an astrophysicist working on the detector design for the Cassini probe to Saturn.

**Thomas Matula** (Ph.D. '93) was chosen to receive a Presidential Early Career Award for Scientists and Engineers. This is the highest honor bestowed by the United States government on outstanding scientists and engineers at the outset of their independent research careers. Tom was also selected to receive a DOE-DP young scientist and engineer award. Award ceremonies were held in the old executive office in Washington, D.C. on November 3, 1997. "These awards reflect highly on Washington State University's physics department," said Tom. "My growth as a scientist is directly related to my learning experiences at WAZZU. Thanks to all!"

**Thomas Asaki** (Ph.D. '95) accepted a staff position at Los Alamos National Laboratory. He will be continuing his work with the ICF program in MST-10 (cryogenics).

**Julia Plummer '97** was selected to participate in the NASA Academy program at the Goddard Space Flight Center in Greenbelt, Maryland. Plummer was one of 23 selected from a nationwide pool. The program ran from May 31 to August 11. Julia was also a winner of the Sigma Xi (Scientific Research Society), colloquium award last spring. Her paper was entitled, "Bound Companions to Early-Type Glazies in the Core of the Coma Cluster." Plummer is now a graduate student at the University of Michigan.

## Bert Brown's Recollections

by Bert E. Brown (WSC '49)

"... **Al Butler** was my first physics teacher—a half-century ago! The lecture demo I recall most vividly was his model of a nuclear chain reaction. It consisted of several dozen mousetraps mounted in a large box, carefully set and loaded with "neutrons" (wood chips). Al would toss in a "free neutron" and the thing would go BLOOEY (usually). I think he had to carve the traps so that the spring of one would hit the trigger of the next, to ensure "criticality."

I recall meeting **Karl T. Compton** in the basement of the M.S. building (Mechanic Arts; Carpenter) when **S. T. Stephenson** showed him the X-ray equipment. I did not see **Arthur Compton** in Pullman, although I did hear him talk in southern California (introduced by **R. A. Millikan**). The three Compton brothers were all heads of colleges and managed to get their group picture on the cover of *Life* magazine about that time. Wilson was an economist and had "only" five or six honorary degrees; the physicists had 25 to 30. Most of us were sorry to see Wilson leave; he apparently had differences with the trustees of that time.

I have always wondered if Stephenson's untimely death, from leukemia I believe, was related to his work with soft X-rays.

I recall vividly having to evacuate the Tech Building (Dana) to let exterminators find and remove an odorous dead rat.

Other staff during my "tenure," besides **Anderson**, **Stephenson**, **Butler**, **Fitzsimmons**, **Johnson**, **Riggins**, and **Chandler**, were **A. R. Tobey** and **R. M. Brown** (no relation), as well as the late **William Band**. I suspect **Anderson's** connections with **Yenching University** in Peking (Beijing) had something to do with **Band's** deciding to come to Pullman; **Band** was English (Liverpool U.) and also taught at **Yenching** until he and his wife escaped the Japanese in December 1941. I corresponded with **Band**, and saw him last in 1991. **Band** was one of the best theoreticians I have ever met.

No departmental history would be complete without mention of the technical shop staff. When I was there it consisted of glassblower **Frank Peters**, and machinists **Don Miller** and **John Guptill**. Without these first-rate technicians, **Anderson** and **Stephenson** would not have achieved such good vacuums and gotten other fine equipment. **John** helped me build a magnetic lens beta spectrometer, which may be lurking there yet if it hasn't been scrapped. The spectrometer worked; I got a spectrum of Ir-192. But it needed fine-tuning when I left and I never got an M.S. on the project.

Physics students, of course, had to take a lot of math, and my favorite math profs were **Sidney Hacker** and **M. S. Knebelman**. **Hacker** taught us about computers which were just getting their start in the late 1940s—the original computer "Hacker." He was

also something of an astronomer and got me interested in that field also with stories about **Henry Norris Russell** and **S. Chandrasekhar**. Knebelman was a first-rate mathematician; of Russian extraction, he was tough but fair. On one final exam, Advanced Calculus, I believe, I got 90; **Don Bushaw** got 95; and top physics student **Art Evett** got 100. Art later got the first WSC Ph.D. in physics. (He was also captain of the WSC tennis team.)

Once the math department hired me to fix something in the offices, lamp cords I believe. In Knebelman's office I noticed a letter on his desk with the signature "A. Einstein." I snooped; it was a recommendation for a faculty position for Peter G. Bergmann (who did not come to WSC). A letter like that would be worth something now to science historians.

I've been in touch with some of my classmates: **Ed Donaldson**, **Dale Martin**, **Dan Bills**, **Don Bushaw**, and more recently **Perry Wilson**. But I lost track of Art Evett after about 1952 or '53. He had a brother, **Jay**, also a WSU physics grad, who taught in southern Oregon at one time.

I'm running out of recollections, so (as Bushaw would say) it is both logical and humane to stop.

