

## APPENDIX C

### HISTORY OF THE GEORGIA TECH PHYSICS DEPARTMENT 1978-1991

By Edward W. Thomas

In preparation for writing a “narrative” history of the school for the period 1978-91 I created this set of year-by-year notes. These are generally based on the school’s catalog and also on the School Director’s annual reports (which from 1978 are preserved in the Dean’s office). Inevitably they also include my own recollection of events and my own bias as to the interpretation of events. The year-to-year notes follows the format used by Wyly who prepared the first review of the School’s history (covering all years through 1967 and presented as Appendix A). These notes were used as the basis for my narrative account of the years 1978-1991.

1978-79

[Valk is Dean of COSALS]

Professor David Finkelstein joined the faculty in the position of School Director in January 1979 taking over from Jim Stevenson who stepped down. David had most recently been a faculty member at Yeshiva University. His research interests were in Quantum Logic, Theoretical Astrophysics and General Relativity. Charlie Braden who had served as Associate Director under Jim Stevenson, continued in that role under David. In June it was actually Charlie who wrote the school’s report on its activities for the year.

At the start of the academic year the faculty was joined by Bill Harter who had most recently been working as a faculty member of a university in Brazil! Bill’s interests were in Complex Atomic and Molecular Spectra. It was anticipated that he would develop connections with the existing Atomic and Molecular Physics components of the school. Bill also has great talents in developing novel instructional demonstrations. Deborah van Vechten was employed as a visiting Assistant Professor to work within the instructional Introductory Physics program. Vincent Mallette rejoined the School in the position of “Scientist” with the principal duty of assisting with demonstrations in the introductory program.

The School continued to carry out a lecture program called “Evening with Science” which was designed for high school students. Under the leadership of Jim Tanner this was quite successful. Ray Young and Gus Stanford offered a continuing education course on X-ray Technology. This was (possibly) the first in the series of courses offered by Ray Young on the general topics of X-ray analysis. These courses eventually became focused on the analysis of crystal structure and they continued for a period of about twenty five years.

For a year or two Jim Tanner had been offering a program known as “Restart” related to the introductory sophomore course programs taken by all students at Tech. The

intention was to reduce the very high rates of attrition. It was obvious that many students became confused by some of the material which came early in the course and as a result never "caught up". Often the problem was related to poor preparation of math skills. The idea of the "Re-start Program" was to identify such students early in the course, pull them out of the main course structure and start them over again on the course in an environment where there was a closer degree of faculty supervision and assistance. As a practical matter the student was left registered for the course and did not carry out a final exam and was given a grade of "Incomplete". In the subsequent term (quarters in those days) the student completed the "restarted" course, carried out a final examination and was awarded a grade. The "Restart" program was initially offered in connection with the first sophomore course (2121, Classical Mechanics). The program was operated by Jim Tanner and Barbara Levi (who had the status of a Visiting Faculty member). In the present year the program was reviewed by a faculty committee and plans made for its future. The program was considered to be quite effective in dealing with students who had poor preparation. The Committee felt that the program should be confined to the first course. There was little intellectual justification for "restarting" the students for every course in the program. In practice at the end of this present year the program died out.

A surprising large number of faculty members were on "Leave of Absence" in this year. Nisbet Kendrick was working with a computer company in Atlanta, Roger Wartell was at the University of Wisconsin for the year, Hal Gersh was at the University of New Orleans. Ed Thomas was at the Culham Laboratory of the United Kingdom Atomic Energy Authority.

In the annual report Braden (Associate Director ) wrote that the main problems facing the school were

Inadequate numbers of graduate students.

Poor quality of the graduate students actually recruited

Inadequate Stipends for Graduate Students.

Excessive teaching loads for faculty.

These complaints were echoed for many years to come.

#### 1979-80

The school had a rather tumultuous year. There had been a lot of dissension regarding the future direction of the school. Soon after his arrival in January 1979 David Finkelstein proposed some rather bold moves to change the visibility of the School by importing a large, well established, group from another institution. He was unable to transmit his enthusiasm to the members of the faculty. Moreover he made many practical decisions which generated anger among the senior members of the faculty. David was perturbed that the school did not support his approach to management and decided to resign during the course of this year. His resignation was effective June 1980 and he was to be replaced by Charlie Braden as an acting Director. Charlie had been Associate Director for many years and was in fact responsible for running much of the routine instructional activities under Stevenson and under Finkelstein. Charlie eased into the Directors position as David eased out. At the end of the year Charlie was in fact writing the annual report for the year when David had been Director!!.

Nisbet Kendrick had decided to retire from Tech and join the Atlanta computer company where he had spent much of the previous year on leave. His departure took place at the end of the year, June 1980. Nisbet had been running a number of very popular courses related to use of small computers and instrumentation. It was planned to Gene Patronis would take over most of this responsibility.

The School hires its first female faculty member. Barbara Levi, who took the part-time position of "Lecturer". Barbara's husband (also a PhD in Physics) worked for Bell Labs and has been posted to their Optical Fiber plant in Norcross. Barbara was seeking a professional position. She joined the school to assist Jim Tanner with the practical operation of some of the service courses. In the course of time Barbara's husband was rotated out of Atlanta and we lost her services. Barbara was for very many years a contributing Editor to Physics today.

Charlie Braden ended his annual report by complaining about graduate student funding, numbers and quality. Basically the same complaints as when he wrote the annual report in the year before!!

1980-81.

[Valk Dean. Stelson Acting VP for Academic Affairs ].

Charlie Braden is acting Director and once again writes the annual report. He really does not have much to say. The School is down by one faculty member (retirement of Kendrick) and nobody is recruited to replace him. In fact this is the second year in a row where there was no hiring of new permanent faculty.

The school loses its "Machine Shop Manager", Kelly Springfield at the end of the fiscal year. Kelly was a genial individual who got on well with everybody. He had tremendous skill and could manage just about any kind of fabrication technique. He was replaced by Julian (Ronnie) Bell who at the time was the number two in the machine shop.

The School stopped offering its "Restart" program. But it decided to offer the "Honors Sophomore" sequence of courses which had been dormant for some years.

It was the first year when a graduate level course related to Optics was offered in the School. The course was given by Don O'Shea in co-operation with Elmer Rhodes (an EES employee who had previously taught in Physics). In view of the later great success of the school in offering "Optics" programs this was something of a historical milestone.

In his report Braden notes that the Director's Offices have been assigned temporarily to the School of Geophysical Sciences. Also that when a new Director is appointed then it will be necessary to evict these people!! He says that there are 20 graduate students working towards PhDs and he regards this as a "large" number.

