

TOLL TALES RETOLD: A SPACE/TIME ODYSSEY

The excitement of both humanists and scientists ran high this summer (an unusual event in itself) when some yellowing parchments were found, not on Ithaca with wine-dark waters lapping the littoral, but in the dusty caverns of the Physics Building. The handwriting has eluded identification but the manuscripts are noteworthy not only because of the content of the story they tell but because the text shows great erudition and scholarship: obviously this Odysseus had surrounded himself with men and women of high learning and culture. Obviously, too, these people held him in very high regard and deep affection.

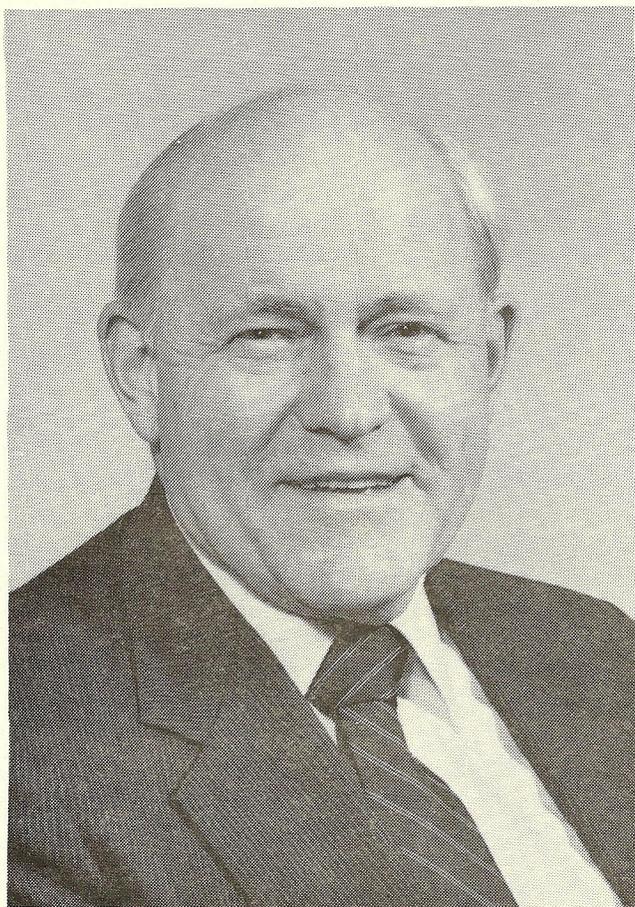
The texts of these manuscripts are printed here in their entirety. They tell of the early years on Ithaca¹ that shaped and honed this Odysseus for the adventures and perils that were to come.

Book 10⁻³⁴

Between 1959 and 1964—during those five years alone—the Department's full-time faculty of eleven grew to about 45, including five astronomers; in addition, doctoral research appointments increased from about five to almost 40. The number of full-time graduate students increased from around 30 to around 320. Research contracts moved from around 12 to almost 40, with federal research funds almost doubling with each passing year. The Department expanded to occupy five new additional buildings. Its prestige on the campus became enormous, and it gained a nation-wide reputation for academic quality, independent of its burgeoning size.

The trouble with reciting such details here, *ex tempore*, is that John Toll himself remembers the facts even more precisely and can correct them readily from memory. His remarkable memory has always enabled him to quote facts and figures—whether from visual absorption or as recollected from phone conversations—almost at will, and indisputably. Quite early I discovered that I could not finesse pseudo-facts with impunity in his presence.

How do we explain this phenomenon of Physics' growth at College Park? Was federal money pouring in



Prof. John S. Toll

¹History records that Dr. John S. Toll was Professor and Head of this Department from 1953-1965.

automatically? Was the State fortuitously over-generous, singling out Physics for special bounty? Were the best physicists of post-war years hovering around College Park seeking employment there?

John Toll knew how the post-war circumstances favored building a strong physics program. He knew that to be located close to the seat of federal government could prove advantageous. Right from the start, he cultivated physicists at the government laboratories, using them on a part-time basis.

John put quality first—second only to graciousness. Politeness and modesty characterized every act and every strategy. Yet nothing was left to chance. Homework was always done meticulously. I recall one time he asked me to prepare an analytical report for him, to be passed on up the line, which I prepared sloppily, thinking it for nought. John himself then reworked it, without saying a word, taking a whole weekend to do it. And of course it won its point and worked.

