

PLANT SCIENCE BULLETIN

A Publication of the Botanical Society of America, Inc.

VOLUME 3

JANUARY, 1957

NUMBER 1

Enrollment Increases and Their Impact on the Teaching of Botany

RALPH E. CLELAND
Indiana University

(Note: This and the following paper are digests of papers presented before the Teaching Section of Bot. Soc. of America, Storrs, Conn., Aug. 28, 1956. These papers, plus those of Edmund Sinnott and Edward Palmquist in Oct. 1956 *Plant Science Bulletin*, are published as a result of numerous requests from members.)

In the next 20 years enrollments in high school and college are expected to double. The present high school enrollment is about 7,000,000; by 1965 it is estimated at 13 million (1). College and university enrollment in 1954 was 2.4 million; by 1965 it will reach 3.7 million (2). These are conservative estimates based on children already born and on the assumption that there will be no increase in the proportion of the population going to college. The proportion, however, has been rising at the rate of about one per cent per year for a number of years (3). At present over 20 per cent of the college age group enter college, as opposed to 4 per cent at the turn of the century. Nor have we reached the saturation point. About 19 per cent of the population possess intelligence quotients which are at or above the average for college graduates. Of these, only about 44 per cent enter college and 35 per cent graduate (2). Less than half of our youth of average college graduate ability therefore even enter college. If an increasing proportion of these highly intelligent persons goes to college in the future, the figures may exceed these estimates. It is evident that our colleges and universities have a major problem in providing for the many students who will apply.

The trend toward increased enrollments, however, is not new. Colleges and universities have been adjusting to this sort of situation for a good many years, on the whole with considerable success. There are, in fact, many cases where increased enrollment has made possible improved quality of teaching. An expanded staff has in many instances made possible more specialized teaching with consequent increase in mastery of subject matter. This is especially true in the smaller colleges in which two persons are now teaching botany where there used to be but one, three or four where there used to be two.

The mere fact that enrollments are destined to increase in the future is not, therefore, in itself ground for assuming that the teaching of botany, or any other subject, is bound to suffer in quality. I am inclined to think that quality of teaching bears little relation to size as such. Some of the best teaching is done in the smaller colleges, and also some of the worst. A few years ago I had a letter from a teacher of botany in a small college who wrote, "For 30 years I have been teaching out of

Bergen and Davis, and now it has gone out of print and I cannot secure it any longer. Can you suggest another book that I might teach out of?" At the other end of the scale, some of the best instruction in botany is at present being given at some of the largest institutions. Two things are often erroneously assumed when one thinks of increasing enrollment. One is that expansion means larger classes. This is not necessarily the case. At Indiana, for instance, with over 10,000 full-time students enrolled on the Bloomington campus in 1954; the average size class was 23.16, the median 18. Freshman classes averaged 33.5 with a median of 25. Total undergraduate classes averaged 27.5 with a median of 22. I doubt whether this is much above the class sizes found in most of the leading liberal arts colleges.

The second erroneous assumption is that large classes are necessarily unsound pedagogically. Given a proper lecture room, with adequate acoustics and modern equipment, a good lecturer, in my opinion, can do an outstanding job with classes numbering in the hundreds. He may not become personally acquainted with the bulk of his audience, but he will, in my experience, get to know many of his class and these are apt to be the superior students, the students who will derive most benefits from personal acquaintance with the professor.

What is likely to be the effect on botany of the impending expansion in enrollment, and what will be needed to adjust to changing conditions? Will the demand for plant scientists expand in a degree commensurate with the growth of student bodies? Will botanical enrollments keep pace with those in other fields or should they? Will botany find it easier or more difficult to maintain its position within the biological sciences? Will we be able to retain proper standards in our teaching, and will we have to modify our methods and approach in order to do so?

It should be realized, in the first place, that we are in competition with sciences which have achieved a position of basic importance in a rapidly expanding industrial empire and which have aggressive programs of recruitment. I heard an officer of a large industrial organization say last year that their company alone was in the market for more Ph.D. chemists than would be graduated from all the universities of the country that year. In view of this type of competition, what is likely to be the demand for plant scientists and what can we do to meet this demand?