Braden concludes his report on a very negative note. " The grossly inadequate level of funding and the continued uncertainty in funding during 1980-81 and the prospects for 1981-82 have led to serious deterioration in faculty morale and in the quality of research and instructional programs. This coupled with other aspects of the administrative structure of the institute make the school unmanageable in my judgment".

During the course of the year there was a vigorous search for a replacement School Director. Three offers were made and all rejected. Towards the end of the year there was a reconsideration of internal candidates and ultimately Ed Thomas was appointed to the position of Director for the upcoming year.

## 1981-1982

At the start of the year Charlie Braden is continuing as Acting Director of the School. A search for a permanent Director took place in the preceding Spring with the result that the position was offered to Edward Thomas, a Professor of the School. Thomas, however, already had a commitment to take a six month leave for a research project at the "Forskingsinstitutet for Atomfysik" in Stockholm. The Dean permitted him to continue with this arrangement and delay taking up the Director position until his scheduled return on March 1982. In the meantime Braden continued to manage the affairs of the School as Acting Director. Braden had been Associate Director under Jim Stevenson and David Finkelstein as well as Acting Director in between times. He was well suited to running the school and received wide support from the faculty.

During the Fall Quarter Tom Weatherly was involved in an automobile accident and while in hospital was diagnosed as suffering from Cancer. He passed away on March 10, 1982. Weatherly was a very well liked and well regarded member of the faculty. Shortly after his death the school was given a \$10,000 gift in his memory by Glenn Robinson, a founder and CEO of Scientific Atlanta (now part of Cisco Systems) and a former research student of Weatherly and Williams. The gift was unrestricted and available for the Director to use at his discretion. Weatherly and Williams had been known for taking student to conferences and exposing them to other Professional Physicists. In recognition of Tom's interest in promoting student travel it was proposed that the gift be used to support graduate student travel to conferences. This met with the approval of the donor and the approval of Mrs Ellen Weatherly. The intention was to spend the money over a period of four or five years and to exhaust the gift. It did not seem to make much sense to put the gift in a bank account and just spend the interest. As it turned out the fund went on and on. The funds were always used on a "matching" basis. The student had to raise some money from other sources such as his supervisor's research funds and the Weatherly fund often acted only as a catalyst to bring in support from a range of sources. Thus the amounts the funds disbursed were small. Ellen Weatherly maintained a keen interest in the fund and in the students who benefited. When the funds became low she contributed money of her own. And these contributions by Ellen continued for many years. Twenty years later the fund is still making small grants and the memory of Tom Weatherly is continued. A gift of \$10,000 may seem small by today's standards but in 1982 gifts directly to Schools were very unusual and this gift was the largest ever received by Physics.

Associate Professor Leroy Woodward retired at this end of this year. Leroy was the second person to graduate from Tech with a B.S. in Physics. His graduation was during the accelerated war-time academic schedules. After service on aircraft carriers he had

acquired a M.S. degree (at Michigan) and returned to Atlanta. Here was had been first the Director of Research at Scripto (at that time the country's largest producer of ball point pens and cigarette lighters), then joined EES in a research position and finally moved to Physics as a teacher. A suitable "retirement party" was held at the home of the School's Director.

Hal Brewer also passed away in December of 1981.

The School engages in its first search for new faculty for some years. The ground work is mostly prepared before Ed Thomas takes over as Director. He makes the final offers. Positions at the entry level are offered to, and accepted by Rajarshi Roy and Peter Schulz. Both are currently post docs at JILA (Joint Institute for Laboratory Astrophysics) in Boulder Colorado. The School also makes an offer of a senior position to John Mosely who was a PhD graduate of Earl McDaniel's group. John was then a faculty member at the University of Oregon. By the end of the year John has still not made a decision on the offer but ultimately he declines. He is later to rise to the position of Provost at the University of Oregon. Also towards the end of the year Henry Valk, announces that he will step down from the position of Dean. Since he has acquired tenure in the school he will join the school and revert to the role of Professor of Physics. Henry has in fact been teaching a course a couple of times a year and is well known in the school.

A major challenge in this year was the confused state of the school's budgets. The school was massively overspending, mostly in the category of supporting Graduate Students (as GTAs or GRAs ). It had been Braden's philosophy that one should commit more than the budget permitted and that eventually somebody else would bail the School out of its problems. Being only the "Acting Director" and having no interest in staying in the position he had been quite cavalier about the problem – and got away with it rather nicely!! The Dean of that time had made it clear to Thomas that this would not be permitted under Thomas' Directorship. It was also noted that the deficits from Physics had been made up by a "tax" on the budgets of all other schools in the College. It was made clear to the new Director that a number of his colleagues from other schools were not happy with this way of management. The new Director instituted a review of all expenses of the School that could be controlled. [Most of the School's budget goes for salaries of tenured faculty and cannot be reduced]. After the stipends of Graduate Students the largest single budget item was, surprisingly, telephone line charges. These were very high on a "per-line" basis in part because the institution was levying a "tax" on each line to support the operations of the computer center! Apart from lines for faculty and staff there was a separate telephone assigned to every graduate student in the school plus additional lines to some labs. This was a bit excessive and the new Director cut out half of the phones and thereby halved that expense in the budget.

The annual report includes a sentence on the research activities of every faculty member. The statement about Joe Ford is notable in that it states that he is active in the study of "Stability and Chaos". In later years Ford's great reputation gives Tech the

reputation as a center for the study of “Chaos”. This annual report is probably the first time that the word “Chaos” was used in the formal records of the School.

There are plans to create an Atomic and Molecular Sciences Center with 12 faculty drawn from 3 schools. There are current large scale Federal funding opportunities which such a “Center” might tap. The proposal to hire Moseley is a key part of the plan. The drive for the program comes from Bill Harter. In fact Moseley does not accept the offer, the funding does not materialize, and in a year the enthusiasm for the center has dissipated.

On the Instructional side. The Honors Sophomore sequence is being taught and the Restart program continues to be dormant. There are discussions, for the first time, about the possibility of a computer based testing and record keeping program to support the service courses with their large classes. New equipment has been purchased for the 2122 lab. This is in fact simple oscilloscopes and signal generators for each student station.

The annual report (written by Thomas) carries the usual complaints and concerns about resources. The School will start the 82-83 Fiscal year with 39 EFT of faculty time where as in FY 1978 there were 48 EFT. A huge drop in four years. The two new Faculty hires each have been promised 50 k\$ of support – but the Institute has not promised the money to the School.. The funding for Graduate Student Stipends in the next year is to be half of that in the year just ending.

