BRIDGE SCIENCES

Max S. Marshall
405 Davis St., Apt. 1604 – San Francisco, Calif. 94111

The place of basic sciences in schools of agriculture is unquestioned. As a former chairman of one of these sciences, the writer has long felt that "basic sciences" might better be called "bridge sciences" in order to emphasize a primary obligation, to meet students at their individual levels and to carry them to or near the applications. Departments of these sciences, within professional schools, are not training specialists in the sciences; they are fortifying professional people in one angle of the professions. The term "bridge science" describes this function; "basic sciences" suggests and all too often describes too strong an academic outlook. In microbiology, for example, the stress, academic or applied, is likely to depend heavily on the teacher's outlook. Though a member of a professional school, the microbiologist may pay too much obeisance to cellular theory, taxonomy, and microbial genetics. On the other hand, his counterpart on the general campus is likely to capitalize on the popular appeal of the applied.

Biochemistry, for example, can turn its face toward pure chemistry or toward aspects of nutrition. Microbiology can lean toward pure science, it can provide stepping stones to plant pathology or soil science, or it can outstretch itself and poach on practical grounds best left to experts. However presented, students have to find a way to effect the transition from basic science to agriculture itself. The bridge, basic to applied, can be clear or fogbound. The teaching emphasis reflects the personal interests and biases of the staff. Supposedly, the departments on the general campus remain basic and professional departments concentrate on the applied. But on academic campuses certain professors will choose dramatic applications, and, in professional schools, a stress on theory at the expense of pertinent applications reflects the interests of the specialist.

To try to direct a professor in what and how to teach is futile. The field of study is his and he himself is unlikely to change in any major degree. To leave basic microbiology, for example, to the general campus, applying it in the professional school, sounds elegantly simple, but it does not work. General campuses have diversified views of general microbiology, and professional schools have too many professors either dedicated to pure microbiology or enjoying the chance to steal a march on applied courses given by experts by skimming off dramatic highlights. These are realities on which administrative decisions have to be based.

Though outsiders cannot successfully direct professors, they can suggest policies. To urge that basic sciences of the general campus be prerequisites for bridge sciences is only partially realistic. The professional school would then face students who had had good courses (and who would be bored), mediocre courses (and who would be lost), excesses of applied instruction (and who would have to be untangled), or courses too many years earlier (and who would need orienting).

The alternative is to begin these sciences in the professional schools, with broadly defined obligations. These schools need educated applicants, but not trained ones. The bridge leads from varied educational backgrounds to a specific goal. General campuses prepare impartially for unspecified futures, including one of countless kinds of specific training. They have no obligation to do spade work for any one school. To teach techniques which will ease the work of teachers in a professional school is to confuse and to waste educational time. The function of the general campus is as distinct as that of the professional group. If earlier courses in bridge sciences have been neither required nor recommended, the professional school has students who will take its courses at appropriate times and levels. Students then take these courses as members of a professional group and not as young persons with vaguely defined futures. The general campus is for solid but nonprofessional backgrounds.

The suggested policy fortifies a professional approach in bridge sciences but it does not speak for glorified departments. To convert units in "basic sciences" into departments of bridge sciences would be more than a whim. The obligation of these departments is to the specific profession. They cannot be monumental departments dominated by graduate students to be trained in the departmental image. Academic study is for the staff members' delectation as scholars so that they may teach well when applied phases are proven. The course provides enough fundamentals to support what is to come and then shifts into pertinent applications. To dwell on fundamentals which the professor enjoys or to use his teaching time by stealing drama from the truly professional courses is out of line. Pertinent topics are always plentiful.

Devotion to one's subject can be a drawback in training for specific professions. Such honest but selfish devotion is one-sided, an outlook notably and dubiously augmented by graduate students. The urge to turn out specialists upsets the training function. The Ph.D. is an educational degree, not a professional degree. Graduate students belong to the academic campus, with occasional limited liaison with professional schools when essential to their training. To designate the so-called "basic sciences" functionally and by name as bridge sciences would help to correct many erroneous viewpoints. To prepare a student for one of the many phases of agriculture is a whole training program into which a bridge science is obligated to fit.

Departmental study and research do not demand dedication to graduate students, so often responsible for inattention to professional students. Now endangered by alleged curricular streamlining, the bridge sciences need support in the use of teaching laboratories and time to teach. The suggested policy does tend to cut departments sharply, however, in an over-all sense, to overcome a situation in which expanded staffs invent too many inappropriate activites. Departments will not like this phase, but is it bad? I think not, when balance is at stake. A policy is in order, and policies are supposed to be based on balance and reason, not on politics, greed, or expediency.

Adapted by the author from the author's article in the Journal of Medical Education, 48:303-305, March, 1973.

STUDENT ATTITUDES TOWARD FARM EMPLOYMENT AS AN OCCUPATIONAL ALTERNATIVE

LeRoy Rogers[1], Myron Wirth[1], and Terry Francl[2]

Colleges of Agriculture and high schools have long recognized that a declining percentage of their students will farm. This has been just one reason for developing programs to prepare an increasing percentage of students for employment in government, farm-related businesses, or other nonfarm jobs.

Even if farm youth have less opportunity to farm for themselves, the number of nonmigrant year-round farm employees has stabilized. Such employment has actually increased in recent years. The Census of Agriculture reported 691,068 regular farm workers in 1954, and a very modest increase to 700,256 in 1959.