

## THE PHYSICS DEPARTMENT IN THE U of O:

### Notes on Recent Developments

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The Physics Department in the University of Oregon has evolved quite dramatically in the half-century since I joined its faculty. These informal notes express some of my personal impressions gained during this period, without pretense of completeness or lack of bias.

Science in the University had plummeted to an all-time low when the State's governing board for higher education in 1932 had moved all biological and physical sciences beyond the sophomore level from the U of O to Oregon Agricultural College (now OSU), leaving only service and general sciences courses in the University, which was to emphasize the humanities---to avoid duplication and save resources. This mandate was rescinded in 1941 but it took a decade to start pulling out of the debacle.

#### *UO Physics half a century ago*

When appointed Assistant Professor of physics in 1953, I was only the fifth member of the Department. Straight out of graduate school in Berkeley, the contrast was drastic. I had interviewed at several large universities (at the time, demand for physics faculty was strong and UC Berkeley had one of the leading departments in the country---with E O Lawrence of cyclotron fame, splendid teachers and Nobel-Prize candidates or winners Segré, McMillan, Chamberlain, Glaser and Townes, Oppenheimer, etc.) Yet, after interviewing at several large universities in the Midwest and East, where the pressure and dog-eat-dog atmosphere among researchers and/or departments was palpable, I was charmed by the idyllic Eugene campus, its picturesque setting, beautiful countryside, emphasis on teaching (my favorite activity) and relaxed atmosphere apparently cultivated by happy students and easygoing faculty alike.

But the contrast with higher-ranking institutions, among which Eugene science was virtually unknown, became perceived as increasingly uncomfortable. The emphasis was almost entirely on teaching (three courses plus one lab or recitation section per faculty member, minimal teaching-assistant support for the largest classes only), virtually

excluded the possibility of meaningful faculty research. Isolation contributed to this scenario---before suitable electronic means of communication became available, without I-5 or affordable air service, it was a feat to arrange collaboration with a major department elsewhere.

### *Incipient metamorphosis*

The 1950's brought changes in many respects. The "shock of the century" was Russia's launching, on 4 October 1957, of the first artificial satellite from the Baikonur cosmodrome in Kazakhstan, demonstrating technological superiority that stunned Americans, *inter alia*. Politicians and the media attacked the US educational system for having fallen behind Soviet schools in training people in the sciences and related fields. In fact, awareness of this problem had started earlier; in 1953 the National Science Foundation was established for distributing research funds on a peer-reviewed basis (the writer, urged by one of his Berkeley mentors to apply, gained one among the first of these awards).

The ensuing higher recognition and better funding of the natural sciences greatly benefited academic departments, including ours. In the University in general, the desirability of a more communal approach to university governance became increasingly recognized. Following a change in leadership, the "Faculty Senate" was renamed "University Senate" and after I was elected its Chair (albeit not until 1974) 18 students were admitted to membership.

The power of this body was enhanced by the University Assembly. Gradually, the restrictive rules that had governed students' graduation requirements were liberalized. One example I recall is participating in a lively debate in the Assembly that succeeded in squelching proposed action which would have precluded students' native language to be counted as satisfying the "foreign-language requirement."

Availability of research grants and consequent enhanced possibilities to acquire equipment and to travel to important meeting and to collaborate with colleagues elsewhere opened new horizons. Important was the support of the Administration, notably of Dean (later President) Robert Clark, whom we fondly remember as being one of the first U of O administrators to recognize that the quality of research and ability to recruit outstanding faculty could only be enhanced by reducing teaching loads, an aim toward which he and his successors strove steadfastly despite continuing fiscal restraints.

### *Transition to modern days*

Inertia among some old-time faculty members to accept a change through which research was placed on a par with teaching proved to be a major obstacle. As late as in the 70's and early 80's, when the writer chaired the Physics Department, the transition was perceived as painful by faculty members who felt that professional requirements had been

changed on them---despite general agreement with survey results which showed that faculty members who are active in research tend to be better, more enthusiastic teachers. Despite our efforts to shift the emphasis in performance evaluations when possible, much in the way of mixed feelings arose. More discriminating appointment procedures and a tougher attitude toward awarding tenure added to the strain

The key factor in bringing about the change and, in fact, turning the grub into a butterfly, is acknowledged to be the appointment, in 1957, of Terrell Hill to the faculty, a world-renowned theoretical chemist at the Naval Medical Institute near Washington who was doing path-breaking research on thermodynamics applied to large biological molecules. His colleague Sidney Bernhard is quoted as saying "He had an offer to build a department in the wilderness... but everyone in Washington thought he was out of his mind, that he would perish from boredom and a lack of colleagues." Hill hesitated, saying later "The science departments at the UO really weren't very good"---a British understatement if there ever was one.

Endowed with superb scientific ability as well as unusual skill in science administration, Hill accepted the challenge. By Bob Clark and others he had been assured of largely free rein in his ensuing efforts to recruit top-notch scientists---aided by his contagious enthusiasm, overwhelming prestige in the field, and unusual interpersonal skills. To the latter, in particular, this writer can testify, with fond memories of happy parties entertaining recruits, at which Terrell served martinis so powerful as only a chemist could create, and rousing songs were led by a multiply gifted Danish postdoc.

A second, perhaps just as important, legacy of Terrell Hill's is his invention of the "Institute" model of academic organization. Under this scheme, faculty members admitted as members of an Institute (Molecular Biology was the prototype) would receive a part of their salaries from their respective academic Department (Biology, Chemistry, Physics...) but the remainder of their time, free of teaching, was in the Institute that covered the other share of their salaries, provided costly shared equipment, engaged in lively interactions among the interdisciplinary members focused, generally, on a major common theme, and held formal and informal seminars and colloquia. Funding, after an initial period, was from grant overhead. The search for new faculty (and potential Institute members) was conducted jointly by the two bodies, an approach that has diluted previous causes of bitter conflicts of interest ("like herding cats," as one frustrated department chair called it).

As if by magic, but in fact through tireless efforts on behalf of Terrell Hill and the growing number of its members, the Institute of Molecular Biology (IMB) grew to world-class status and became, without doubt, the diamond in the scientific crown of our University. Small wonder, then, that attempts were made to form analogous units, both here and at other universities. Results have been mixed. Bringing an interdisciplinary approach to problems of major importance (such as "the secret of life," as one enthusiastic IMB member called it, not altogether euphemistically) can be a powerful approach given the right leadership and team, as well as many other preconditions. In Physics, an Institute of Theoretical Science and, even more, a Materials Science Institute

have been doing well, and a Chemical Physics Institute, now morphed into the “Oregon Center for Optics,” has already engendered outstanding achievements.

It seems clear that most divisive problems in the Physic Department have been happily resolved, and the focus is on strong, meaningful research and the teaching and training of students who will be well prepared for the rapidly changing developments in science.

Personally, I have found it a relief to redirect my energy toward physics at large, first within the American Physical Society’s various programs and, for the last 14 years, as Editor of the APS Journal *Physical Review A* (Atomic, Molecular and Optical Physics), which now receives some three thousand submittals per year, 80% of them from abroad. But it remains a pleasure to see the increasing success of the Department in which I spent most of my academic career.

### *Acknowledgments*

Specific references have been left out of these informal notes, but it should be mentioned that much relevant material can be found in Lotte Streisinger’s charming book *From the Sidelines* (University of Oregon Press, 2004) and Tom Hager’s article, *The Making of an Institute*, published in *Old Oregon* magazine (1985).