#### 1982-83.

Charlie Braden expressed a wish to withdraw from the position of Associate Director of the School and he ceased to hold this position at the end of the 81-82 Academic Year. As a replacement the Director decide to create two Assistant Director positions to assist with operating the School. One was an Assistant Director for Graduate Affairs who was to run the Graduate programs. This position was occupied at its inception by Ron Fox. The other was an Assistant Director for Undergraduate Programs. This position was occupied by Jim Tanner. These positions are not officially recognized by the Institution and represent only the internal management decision of a school. It was Thomas’ original intent that the occupancy of these two positions should rotate through the faculty on a two year cycle. That continued for a while but is now no longer the practice. One of Thomas’ goals in the defining these positions was to develop management expertise in the faculty. In 1982 the only people with any experience of managing the school were Finkelstein, who had no real enthusiasm for management, and Braden, who felt he had done enough. No faculty member under the age of 50 had any management experience at all. The rotating “Assistant Director” positions were useful in “training” manager. Two of the “Assistant Directors” appointed by Thomas later became School Directors (or more properly Chairs) in later years; Fox who became Chair of Physics, and Wartell who became Chair of Biology.

Two new Faculty were appointed for the year. Rajarshi Roy and Peter Schulz both to the position of Assistant Professor. By a co-incidence both of these men were in Post Doctoral positions at the same institutions, JILA (The join Institute for Laboratory Astrophysics) in Boulder Colorado. Both had research interests in the general area of Atomic Physics and were experimentalists. The school felt that there was a real need to

make a successful appointment and it therefore decided to make to simultaneous offers; the presumption was that we would be lucky to get one acceptance and surely not two. We in fact only had the salary money for one person and the Dean had committed start up funds adequate for one person. It was a bit of a surprise that they both accepted our offers. And this certainly stretched the budget of the school. Realistically neither of these two men were adequately provided with start up funds. The amount secured for each was about equal to their annual salary. Start up funds today (2008) run to many times the faculty member's salary.

Rajarshi Roy was originally from India. His parents were Physicians and the whole family had benefited from a very "English" upbringing. At Boulder Raj had become interested in how the statistical fluctuations in a photon beam influenced the measurement of photoabsorption. The School had anticipated that he would concentrate his research further on atomic physics processes. But in fact he concentrated on the statistical fluctuation, or noise, in optical beams. For a long time he was unable to raise any financial support for his research. One reviewer wrote back that "noise" was something that you eliminated; you did not study it. Eventually, with a little tweaking of emphasis, his idea found support in the Department of Energy and the funding problem was overcome. Prior to this point Raj had been very short of equipment and had even resorted to borrowing from other Universities. He found out that the Physics programs at Atlanta University had received a number of lasers over the years and were not using them. He brought them over to Tech and devoted them to his programs. Raj's research programs became very well known and successful. He collaborated with Ron Fox on a number of important papers. Their work on non-linear problems and on Chaos dovetailed very well with the interests of Joe Ford. Working separately they together gave the School a considerable visibility in the field of Non-Linear mechanics and Chaos. Raj eventually became Chair of the School (1996-1999) and in 1999 left for a Professorial position at the University of Maryland.

The second hire this year was Peter Schulz. Peter was the son of George Schulz a well know Atomic Physicist at Yale University (Applied Physics Department). Peter proposed to perform experimental studies of recombination processes. Thus he also was expected to contribute to the atomic and molecular physics arm of the school's programs. As the years progressed it became clear that Peter's chosen research area was not yielding very much output. Certainly his productivity suffered from the totally inadequate funding of his equipment. Ultimately it was realized that he would probably not receive tenure and he left Tech to take a position at the Lincoln Labs.

Raj and Peter had contrasting life styles which, to some of us, mirrored the contrasting aspects of professional life in the developing city of Atlanta. Peter and his wife bought a new house in the trendy and close-in area of Ansley Park. An area which has always been favored by successful professionals. The building had multiple levels and was of a very modernistic design. Raj started off in a cheap apartment by himself. His fiancée followed him to Atlanta, they married and bought a house in the Lake Clair neighborhood. This is a working class area of old bungalows, south of Ponce de Leon Avenue. In the early 1980s this was an area some decay and had suffered from "white flight". There had also been an invasion of hippies in the preceding two decades. No other faculty member lived south of Ponce de Leon. Raj was a pioneer. Today this is a trendy and expensive area full of professionals

Also Henry Valk has joined us after stepping down as Dean. Henry promptly takes a year's leave at the Catholic University and Rensselaer Polytechnic Institute so we do not see much of him. Ray Young's crystal physics research program moves from EES to the Physics building and occupies the space designed for it when the building was opened in 1967!! Ray brings with him two established Research Scientists; Darrell Holcomb and James Cagle. Ray Young promptly goes off for a six month leave of absence to the University of Toulouse – so we do not see much of him either!!

For some years the School had complained about the resources available for graduate student stipends. It was argued that without generous, and numerous, assistantships it would never be possible to increase the size of the program or to improve the quality of the student intake. For some years the school had typically overspent its GTA and GRA budgets leading in some years to a deficit in the School's budgets which was made up by a "tax" on other schools in the College. To be fair, a contributing cause to this problem was the grants and contracts being obtained in the school did not provide many Graduate Research Assistantships. So even when a student was actively engaged in research there was often the expectation that his or her stipend would need to be provided by the School's Instructional budget. In the present year the central administration decided to take hand in dealing with the problem of graduate student support. A Scheme was developed to identify research positions in EES (now called GTRI) which could be occupied by Graduate Students in their first year. The position might continue into the second year but it was generally anticipated that after passing the qualifying examinations the student would be supported by the School. Over the next few years a large number of first year graduate students were assigned for their financial support to work in an EES research group. Some students found the work in EES to be far more satisfying than grading papers and supervising labs in support of sophomore courses. In a number of cases the work that they did in EES was the basis for their future employment. Other students found the work in EES to be onerous, particularly since the number of hours they had to work was in practice far greater than the hours worked by student who graded papers and supervised labs in the School.

As part of the enhance relationship with EES it was also envisaged that some students would find PhD research projects in EES. For that purpose it was necessary to permit certain EES faculty to chair PhD supervision committees and thereby take on an academic role. This kind of working relationship was established with Eisele, Ravishankara, Holah and Summers in the Electromagnetics Lab of EES. None became formal members of the faculty but all were granted an "Associated Faculty" status under the title of their EES position. Eisele was a former PhD student of our own School and had previously been a junior (untenured) faculty member in the school. Summers was a Physicist and at the time of writing (2007) is now a full Professor in an Engineering School at Tech. Ravishankara was a Chemist who later had an outstanding academic career at the University of Colorado. A number of students took these opportunities. Summers in particular graduated quite a number of students up through the early 1990s. The concept of students working for their Physics PhDs under supervision of EES personnel was not new. In the past, however, the EES personnel had enjoyed properly documented joint appointments in Physics. Thus in the 1960s McDaniel, Martin,



Schiebner, Thomas, and Young all were employed mostly in EES with part-time Physics positions and in that arrangement graduated many PhDs using projects managed in EES. By the 1970s only Young and Schieber had those shared positions.