And on another piece of vellum appears the following:

His powers of analysis and administration served as an indispensable tool for him to get the necessary support and resources for our growing Department, on both the federal and State levels. Whenever the University administration responded that it was impossible to grant one of John's requests, he would prepare a detailed and carefully reasoned document demonstrating how it would be possible, after all.

That Dr. Toll was a "man of many methods" can also be seen:

John tailored his approaches to other department heads and to deans or administrators according to their dispositions and propensities. It was a phase of departmental operations that he preferred to handle personally.

Johnny (as he liked to be called) also was a magician with finances and budgets. Money seemed to move around amazingly fast; and each time it moved, it seemed to increase in value. I used to say to myself, "He uses every dollar twice over." John knew how to handle federal grant and contract funds and to make them work in balance with state-budgeted funds so as to get maximum return from both sources. It was ingenious. I had no idea such things could be done so defensibly, yet deftly. Wherever there were fewer restrictions, attention would focus. Getting funds for new buildings was a case in point.

It was entirely due to John Toll that the Department obtained the funding for the Astronomy Program and insured that it became part of the Department. The proposal for the Program was added, almost as an afterthought on his part, as a last-minute item in the budget request which was sent annually to the Provost. On this occasion, too, he made sure that all his i's and t's were dotted and crossed. It was one of his most successful negotiating triumphs. The Astronomy Program was born and hatched under the protective wing of the Department, thus paving the way for Gert Westerhout to join the Department in order to nurture and foster the Program to maturity.

Every program or project that John Toll introduced always benefited from an exhaustive written prospectus, with documentation. Reports were never superficial or simply intended to meet minimal expectations; John produced tomes of detailed but relevant information. Though he spoke with a silver tongue, John led by initiative—without pushing anyone around.

Faculty meetings were never left to chance. John carefully prepared his agenda and spoke at length in advance with various faculty members about those issues that might arise, anticipating trends and influencing them as needed. He moderated those meetings with objectivity and his usual good will; and they never got out of hand for long. He was in charge, yet without seeming to impose anything but indisputable good sense.

Then there was the matter of the migrating labs. For three years, from 1959 to about 1962, John Toll seemed to have an obsession about moving research laboratories from one part of the building to another. We were expanding, adding faculty, increasing programs, and adding space; but something was afoot. In those days, State policy did not allow air-conditioning solely for comfort (unless it was for the benefit of the higher administrative levels). The State was stubbornly proud of its spartanism. Air-conditioning could be installed and justified only as it might regulate humidity for special apparatus. By 1963 most parts of the Physics Building, distinctively at the time, were air-conditioned. John was able to justify air-conditioning the remaining parts with the argument that a physicist's brains are much like a computer and need to be cooled in order to function.

Like that other Odysseus, Dr. Toll recognized the importance of forming alliances:

John carefully avoided having the Department become indebted to others—by borrowing from other de-

partments, for example. Physics did favors for others, but seldom did Physics collect quid pro quo; we did favors for the goodwill that they engendered.

Public relations were unnecessary on that other Ithaca but Dr. Toll knew they were imperative in the 20th century:

Opportunities for publicity were never overlooked. Even local civic awards were noted. For any form of recognition, either on campus or elsewhere, John would nominate a candidate who was a physicist or staff member in the Department—with supporting dossiers that more frequently than not resulted in capture of an award. He showed Howard Laster the knack, to good advantage. Johnny arranged special institutes or celebrations to draw physicists to the campus. He spent hours on the phone bringing to the campus outstanding colloquium speakers.

And the visitors to this Ithaca were often legends themselves:

I was on sabbatical leave at Princeton and I happened to mentioned to John Toll that the Nobel Laureate Paul Dirac was also there from Britain. John asked me to invite him to Maryland, so one day at tea I plucked up every ounce of courage I possessed, approached the great man and issued the invitation. He accepted and I passed on the news to John. Instead of congratulating me on my success, John promptly asked me to get his social security number so that we could give him an honorarium. By this time my courage had deserted me, so I wrote a note to Dirac's secretary asking for the number. She wrote back to say that he did not possess one. John immediately sent me the forms necessary for Dirac to apply for one, with instructions to have Dirac fill them out. Again I was unable to approach this Zeus in person on such a trifling matter, so I asked the secretary to have him complete them. He returned the completed forms to me, along with a note which said: "Thank you for getting me the invitation to visit Maryland."

