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The term "biologist" may suggest a person who didn't quite succeed as a specialist, for biology after all is not a single science but a series of related sciences, whose relationships are not always obvious. The small liberal arts college biology professor and some of the naturalists have probably come closest to the category of "biologist," although neither has been customarily designated specifically as a "biologist."

In the past two decades a small number of private entomologists, usually known as "consulting entomologists," have appeared and managed in most cases not much more than barely to exist financially. Recently the term "consulting biologist" was suggested for their profession, as the consulting entomologist often deals not only with insects, but with other animals, and plants as well. These professional biologists are truly "biologists," as their existence often depends upon their ability to adjust themselves to all phases of biology, which is not a small achievement today considering the vast expansion of many of the biological fields in recent years. (References No. 1 and No. 2.)

Since several of the biological sciences have developed independently, large descrepancies in philosophies, methods, and "languages" are evident and are handicapping to those who as general biologists attempt to "cut across" the boundaries in their studies and practices. It is clear to the general biologist that a unified profession of biology is not generally recognized, by the public nor by specialists in biology, a fact which is handicapping in seeking professional recognition. It seems evident that all biologists, regardless of their degrees of specialization, would profit from a unification and reasonable standardization of the biological fields; if the cornborer specialist can "speak" the language of general biology and is part of a greater profession than mere cornborer specialization, or even entomology, he should be in a position to contribute his best to society as well as to receive the maximum personal benefits. "Standardization" is used here in its broadest sense to include all of the possible benefits that should accrue, in contrast to the narrower usage which suggests mere conformity.

It should be evident that each biological field will not progress far alone in attempting to arrive at a more common biological goal. About three years ago, a national organization of biologists, the American Society of Professional Biologists, came into being, large-

ly through a nucleus of bacteriologists who had served in the recent war under medical men, and who consequently had a lesser status than the doctorate in bacteriology would justify. These young men expanded their society ranks to include entomologists and all other classes of biologists. The purpose of this organization is to help standardize the biological sciences into a single profession of biology and to bring this profession proper recognition.

Over a considerable period of time, another group of biologists, the American Institute of Biological Sciences, recently crystallized into an organization whose purpose was to obtain the proper recognition of biological research through the representation of biological research societies. This organization has been preparing a handbook of biology similar to those of physics and chemistry, which is concrete evidence of the attempt to bring the biological sciences "under one roof." (The writer of this paper has worked for about four years on a general reference book of biology, whose proposed title was originally HANDBOOK OF BIOLOGY, but which was changed to REFERENCE BOOK OF BIOLOGY, so as to avoid confusion with that of the American Institute of Biological Sciences.)

The young National Association of Biology Teachers, originally in the main a group of public school biology teachers, has recently attracted biologists in higher education. Three years ago, the writer attended the annual banquet of his group and recalls that one of the public school teachers at his table expressed surprise that college biology professors were coming into The National Association of Biology Teachers. A recent issue of the AMERICAN BIOLOGY TEACHER, the organ of this society, contains three feature articles, two of which are by people in higher education, and the third is non-academic. The "N. A. B. T." is becoming broader in its influence.

These three young societies represent cross-sections of the main phases of the biological sciences, namely, research, practical professional applications, and teaching. The American Society of Professional Biologists does not limit itself to any one phase of biological practice, but its trend has been more along the lines of the second category, namely, practical professional applications.

Some of the more specific phases of applied biology, as the agricultural and medical sciences, have become almost divorced from the biological sciences proper. Many agriculturists and doctors of medicine would not recognize any direct connection between the professional aspects of their fields and those of the biological sciences; their societies are nearly unrelated to those of the latter groups.

However, some of the practical biological fields still recognize an affinity between the parent sciences and their branches, such as entomology and plant pathology. It is remarkable that some bacteriologists should have been willing to organize into a national standardizing society of all biologists and that they initiated such an organization; evidently they appreciate the fact that in numbers there is strength.

Certain "trade" organizations related to the biological sciences, as those of the horticultural and landscape nursery fields, arboriculture, and structural pest control have been developing along very definite lines in an attempt to gain recognition and eliminate the charlatans. These have come to recognize the value of the association with university, state agricultural college, and state experiment station biology, and are becoming more and more branches of the agricultural biological sciences. Structural pest control might have developed along medical science lines, as it is, in a sense, a complementary science of that field, but it has been adopted by entomology departments, especially that of Purdue University. Even though most of the persons in these trade groups are not college educated, their national, state, and local organizations are striving for the highest possible standards, which of course have been very much needed.

The landscape gardener is one of the most enigmatical of all applied biologists as to category, for he may range from strictly grower to strictly engineering planner. The "graduate landscape architect" is chiefly an engineer and artist with something of a biological outlook. Possibly the best definition of a landscape architect is "a member of the American Society of Landscape Architects," whose standards are quite beyond reproach, but which stresses the engineering and artistic aspects of the profession. The term "landscape gardener" may be exactly synonymous with "landscape architect," or may actually be broader in its scope to include the growing and selling of landscape plants, landscape design, and landscape plant care. The landscape gardener who merely grows and sells landscape plants is generally designated a "landscape nurseryman." There is generally nothing to prevent any man from calling himself a landscape architect, regardless of qualifications. The landscape nurseryman is obtaining protection for his field through at least two national organizations, one of which serves all horticultural nurserymen.

Forestry has been commercial or governmental in opportunities and since the average graduate forester is an employee of little in-

dependence, and his training has been rather limited in the biological sphere, he seldom considers himself a professional biologist. This also applies to the wildlife conservationist, who is chiefly a federal or state government employee, although a few conservationists are broadly informed in ecological principles.

Whether these young applied biological professions will ultimately unite through the new biological standardizing organizations, or something comparable, is a moot question. Except for the applied medical sciences, whose standards are most special, it does not appear unlikely that most of these professions will come to be represented in centralized biological standardizing organizations, and it is not likely that even the medical will remain exclusively in its cloistered halls. The practicing medical science professions are coming to recognize the values of associating with the pure biological research fields.

The problems of biology teaching are so special, within the various types of institutions of teaching as well as in relation to the other phases of biological practice, that they constitute a topic much beyond the scope of this paper. In general, biology teaching is nearly more related to teaching as a whole than it is to the biological professions, especially in the small liberal arts college and the public school. To those who teach general biology, it is obvious that there are nearly insuperable problems in this field today, such as trying to reconcile the standards of mass education with those required by the medical and other applied biological fields. Such journals as SCHOOL AND SOCIETY, and the BULLETIN of the American Association of University Professors have numerous articles that describe these problems, although the public as a whole is nearly completely unaware of them; for some reason or reasons the popular magazines do not appear to be interested in these problems, or fail to deal with them to any extent, hence the public, including college alumni, remains ignorant of what goes on behind scenes in the teaching institutions. In this paper, it suffices to conclude concerning the teaching of biology that the average biology professor scarcely has professional status, as he is meagerly represented in national standardizing organizations and has little independence in his profession. It has been suggested to the American Society of Professional Biologists that a special study be made of the college biology teaching profession. (Reference No. 3.)

In conclusion, in the opinion of the writer, who as alternating consulting and government entomologist and college biology professor has at least sampled most phases of biology, continued uni-

fication and standardization of the biological fields are essential to the best interests of all biologists. He feels that no new organizations or reorganizations are necessary for this purpose, but rather a stronger support of the young national organizations which collectively have this goal; a desirable eventual outcome might be the amalgamation of these groups into a single parent association with numerous divisions representing the specific areas of interest. The writer hopes that future writings and discussions will keep alive the possible solution of the problems of the biologist.

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