Along with the assignment of some incoming graduate students to EES the School raised its stipends for all Graduate Students to national levels. Also the graduate student course curriculum was revised to permit a more rapid preparation for the comprehensive examination and therefore a more rapid transition to the research experience. In this current year the school graduated 9 PhDs. This was believed to have been the largest number to that date. The Director noted that graduation rates in the BS and MS programs were “constant”.

The School was devoting some energy to the possible revision of its Sophomore programs. These sophomore courses were a requirement of all degree programs at Tech and as a result the vast proportion of the students were Engineering majors. A survey was conducted of all Engineering School Directors to determine their level of satisfaction with the course and what changes, if any, they would like to see in the curriculum. As a consequence of the survey there was an expansion of the solid state component of the curriculum and a decrease in the teaching of some classical areas. The School also moved to a new text. A continuing problem in the program had been that while there was a definite curriculum for each course there were wide variations in how the individual faculty members divided up time on the subjects. There were a few cases where a faculty member might cover only half the curriculum. This made the teaching of the subsequent course very difficult. Jim Tanner proposed to simplify the logistics of the Sophomore course system by introducing a computer system for the grading of tests and for the keeping of records. An integral feature of the program was that the tests would be generated centrally and given on the same schedule to all the sections of the course. That would force all faculty members to follow the same curriculum. Jim’s proposals were accepted by the faculty as a whole. A major attraction, of course, was that Jim would be taking over the responsibility for setting and grading tests as well as record keeping. During the present year the developmental work on the program was started.

The undergraduate degree program in Physics has traditionally included a large number of “elective” hours. Students preparing for graduate school (in Physics) were encouraged to use the elective hours for fundamental Physics courses. Students not contemplating Graduate School (or at least not in Physics) were encouraged to devote these hours to Applied Physics or Interdisciplinary areas. In the past students had used their elective freedom somewhat haphazardly. The courses they undertook did not often represent a useful package. In the present year the school formally identified seven course clusters related to either career prospects with a BS degree, to Graduate School in an Interdisciplinary subject or to Graduate School in Physics. The list was

- Acoustics
- Biophysics
- Computational Physics
- Computer Based Instrumentation
- Optics
- Solid State Physics
- Physics Graduate School Preparation.

The school encouraged students to choose two of these clusters and to devote their entire elective course time to a comprehensive group of courses in each. Students were quite enthused about the course clusters. "Preparation for Graduate School in Physics" was of course the first and most natural choice. A very close second was the Optics course cluster which was being spearheaded by Don O'Shea. There was at the time a huge demand for personnel in the developing "Optics" industry and students could see this course cluster as providing a strong set of marketable skills. There was also significant interest in the "Computer Based Instrumentation" program. Again this was driven by the perception that there were many jobs available for people with that kind of background. Interest in Acoustics always remained small but had good following. The program was entirely managed by Gene Patronis who was the only person in the school with any background in the area. The other interdisciplinary clusters never really became important as undergraduate program components.

There was discussion, for the first time, of the notion of awarding a "Certificate" in Optics. The Optics instructional program had been developing a national recognition. There was a large industrial demand for people trained in Optics. There were only a couple of Universities which had Schools of Optics and granted Degrees in Optics. Tech's program was highly regarded and compared well with the degree granting programs. The "Certificate" would provide an official recognition of a student's training in Optics with the enormous burden of creating a formal degree program in the subject. Ultimately the certificate program was approved and was very popular and successful.

In this present year the Dean of the College started a "College Seminar" program. In the first two years the seminars were presented by School Directors of the College and designed to highlight the whole of their school's activities. In subsequent years the seminars were presented by leading research figures and highlighted their own programs. The intent was to educate all of us about the activities and breadth of the College's programs and to improve communications and co-operation. These seminars were very well attended and continued until Karlovitz's departure from the Dean's position.

1983-84

David Grider joined the school at the start of the year. He came from a Post-doctoral positions at Liverpool University (UK) and a previous Post-doctoral position in Berlin (Germany). His PhD was from Iowa State University (1980). The School was also joined by James (Jim) Gole who was previously an Associate Professor in our own School of Chemistry. Jim's interests were in the area of "Physical Chemistry" which in practice could as well be described as "Chemical Physics". There were plans to create, at Tech, a major center for the study of low energy collisional processes. Leading this idea was Bill Harter, with some significant support from Earl McDaniel. Jim, from Chemistry, was expected to be a key experimental component in this whole endeavor. But Jim was not at all happy with the way he was being treated in Chemistry and was actively seeking a position elsewhere. One concern was that the School of Chemistry was increasingly emphasizing "BioChemistry" and that "Physical Chemistry" was being de-emphasized. The other members of the collaboration were concerned that Jim's loss from Tech would seriously imperil the chances of large scale funding for the proposed research center. With their impetus and with the strong support of the new Dean (Karlovitz), Jim was transferred to the school. The major research collaboration that they had all envisaged

never materialized! Jim proved to be an awfully hard working individual. Absolutely dedicated to his research interests. Rather successful in attracting students from Physics and money from the Funding Agencies. Well known for telling jokes – often rather bad jokes!!

At the end of 1984 Wyly and Williams both retired. Both of them found retirement positions as volunteers at the Fernbank Science Center and spent a number of years leading groups around the interactive Physics displays

In this year we begin to see that faculty of the School are receiving considerable recognition for their work. Joe Ford's pioneering work on Non-Linear Dynamics and Chaos led to a total of 25 Invited Lectures, two citations in the New York Times and an interview by the Canadian Broadcasting Company. Ford wrote an invited paper for "Physics Today" (first time anybody from this school has been asked to do so). Perhaps Ford's most astonishing achievement was to be invited a conference organized by MIT but actually held on the beach in the British Virgin Islands! Ron Fox received a Guggenheim Fellowship. Also Fox was invite to be the major lecturer at a Summer School in Mexico. John Wood was a participant in an official visit to China and also elected to the Executive Committee of the Holifield Heavy Ion Research Facility (Oak Ridge). O'Shea was Chairman of the Education Committee of SPIE and on the Governing Board of the Laser Institute of America. Hal Gersch was awarded the outstanding Teachers Award. Landman was awarded the Monie Ferst sustained Research Award from Sigma Xi. Bill Harter was on leave at Los Alamos. David Finkelstein was on leave in Israel.