We are not told anything about formal education on that earlier Ithaca. For Dr. Toll, however, education was paramount:

John Toll had several quality-building, long-term precepts. Every faculty member should engage in some research, and every faculty member that he hired as an educator should teach. They taught only one course, to be sure—in all but exceptional cases. Faculty members were expected to limit their outside consultations and extra-University commitments

strictly; and they were not to teach in University College's evening program. Against pressure from University College, John argued, with success, that adequate facilities were not available to permit a successful evening program in physics.

In order to emphasize the importance of teaching responsibility to the students, John would fill in for an absent or snow-bound faculty member on occasion. I recall more than one time when he saw from the hallway a class seated and waiting, walked in and began to talk physics to it after asking quickly what level of class it was. Of course, when the regular professor got there, he recognized who was filling in for him, or found out subsequently: the boss.

Courtesy, coupled with directness, were Dr. Toll's hallmarks:

John Toll was never so busy that he ignored a person. He always returned phone calls. He rarely sent messages by third parties. If you told him so-and-so said such-and-such, he would immediately take the phone to call up so-and-so to get directly to the heart of the matter, first-hand. He was direct—and always considerate. He was never impatient or demanding; never short-tempered or vituperative. It was as if he were trying to teach a way of life by his example. He was all for physics and all for education, all the time.

In addition to his kindness, the following shows clearly that he was able to circumvent the problems created by those who had fallen prey to the beguilements offered by the Land of the Lotus-Eaters:

In the early years the Department had a secretary who regularly sought solace in the arms of Bacchus, although in those days no one openly admitted the fact. On one occasion a Nobel Laureate came to visit the Department. He walked up to the counter in the Main Office and said he would like to speak to Dr. Toll. "Do you have an appointment?" asked the lady. He answered in the negative, somewhat taken aback. "What's your name?" she demanded. He told her. "I don't know you from Adam," came the abrupt response, and she walked away.

I never heard John Toll make a derogatory assessment of anybody, even under extreme provocation, and even when encouraged to do so. Everything was upbeat. His phrase "In the future, let's..." was his mode of correction—instructive, constructive. He stressed the good qualities in people, sometimes even seeing those qualities when nobody else could. He would give as much as three hours for discussion with

some otherwise willful colleagues, in order to smooth things out with a silver dialogue; he took time to out-listen and outlast his opposition. "Let's discuss it further..." "And then on the other hand..." John never embarked on any endeavor without first conducting extensive homework; like his lawyer father, he wished never to lose a case.

The next text shows not only his ability to work late into the night but also that even at this early stage he was at home in all cultures:

One of the staff members had always been fascinated by turbans, and when a sheik joined the Department he asked him one day if he would show him how they were affixed around the head. The sheik agreed and instructed him on the length of fabric to buy. The staff member carried out his instructions and the sheik showed him how to wind the material round his head. When he had finished, the staff member really looked like the genuine article. By this time it was late in the evening, so the staff member decided to leave the turban on his head, since he was sure there was no one else in the building. As he walked up the hall, he noticed that John Toll was coming towards him. The hallway was ill-lit at that time of the evening. John Toll peered at the 'sheik' for several seconds, then gave a low bow, holding his hands together below his face as he did so.

In fact John Toll's industry and capacity for

taken by student desks; and the following year, the fourth floor was added, encompassing the area. So in reality, Johnny crowded himself out.

Here the manuscript continues the same tale in a different handwriting:

About two weeks later Dr. Toll asked me how my fire inspection was going. I told him it was going very well, upon which he asked "Did you by any chance come across an old mattress?" "Yes," I replied, "and we took care of it." He explained that he himself used it on occasion when he worked through the night. By this time it was quite impossible to retrieve it so we bought a folding cot from State Surplus and presented it to him. It was kept in his bookshelf and I believe he slept happily ever since.

Johnny believed in Spartan virtues. The Department was furnished entirely with surplus chairs, desks, filing cabinets and typewriters of ancient vintage. The first new typewriter the Department had was an Olympia, probably bought on the sly when he was on one of his trips to Lund, Sweden, to do research with Gunnar Kallen. To save Department or grant funds he used MATS transportation only; it was available to him through his AFOSR research grant.