## Letters from Alumni

*The letters we receive from you, our physics department alumni, are always greatly appreciated. We hope to hear from more of you. Please let us know where your careers have taken you. We are very interested and would like to share your accomplishments with your fellow alumni and our current students.*

"... I got the newsletter; well done, I enjoyed it. Since you solicited information about the whereabouts of alums here is my situation: after a stint as a Marine Corps officer, I worked as an engineer and marketing manager in the semiconductor and biotechnology fields. I'm currently a vice president at IGEN International, a public biotechnology company in Gaithersburg, Maryland, where, among other things, we are developing applications of carbon nanotubes and molecularly imprinted polymers as biosensors and as separations supports."

**Gary Henricksen (B.S. '74)**

"... I'm in my 20th year at La Sierra University—hard to believe! **Ivan Rouse** (WSU '74) is also still here. Unfortunately we've been on thin ice—so to speak—for a number of years in terms of majors in physics, so administration has decided to downsize us from four to three faculty in physics and close the physics majors to new admissions. We will still offer a biophysics degree in cooperation with chemistry

## Scholarship Recipients, 1997-98

Many of the gifts from our alumni and friends support scholarships for our department's most deserving students. For this academic year, the following scholarship awards have been made.

**Nathaniel W. Teigen**, Lewiston, Idaho, received the Paul and Dian Bender Freshman Scholarship in Physics. Nathan is a graduate of Lewiston Senior High School.

**Brooke C. Bafus**, Colfax, received the Claire May Band Freshman Scholarship. Brooke is a graduate of St. John/Endicott High School.

We are looking for additional scholarship funds to support talented freshmen. We would appreciate any donations for this purpose.

## Physics Development Fund Book Scholarships, 1997-98

The following undergraduate physics majors received \$50 book scholarships for superior academic performance (3.30 GPA or better) during the fall 1997 semester: **A.C. Binner**, **Chris Breckon**, **Nathaniel Hicks**, **Scott Douthit**, **Jessica Mjelde**, **Susan Richardson**, **Dirk J. Robinson**, **Erin Kathleen Strobel**, and **Chad Sprouse**.

and biology. We are still very busy with service courses for pre-meds, etc.

I've been doing some research in acoustics, and have had the fun of engaging undergraduates in that work. I expect to have a paper published in *AJP* on some work I've done on acoustic whistlers in cylindrical pipes.

Please give my regards to Tom Dickinson, Miles Dresser, and others who may still remember me from 1971.

**Edward Karlow (Ph.D. '71)**

"... It was nice to get the 'Physics Matters' a couple of days ago. I enjoyed reading the paper and see all the movements that are happening at WSU/physics. So I thought this might be a good opportunity to say 'hi' and send many greetings to everyone.

... I am working for Philips in the Netherlands right now (since April 1995, when I completed my Ph.D. at the Technical University of Berlin). I am still doing optics and after meteorology at the University of Berlin, I have now mutated into optical design."

**Stefan Bäumer (M.S. '88)**

*Philips CFT*

*P.O. Box 218 / Building SAQ p312*

*NL 5600 MD Eindhoven*

*The Netherlands*



*Susan Richardson and Jeremy Young.*

## **WSU Students Conduct Tests with NASA**

Two WSU teams, each composed of four physics majors, spent two weeks in March at the Johnson Space Center in Houston, Texas, doing experiments that required a near zero-gravity environment. The plane in which the experiments were conducted creates short periods of near-zero gravity by repeatedly flying a parabolic flight pattern of rapid ascents and descents. This

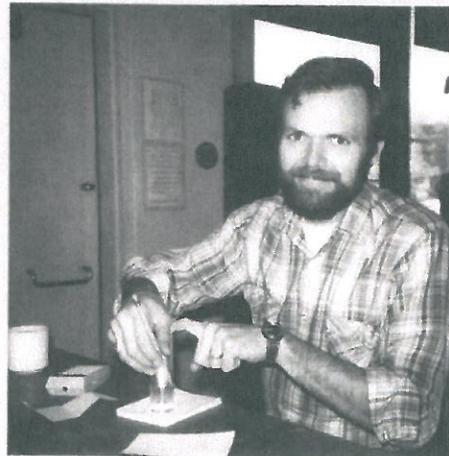
was the second trip to the program for two members of each team, who participated last year. **Nathaniel Hicks** of Cheney, **Arthur Binner** of Wenatchee, **Erin Strobel** of Woodinville, and **Betsy Weaver** of Portland conducted plasma crystal experiments.

**Jeremy Young** of Puyallup, **Susan Richardson** and **Scott Douthit** of Richland, and **Chris Breckon** of Bellevue conducted experiments on the bubble sonoluminescence phenomenon, which occurs when sound waves strike bubbles of gas, emitting sparks of light.

## **In Memoriam**

Word has been received that **Robert Cunningham** passed away in fall 1996. Robert received his Ph.D. in physics from WSU in 1969 and was employed by Kent State University at the time of his death.

**William Alspach** died February 12, 1997, after suffering a heart attack while swimming at the WSU swimming pool. Bill began his work as an instrument maker for the Technical Services machine shop in 1974. At the time of his death, he was supervisor of the shop.



*Bill Alspach*

## Department of Physics Honor Roll of Donors

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