Through the work of Jim Tanner all sophomore (service) courses are this year on the same schedule with uniform teaching curriculum, same standard tests to all sections and computerized grading of tests and record keeping. Gus Stanford wrote and published a new version of the lab manual that goes with these three courses. The School obtains funding for a new Senior Level Laboratory devoted to surface science. It is intended that this will be implemented under leadership of Dave Grider.

The School started a program dubbed the "Fast Track to the PhD". The intent was that a few very well prepared students might wish to take the first few courses of the graduate program while still a senior. In that way they could undertake their qualifying exam early in their first year of graduate school and move rapidly towards the research phase of their degree. We had noticed that many of our best undergraduates were going to schools which did not offer programs superior to our own. We felt that we should deliberately try to retain some of them at Tech.. Those that took the "Fast Track" would be well into their graduate course work at the end of their B.S. program and this might prove to be a motivator to stay at Tech. In practice students who took the "fast track" tended not to be well rounded nor to have broad experience. Or perhaps what happened was that students who were well rounded and wished for broad experience declined to take the "Fast Track". Either ways the program did not produce results that we were proud of and after a year or two it drifted away.

The year saw a decline in MS degree enrollment due to a deliberate policy of not offering financial support to student unlikely to finish at the PhD level.

The year saw some interesting developments of industrial support for our programs. O'Shea (in Optics) and Patronis (in Acoustics) brought many small scale

projects to the campus and were able to engage students at all levels in this work. Uzi Landman secured a small but significant grant from the North American Philips Company for fundamental research related to crystal structure. This was the first formal industrial research grant that the School had handled.

There was much concern about the computer capabilities of the Institute. Uzi Landman required really massive amounts of computing capacity to handle his molecular dynamics computer simulations. This was a type and scale of computational physics that had never before been performed on the campus and we were not able to handle it satisfactorily. At the same time we also had faculty such as Ray Flannery whose more conventional calculations were also massive and could occupy much of Tech's computer capacity. Between the two of them Landman and Flannery could completely dominate the Ga. Tech computer's operations for certain hours of the day. During the year Landman was able to secure time on the DoE CRAY computer. He also used the Microelectronics Center Harriss 8000 machine. Other work was performed on the Institutional CYBER machine. By the end of the year there were plans for Landman's group to acquire a RIDGE and a SUN system for simulation and for their graphics capabilities. The proliferation of systems was a very unsatisfactory situation and much time was wasted trying to deal with this problem. There were also institutional tensions on this matter. Computer "time" had always been free of cost to the user. As usage approached capacity an attempt was made to have research groups pay for their computer time. This was emphatically resisted by the groups. The Institute then attempted to regulate things by assigning "free" blocks of time so that everybody would have a reasonable share. That also did not work due to the insatiable demands created by certain kinds of research project. The solution in part was for the sponsor of the work to provide computer time as part of the "support" of the project. This led to Landman's use of the DoE CRAY and to the partial accommodation of his needs. An alternative solution would have been for Tech to improve its Computer capabilities – but the money was not available.

1984-85

Ahmet Erbil joins the school from a Post Doctoral position at IBM. He had previously been awarded his PhD for research at MIT performed under the supervision of Mildred Dresselhaus. He had originally intended to work on Langmuir Blodgett films but changed his mind and turned rapidly to the study of microelectronic materials. He ultimately developed some materials which had promise as High Temperature Superconductors.

Clarence (Barney) Barnett of Oak Ridge was appointed an Adjunct Professor. Barney had worked with Ed Thomas and Earl McDaniel for many years. Paul Wine of GTRI was appointed to be an associate faculty member carrying his research title from GTRI. Paul is active in Chemical Physics and has a particular interest in processes related to the atmosphere of the earth. He supervises a number of PhD s for the school. In later years he becomes a full Professor of Chemistry and of Geophysical Sciences.

For the year we had as a visiting professor Don Kinkaid for North Georgia College in Dahlonega GA. There was an idea that there could be mutual benefit if the

faculty of smaller schools in the state could pursue some research interests at Tech or in collaboration with Tech faculty. Faculty of small schools cannot simply leave for a year. So we proposed to swap a faculty member of a small school with a mature (almost ready to finish) graduate student from Tech who already had teaching experience. The Graduate student would carry a full teaching load to compensate for the faculty members absence. At Tech the faculty member would carry a standard teaching load to justify his salary but also engage in research with one of our groups. Don Kinkaid was the pioneer in this program. In practice the research benefits to the faculty member were quite slim and he devoted most of his time to educational developments in collaboration with people like Tanner and Stanford. It had been intended that this “swap” system should become a recurring program. In practice it was not repeated. It is interesting to note that some twenty years later Tech establishes such a program on an institute wide basis and supported by the central administration.

During the year Ed Schiebner retired. Ed was a surface Physicist with a considerable reputation in the field of Auger Spectroscopy. His work at Tech was performed entirely through EES and he maintained only a nominal role in the School. He had nevertheless supervised a couple of PhD these and over the years provided immeasurable practical assistance to researchers in the School.

Our faculty continue to receive recognition. In his first year Erbil was awarded a Sloan Foundation Fellowship. Ford receives the Sigma Xi award for sustained research. Landman is a visiting Professor at Gotenborg and Tel Aviv. Valk is elected Vice President (and President to be) of the South Eastern Coast section of the AAPT. Fox is appointed to the Advisory Board of the Journal of Statistical Physics. Tanner and Stanford publish their text for the use in introductory physics programs.

Optics has become a favorite “track” for undergraduates and fully 50% of all B.S. students complete the “track” in optics. A motivator for this is that there is strong demand from industry for employees trained in this area. During this year the school is granted permission to award a “Certificate” in Optics. This is to recognize completion of a defined course of study in the subject. A certificate is perhaps not as strong a qualification as a “Minor” in a subject. But it is rather simple to have approved and to manage. In practice it proved very popular and was well regarded by industry when they sought to hire our graduates. Also started in this year was a certificate in Computer Based Instruction. This never garnered any significant student interest.

In his report the Director commented that 25% of the faculty who will start the next year (85-86) have four years or less service. They are in fact all experimentalists and they are all busy trying to set up experimental facilities. They are also attempting to publish results and to develop a viable reputation before the tenure decision is made. The Director suggests that trying to do all this, with limited funds from the institution, is a heavy burden. He also notes that none of these young faculty have yet obtained significant external funding.

#### 1985-86

This is Tech’s Centennial year. The “Celebrations include a series of public lectures by scientists who are well known public figures. These included the Nobel Prize winner Francis Crick and the underwater explorer Jacques Cousteau. There was also a flurry of books on the School’s history. It is worth remembering that from the very first

inception of the institution, 100 years ago, the teaching of Physics has been part of the curriculum. In the early years there were only five faculty members and the Physics classes were taught by the President, Dr Isaac Hopkins.

