

Dr. T. G. Rennie having kindly procured thyroid tablets of the same strength as those used above, the experiments are being continued to see if a race of 'giant' *A. proteus* can be secured.

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University Botanical Teaching and Training

THE report of the discussion on botanical teaching held at the British Association meeting this year raises a number of interesting problems¹. I cannot agree with Dr. Ashby when he suggests that the specific requirements of potential employers, and, in particular, government departments, should determine the scope and content of honours courses. I have heard similar arguments out here in New Zealand where government departments form the major avenue of employment for the abler students. It is surely our duty to see that students have a sound botanical, rather than a vocational botanical, training.

After acquaintance with several types of botanical training, and at the risk of appearing biased, I believe that something along the lines of the Cambridge system, as described by Prof. Briggs, meets several of the points raised and in particular has sufficient flexibility for the future specialists without losing the advantages to be gained from an overall education. The introduction of the half subjects, although regarded with suspicion by many at first, has, I think, been a happy proposal because it permits specialists to have a wider choice of ancillary subjects. I was surprised that no one raised the desirability of altering the present system in British universities where a subject tends to be studied as a unit over a whole year. The Cambridge half-subject system or the American semester system would merit much closer study in relation to the needs of present-day botanical teaching.

It might be of interest to refer to some organizational points at Auckland University College. Although there is no honours degree at the bachelor level, nevertheless the teaching is at the honours level. Certain prerequisites are laid down by the various heads of departments. Thus in botany a student who intends to study the subject for more than one year must do a year of chemistry before proceeding to study additional plant physiology. Any student taking the B.Sc. degree with botany as the major unit must, in addition, do one year in zoology. Those students who stay on to take an M.Sc. have not only a thesis to do but also there are additional lecture courses. These comprise formal courses in economic botany, history of botany and evolution, together with a number of topics selected from various fields of botany and changing from time to time. There are further prerequisites also; for example, a student specializing in genetics must have done a year of mathematics, a student in plant physiology is expected to have done a second or third year in chemistry, while an ecologist must attend a surveying course in the Geography Department. We also make use of specialists in other fields; for example, the professor of organic chemistry and the professor of geography both give some lectures in the course of economic botany.

Finally, the unit system at Auckland has great advantages, though it is not quite so flexible as the Cambridge system. Only one subject is studied over three years and at least one other subject over two years. This provides five units, and as eight are required for the degree the remainder can be taken as one-year courses in three other different subjects, or another subject can be taken to the second-year stage or one to a third-year stage. While this system provides very considerable flexibility, one must admit that it does raise time-table problems, though these can be solved.

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¹ *Nature*, 170, 770 (1952).

THE main difficulty in botanical teaching lies in the fact that three or even four years of study are not enough to train a biologist for all the requirements of modern life.

In this Department the first year is devoted to a general survey, necessitated by the completely insufficient knowledge the students bring with them from the schools. Thereafter students may proceed with zoology as second major; but chemistry as second major is becoming increasingly popular. As I consider any specialization in the first three years to be undesirable, I think it would be better if those majoring in botany and zoology could have the opportunity of following biochemical courses in case their interest lies in this field.

In the second year, courses in systematics of lower and higher plants and in physiology are given. In the third year, the main courses are those in taxonomy, anatomy, cytology and plant breeding; but there are also short courses in ecology, and in phytogeography in relation to climatology. Practical ecology is taught during a fortnight's course at Frankenwald, the University's Pasture Research Station.

Students proceeding to the honours course (fourth year) find no prescribed syllabus. Considerable choice of subjects is made according to their special interests. The system is one of individual tuition and serves three purposes: (a) extension and broadening of knowledge in some of the fields studied in the first three years, (b) self-activity, by learning how to tackle problems and apply different techniques with criticism, (c) discovery of abilities. A course of this type stimulates the interest of the student, not only in his own work, but also in that of others.

In conformity with the principle of general biological training in the first three years, which is based upon the undeniable interrelationship of all facets of modern botany, we created a special honours course in 'bio-ecology'. This course is based on botany and zoology as majors and has ancillary subjects like surveying, statistics and geology.

Subjects like ecology and other border-line fields are very suitable to demonstrate the complexity of apparently simple problems.

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