The Spartan virtues which he showed in his own lifestyle and in his management of the Department's finances contrasted sharply with the lavish hospitality and generosity which, like that earlier Odysseus, he considered de rigueur towards guests:

John started the Departmental teas each afternoon. (He brought the tradition with him from Princeton). He did so initially at his own expense; later it was by donation. John also began regular faculty luncheons, usually on colloquium days when guests could join in. We went to the Domino Restaurant on U.S. Route 1, which at that time had a genuine French chef. The steaks were memorable. As we outgrew the Domino, we tried various other locations, always with stimulating and enjoyable fellowship.

Moreover, his generosity did not cease with faculty members. Whenever new students or newly-fledged postdoctoral fellows arrived, sometimes from overseas, and usually in an impecunious state, there was always a delay of a few weeks, as with any new employee, between the day of their arrival in the Department and the day they received their first paycheck. To alleviate any financial difficulties, therefore, it was customary on such occasions for the person to be ushered into Dr. Toll's office and to

long hours of arduous, unrelenting work are legend-

receive from Dr. Toll himself a personal check as a salary advance. Indeed, this was the origin of the present Toll Loan Fund.

Dr. Toll was evidently a living example of the Aristotelian precept that "The desire for knowledge is in the very nature of man."

Research was one of his *raison d'être*. On the door to his office was a sign which read: "If you want to discuss administration, please make an appointment. If you want to discuss research, come right in." This held true not just for the particle theory physicists or any other faculty member in physics, but also for Charlie Fefferman, a young local math wizz who was doing research with Dr. Toll when he seemed to be barely 12 years old. At that time high school and certainly grade school students were a highly unusual sight on campus. Charlie was not a big fellow, either, and could only reach the lower section of the blackboard, while Johnny's equations covered the upper region. They were a wonderful team to watch! (Charlie Fefferman received a B.S. degree in mathematics from Maryland at the age of 16, and his Ph.D. from Princeton at age 20. He is now a professor at Princeton.)

And again:

The flight schedule on his trips to Sweden to visit Gunnar Kallen usually required stop-overs in Paris and, according to one of the students who would accompany him there, after such a flight (undertaken overnight to save money on his research grant), Johnny would sit on his suitcase in the middle of Paris airport, pull out a yellow pad and say "Let's do research."

Dr. Toll's hectic schedule left no time for him to concern himself with sartorial splendor, and he had yet to meet his Penelope. The following anecdote illustrates:

He was already late for a meeting and was rushing out of the office when a member of his staff noticed his shirt sleeve was dangling, buttonless, round his wrist. There was no time to seek for and sew on a new button, so she resourcefully stapled the offending sleeve together with a stapler, and he continued on to the meeting.

The phenomenal talents of such a man did not pass unnoticed by others and the time came eventually for this Odysseus to seek his fame and fortune elsewhere:

Dr. Elkins, then President of the University of Maryland, was so impressed by Dr. Toll's thorough understanding of how the University operates that, in trying to keep him at College Park, he offered him "every job except my own." Twelve years later, upon his retirement, Dr. Elkins was able to offer his own job to Dr. Toll.

Sadly, any succeeding books appear to have been lost to the ravages of time. One can only imagine the trials and tribulations suffered by this Odysseus as he fought his Trojan War, his One-Eyed Cyclops, his Many-Headed Hydra, etc.

At the bottom of the parchment found this summer, however, there is an inchoate Book 24, which begins with the return home:

Dr. Toll's return was sudden. Limping purposefully to the podium on crutches, in true heroic tradition, he made the announcement. He was barely a league from home. Within the hour a gigantic sign was strung across the entrance to the Physics Building: "Welcome back, Johnny." Preparations began immediately to ready his rooms. They were spearheaded by Telemachus, informally adopted from the far side of the world, and by a youthful Eurykleia, also from across the seas, who on arrival here 30 years ago thought she was being interviewed for the position of secretary and, after being interviewed, apparently inexplicably, by Dr. Toll himself, had agreed to be office manager. At this, Dr. Toll had exclaimed with characteristic enthusiasm, "You're a miracle!" Thirty years have proven his uncanny ability for instant character assessment.

On the day of his return the rosy-fingered dawn crept across the sky and there followed great feasting and merriment. Joy was in the land. Then Dr. Toll settled down to wrestle with such cosmic conundrums as the origins of the universe and a grand unified theory.

Physics and Astronomy News is published four times a year by the Department of Physics and Astronomy, University of Maryland, College Park, MD 20742.

Dr. Chuan S. Liu
Jean B. Crabill
Pam Solomos
Joan Hamilton

Chairman
Editor
Editor
Photographer