The School's faculty continues to change. Andrew Zangwill joins us as Associate Professor from the Polytechnic Institute of New York. Andy is active Theoretical Condensed Matter Physics. Turgay Uzer joins us from a Post Doctoral position at Harvard. Turgay works in the field of theoretical Atomic and Molecular physics with specific interest in Chemical Physics. These two hires have a number of interesting features. Firstly Andy Zangwill is the first hire for more than a decade who is NOT hired out of a Post Doc position. Andy was in a well established tenure track position and was attracted by coming to Tech and coming to Atlanta. (Or maybe he was attracted by the idea of leaving New York!!). For the first time in living memory we needed to worry about a position for the faculty member's spouse. Andy's wife was a corporate attorney working on the New York Stock Exchange. Not a position that has any direct parallel in Atlanta. Turgay Uzer was the second member of our faculty who is of Turkish family background (the other is Ahmet Erbil).

The School also moved John Wood from his Research Scientist position to a tenure track position as Associate Professor. John had originally been hired at Tech to work in the School of Chemistry (in the very large group of Professor Fink). He had moved into Physics as a Research Scientist with his own independent research support. Over the years he began to teach a course on Nuclear Physics and to take on students. It was now an appropriate time to recognize his contribution to the school by bringing him into a regular faculty position.

Associate Professor Bill Harter resigned from Tech to take a position at the University of Arkansas. Associate Professor Bill Woolf retired. Bill Woolf was the last of the faculty hired only to teach and the last of the tenure track faculty without a PhD. By anybody's standard Bill was the best and most popular teacher in our sophomore service course program at that time. Of all our faculty Bill had been most opposed to large classes, computer graded quizzes and the general decrease in the faculty effort given to that instructional program. Although he could function in that system and could hold the riveted attention of a 150 person class – he just thought that this was an unfair way to treat the freshman or sophomore student. He was missed and his departure represented the end of an era.

In this year we had given Henry Valk the specific task of recruiting graduate students for the next year. The result was quite astonishing. By the start of the summer quarter we had firm acceptances from 36 students which is almost the size of the entering Freshman Physics class. We had been aiming, over the next ten years, to raise the recruitment rate to 20 to 30 students annually. So instead Henry had achieved our goal in twelve months. This gave something of a problem as there was insufficient funding to cover their stipends. As a result we had to use our connections with GTRI personnel to place incoming student in GTRI research groups. Management of the graduate student program had been improved by requiring all MS students to finish in four quarters. This move appears to have been appreciated by students and the assurance of a one year completion times may have explained why so many entering M.S. students were willing to support themselves.

The Director's annual report commented that Zangwill (new this year) had brought with him a DOE grant, Erbil has acquired a new DOE grant, Landman has secured two new contracts (one from Hughes, the electronics company) and Ahrens had secured a grant from the Eppley Foundation. Despite these successes the Director reports that a number of the new faculty are still without external support. In this year well over half the external sponsored research dollars in the school budget comes from DOE in the area of Solid State Physics.

In this year Henry Valk is awarded the British Decoration of "MBE" or "Member of the Order of the British Empire". The award is for his service to the Marshall Scholarship program which is funded by the British Government and provides Scholarships to American students. In principle the MBE award may be received at a reception given by the Queen of England at Buckingham Palace. In practice Henry received his decoration at a reception given by the British Consul General in Atlanta. Erbil is this year holding both a Sloan Foundation Fellowship and also an IBM Faculty Development Award. Don O'Shea published his latest book "Elements of Modern Optical Design" and spends the year on leave at the University of Arizona Optical Sciences Center. Ray Young is Chairman of a National Committee to advise on building of a national 6 Gev synchrotron facility.

The Director reported that demand for specialized tracks in the undergraduate program continues to increase with the most popular option being the "Applied Optics Program". The demand for this program, spearheaded by Don O'Shea remains high for many years and is long the mainstay of the "Applied Physics" degree program.

In this year a newsletter was sent out to all Physics alumni, numbering some 1200 persons at all three degree levels. We solicited comments on how the experience at Georgia Tech influenced their lives and what comments they would make concerning possible ways of improving the experience. This attempt to contact our alumni was apparently much appreciated. It gave rise to some interesting comments, not all of them laudatory. The Director reported that he planned to repeat this newsletter in future years. But this did not happen. It was about 2007 before a regular contact of the school with alumni was implemented during the time when Mei Yin Chou was Chairperson of the School.

At the end of the year Earl McDaniel retired from the school.

1986-1987.

Les Karlovitz is Dean.

This year we were joined by Tai-huang Huang who was appointed as an Associate Professor and came to us from the University of Maine in Orono. Tai Huang was active in experimental Nuclear Magnetic Resonance Studies of biological materials. His objective was to carry out NMR analysis at very high spatial resolution so that the behavior of cell membranes could be studied. There was the hope that he would assist the development of a thrust in Bio-Physics. Tai brought with him a completely instrumented laboratory and some existing grant awards. In his years at Tech he was able to publish quite successfully in the general field of NMR studies but was not able to make a large

impact on research into Biological problems. His presence did not significantly improve the interaction between other faculty with interest in Biophysics. After a few years he left to take up a position in Taiwan.

In June 1986 Peter Schulz left our School to take up a position at the MIT Lincoln Labs. Late in the summer of 1986 David Grider resigned, somewhat precipitously, to take a position at Honeywell. Schulz and Grider had both been hired into Assistant Professor positions. In a sense their career at Tech “had not worked out”. Both were experimentalists. Both had suffered from inadequate “start-up” funds. As a result both had spent too much of their time building equipment and too little time performing research.

Earl McDaniel had retired in June 1986. Hal Gersch retired in June of 1987. In the space of twelve months the school lost two of its greatest characters. Hal was the consummate academic. A superb teacher, a piercing questioner and a careful researcher. He liked to claim that he produced two papers per year; one representing the work of his current senior graduate student, the other his own work. Never worried very much about research funding nor reputation. McDaniel by contrast was a go-getter. Always building groups, projects, funding and reputation. He published the first books from the School, and for many year had more grants than anyone else, published more papers than anybody else, and was better known internationally than anyone else. Although both retired, they did not move away! Both Earl and Hal remained in their spacious offices and both continued for some years to publish and to enhance the reputation of the School.

Two of our faculty were away on “leaves of absence”. Roger Wartell was at the National Institute of Health in Washington. Jim Tanner was at the West Point Military Academy (and in fact remained there for a second year, 1987-88). Georgia Tech does not have a “Sabbatical” program. A traditional “Sabbatical” involves an institution paying people a salary while they do not work at that institution. Under Georgia law that would constitute a “gift” and is illegal. So a person seeking a year’s experience elsewhere was required to find their own salary, presumably from the host institution (or on rare occasions as a grant). In this year both Wartell and Tanner were paid their full salaries by their host institution. The School of Physics at Tech did not have to pay them and was able to divert their salaries to other purposes. There was a real administrative advantage to having people “on leave of absence”.

Undergraduate graduation rate was reported to be about 40 per year and considered to be adequate. This number is quite large by national standards and in most years placed us in the top five “producers” in the nation. PhD graduation rate in the previous year (so graduating in the year 1985 to 1986 ) was eight. By contrast the number of students recruited into the PhD program to start in the Fall of 86 was almost 30 (with a further ten MS students). The School’s Director hoped that about 20 of the intended Doctoral students would continue through to actually complete the PhD. He also stated that a graduation rate of a constant 20 or so per year was the school’s objective.

The annual report commented briefly on the required numbers of GTAs. Over 100 sections of sophomore labs were being operated each term (quarter) requiring 25 TAs. In addition TAs were needed for grading and quiz proctoring. Ideally the school would also operated tutoring and help programs which would require further TAs. It was argued that the most professional approach to the TA need would be to hire graduate TAs and with



the various needs that would come to a requirement of at least 25 GTAs. The School budget provided for only 16 GTAs and as a result many of the TA positions were filled by using hourly paid, low cost, undergraduate students. This was a problem that exercised the mind of the school's administration for many years.

1987-88

The "Gaseous Electronics Conference", a major national conference, was brought to Tech in the Fall of 1987 organized by Ray Flannery. This is actually the second time this conference has been in Atlanta; the first was in 1965 and was organized by Earl McDaniel and John Hooper. Bringing this conference to Atlanta provided a welcome recognition of our long established program in Atomic Physics. During the year Andrew Zangwill and Ron Fox both published books. Each made a significant impact in their respective fields. Within twelve months each of the books was listed as "Main Selections" by the Library of Science Book Club.

Kurt Wiesenfeld joined the School in September 1987 coming from a Post-doctoral position at Brookhaven. Kurt was interested in Non-Linear and Statistical Physics as well as the phenomenon of "Chaos". He became an important part of our growing visibility in Non-Linear Phenomenon and Chaos. This group of people had Joe Ford as its most prominent, and outspoken, representative. Also included was Ron Fox a theoretician with an interest in Statistical matters and Raj Roy studying Optical phenomena. These people did not really constitute a working "group" but rather a loose association of individuals who periodically got together when it was of advantage but mostly went their separate ways. This concentration of individuals did give to the outside world the appearance of a "group" and this particular part of our program developed some considerable external visibility.

Margaret Graaf joined the faculty as an Assistant Professor in September 1987. She came from the University of Oregon and had previously been a post-doc at the Smithsonian Observatory at Harvard and also at the University of Paris. Her field was experimental Atomic Collision Physics and she was particularly interested in the recombination of atmospheric ions at low temperatures. Simultaneously with her hiring the School of Electrical Engineering also hired Margaret's husband, Dick Higgins, into a full Professor position. The two had made separate job applications and consideration of both was quite advanced before the two schools realized the connection. It was the first experience in Physics of the "two body problem" where the hiring of one person into the Institution was related to the simultaneous hiring of a spouse. Margaret was a very vibrant outgoing individual with a "take charge" personality. She was a superb teacher who gave enormous amounts of her spare time to the operation of "help sessions" and other tutorial programs. After a few years she was recipient of the "Best Junior Faculty Teacher of the Year" award. Unfortunately her chosen experiments were more difficult than anticipated, research productivity was poor and after a few years she resigned and left Tech. She later was very successful in personal financial management. Her spouse, meanwhile, rose to some prominence as the Head of a major Research Center on the campus. After his retirement they bought a house in France!

Kevin O'Donnell joined the school in mid year (March 1988) coming from Post Doctoral positions in England in Italy. Kevin was interested in optical scattering and his

hiring represented a further strengthening of our program in the broad field of optics and Optical Phenomena. Kevin was a mild mannered individual with a seemingly relaxed approach to life. He was not real taken with the idea of competing for funds, students and reputation. After some years of successful contributions to the school he rather suddenly resigned his position and moved to a faculty position at a University in Mexico. A major attraction of the new job was that the Institution overlooked a beach and the Pacific Ocean.

The School was experiencing, for the first time, the challenge of hiring faculty who had a spouse who also required a professional position in Atlanta. Two year's previously we had hired Andrew Zangwill whose wife (Sonia Zangwill) was a corporate attorney working for the Stock Exchange in New York. The school had attempted to put her in contact with potential employers in the Atlanta area. In this present year we hire Kurt Wisenfeld whose wife (Carla Jennings) had been a journalist and writer. We attempted to assist her with suitable contacts at our local newspaper. Then there was also Margaret Graaff whose spouse (Richard Higgins) was a university faculty member and who secured a position in our School of Electrical Engineering. Providing assistance with the employment of spouses has of course now become a major component of the hiring process.

Ray Young retired in December 1987. For many years into retirement he maintained his extensive research facilities, raised research funding, and taught short courses. It cannot really be said that Ray "retired". Rather he stopped routine teaching activities and no longer sat on committees which did not interest him. His daily routine did not really change at all. At the end of the year Harry Dulaney retired (June 1988). Harry had actually been an undergraduate student at Tech, moved to the graduate program and never been elsewhere. For a few years he continued to work part time to handle the "Self Paced" Instruction program for Physics 2121 (the only faculty member willing to take on the responsibility). Some years later he married Anna Ruth Hale, the School's Senior Secretary, on her retirement from the School.

The School Director commented that the BS graduation rate was around 40 per year. Of the 17 incoming Tech freshman awarded prestigious (and financially rewarding) "Presidential Scholar" positions at the start of the year, fully four of them were Physics majors. The combined SAT for Freshman Physics Majors for the Fall of 1987 was higher than for any other major at Tech.

The school began to introduce computers into the Sophomore instructional laboratories. These are used to control experiments and record data. In time the instructions for the experiments and the reports by the students of their results are all to be done via the computer interface. The main hindrance to widespread adoption of such technology into our programs is the large capital expense.

In the fall of 1987 John Patrick Crecine became President of the Institution, a change which had significant impact on the Institution. Unlike his predecessor (Pettit) and his successor (Clough) Crecine was not an Engineer and indeed had no real standing in the Engineering community. In the Spring of 1988 he proposed that the Institution be reorganized and that the "College of Science and Liberal Studies", to which Physics belonged, should be split into three parts. The School of Computer Science was to become a separate College. The Sciences were to be left on their own as a college of Sciences. The remaining Schools, English, Modern Languages, History and ROTC, were

to be combined with the College of Management into a new College called “The Ivan Allen College of Management, Policy and International Affairs”. The schools that had previously been non-degree granting would have their focus changed to technological and management objectives and with this new thrust they would be recommended for degree programs. Thus the “English “ department which had hitherto taught Freshman English and virtually nothing else was to become a School of Communications and to focus on technical writing; as well as continue to teach Freshman English!! There was considerable opposition to the change, particularly the joining of the “liberal arts” type departments to the College of Management and elimination of Management as a free standing College. The proposals were roundly denounced by most faculty that they impacted and largely ignored by those who were not impacted by the proposed changes. Ultimately the changes took place. After Crecine resigned from Tech in 1994 the most controversial change was rescinded and the multidisciplinary “Ivan Allen College” was broken up into a separate College of Management (as before Crecine became President) and a new “Ivan Allen “ College which encompassed the liberal studies (like Communications). The changes to departmental focus and the new degree programs were generally left intact and are seen now as a positive step. The short term impact of these proposals was, however, to create enormous local opposition and uproar. Tech is normally a quiet place with people going about their business and ignoring the administration. But Crecine managed to change all that. The resulting uproar and dissent was not a positive factor. The Dean of COSALS, opposed the move and ultimately lost his position. One member of the Physics faculty, Joe Ford, took a very visible public role in opposing the President and brought considerable notoriety to the School. The Director of the School was active in trying to craft alternative approaches to reorganization; alternatives which the President did not wish to hear. Overall the appointment of Crecine led to seven years of strife. And Physics was probably seen as the source of much of the opposition to the President. One should also note that Crecine was a prime mover in bringing the Olympic Games to Atlanta in 1996. The Olympic Village was located on the Tech campus and, not surprisingly, this caused considerable disruption to normal academic activities.

1988-89

Karlovitz is Dean.

Joe Ford was recognized for his contributions to the field of non-linear dynamics by a special 60<sup>th</sup> birthday issue of the journal “Physica D”. Joe had in fact founded that journal some years previously and served for many years as one of its editors. The “Fourth International Laser Science Conference” was held in Atlanta, primarily through the efforts of Jim Gole. Don O’Shea was elected to the boards of Directors of both the OSA and of SPIE. Students also received external recognition. Chris Bracikowski, a graduate student working for Raj Roy, was awarded Scholarships by SPIE and by Kodak.

The faculty were joined by Mei Yin Chou who came to us from a Post Doctoral position at Exxon. Her country of birth was Taiwan. Mei Yin is active in theoretical solid state Physics. A quiet and effective faculty member she gets on well with everybody and twenty years later becomes Chair of the School. Her hiring is a further example of the

“two-body” problem. Her spouse also was seeking a position and was hired as a faculty member in Mechanical Engineering. On the hiring of Mei Yin the school now has two female faculty members out of a total of 32. Compared with most Physics programs, this is a rather high fraction.

There were some changes in the support personnel. Notable was that we hired as a machinist in the workshop a Mr Wayne Springfield who was the son of the former (retired) workshop manager Kelly Springfield. Working in the Physics shop had become something of a tradition for the Springfield family! Vincent Mallette resigned from the School – for the second time in his life. Vincent had been in charge of demonstrations for lectures and had a minor role in supporting the instructional laboratories. Vincent had a national reputation for his lecture demonstrations and had published a number of papers on the subject. He was also an accomplished photographer and had started to provide professional figures and illustrations for faculty member’s publications. This photography activity had become a major part of his activities but was not the role the school as a whole expected him to play in the routine operations. Vincent left the school intending to develop a career in commercial photography.

The Director reported that in the first sophomore course instructional laboratory (Physics 2121 ) some 75% of the lab stations were now connected to a computer for data taking, experiment control and communications with the teacher. Braden had secured an NSF grant to upgrade the Senior Laboratory. O’Shea had secured an NSF grant to implement a Computer Assisted Design Laboratory in Optics. The Institution did not generally support the upgrading of teaching laboratory equipment. A School was expected to go out and secure a grant to cover most of the cost – just like the performance of a research enterprise. Margaret Graaf, Turgay Uzer and Raj Roy jointly secured an NSF grant to support summer research by undergraduate students. After Margaret left Tech that program was taken over by Jim Gole who continued to get the support renewed for many years. Graaf had also supervised a summer research program for minority female high school students in the summer of 1988 with funds from the American Chemical Society.

Charlie Braden undertook a review of the School’s management structure and this led to the formation of an elected management committee (termed the administrative cabinet!!). The intent was that the “Cabinet” would provide a more balanced form of faculty input to the decision making process. The Cabinet was supposed to review all administrative practices and also to consider the advisability of seeking an external review by a visiting committee. The “Cabinet” arrangement continued to function until the resignation of Thomas from the Director’s position.

#### 1989-90

Les Karlovitz, Dean of the College of Sciences had resigned at the end of the previous academic year and taken a position as Provost and Vice President of Academic Affairs at Western Washington University in Bellingham. Shortly after his arrival in the new position he was diagnosed as suffering from cancer. By the following February he had to take medical leave and by March he had passed away. Bob Pierotti becomes Acting Dean of the College of Sciences at the start of the year. Bob is a Chemist from our own School of Chemistry.

Roger Wartell, a stalwart member of the school and for some years Associate Director, was appointed Acting Director of the School of Biology!! Roger is a Biophysicist and has held a joint appointment in both schools since he started at Tech. His research facilities had always been in Physics and most of his research co-operations had been in Physics. After a couple of years he was appointed Chairman of Biology on a permanent basis and moved his facilities and all of his time to that School (in the intervening time the titles of all academic unit heads had been changed from “Director” to the more conventional “Chairman”). The year saw the death of Ed Schiebner who had held a Professorial title in Physics but who had devoted his career at Tech to Research performed in GTI (formerly called EES). He had retired in 1984. Also Adjunct Faculty member Clarence (Barney) Barnett passed away. Barney had been formerly employed at ORNL and had been a strong supporter of the Atomic Physics Program at Tech for thirty years or more.

Faculty members continue to receive awards from national and local bodies. Ford’s work on Chaos receives widespread recognition ranging from the pages of Nature to the business sections of the Atlanta Journal Constitution. Landman’s work on Atomic Force Microscopy was highlighted by Science Magazine. Mei Yin Chou received a Prestigious Sloan foundation Research Fellowship. Zangwill received the unusual recognition of having his recent book “Physics at Surfaces” (Cambridge University Press 1988) cited by Encyclopedia Britannica as having made a “significant contribution to learning and understanding”.

90-91.

First and Kennedy start

Tanner and Braden retire.

Thomas resigns and Valk takes over.

Valk wrote annual report and I will assume he will write the year’s “history”.

Written in 2009