While we may expect that the utilization of plant scientists by industry will grow slowly, it must be recognized that the botanical sciences are geared more closely to the educational system, which at present em-

Plant Science Bulletin

HARRY J. FULLER, Editor
203 Nat. Hist. Bldg., University of Illinois
Urbana, Illinois

EDITORIAL BOARD

George S. Avery, Jr.....	Brooklyn Botanic Garden
Harlan P. Banks.....	Cornell University
Harriet Creighton.....	Wellesley College
Sydney S. Greenfield.....	Rutgers University
Paul B. Sears.....	Yale University

JANUARY, 1957 • VOLUME 3, NO. 1

employs 67 per cent of the plant scientists, and to government which employs 22 per cent (4), than to industry. Increased demand for botanists will therefore result largely from expanded enrollments in high school and college.

Considerations of space preclude a discussion of the high school situation. With respect to the colleges, it would seem on the surface that increased enrollments should call for correspondingly increased numbers of botanists. Whether this will prove to be the case will depend upon the position of botany in the curriculum, whether it remains unchanged, or becomes modified for better or for worse under stress of the pressures resulting from enforced expansion. Will botany be able to keep its place in the sun? This, it seems to me, will depend upon certain factors which I believe are well within the control of botanists themselves.

In the first place, botanists must become increasingly active in recruitment and in the education of the general public. Up to the present, botanists have made little effort to prepare and distribute suitable materials for the use of high school counselors and students, although other sciences and professions are flooding the schools with attractive materials. Nor does the general public understand the strategic importance of plants and plant research. To the average citizen, a botanist is still a man with a green can, and botany is an ideal subject for young ladies. It may not be too much to hope that effective means will soon be developed to bring to the plant sciences the recognition and support that they deserve.

In the second place, the attitude of botanists toward biology as a whole and toward their role in the biological field will exert a considerable influence on the place of botany in the college curriculum. In some botanical quarters a feeling of separateness from the rest of biology has developed, of unwillingness to think of botanists as biologists, even of antagonism to other kinds of life scientists. I recall a botanist in an institution where botany occupied the lower floors and zoology the upper in the biology building. He used to point his thumb upstairs and say, "They're as near to heaven as they'll ever get." This attitude does not serve the best interests of botany. We are biologists, whether we like it or not, and the only way for botany to achieve its rightful place

in the biological world is for it to stay within the biological fold and aggressively work for recognition of the importance of the botanical specialties. Especially in cases where biology remains a single administrative unit a great deal will depend on the wisdom and tact of the botanical members of the department. They can, if they are constructive and imaginative in their approach, give to botany its proper place in the scheme of things. On the other hand they can, by a negative and antagonistic attitude, reduce the influence and importance of their subject within the department.

In a well rounded biology department or program there will be some courses of a strictly zoological nature, some purely botanical. Others will be general biological subjects, including ideally both plant and animal material, subjects such as genetics, cytology, ecology, evolution, cellular physiology, micro-technique. It should be the aim and hope of the botanical fraternity that the number of strictly botanical courses will be more or less comparable to the strictly zoological ones, and the persons chosen to represent the general biological fields will be drawn more or less equally from the plant and animal side, and will be persons with broad biological knowledge and interests. It should be our constant endeavor to bring about the happy marriage on an equal partner basis of the two major branches of biology.

A third factor which will influence the place of the plant sciences is the way in which those working on plant materials choose to align themselves professionally. If they choose to call themselves first and foremost biochemists, geneticists, agronomists, horticulturists, etc., and do not at the same time consider themselves members of the great fraternity of plant scientists, botany is likely to lose stature. To the extent to which the various experimental approaches and the applications of botany become the preoccupations of persons in other than departments of botany or biology, of persons who do not think of themselves as botanists, or even as life scientists, the significance of botany, so-called, will dwindle.

The splintering process among the life sciences has already gone too far to allow the hope that all botanical activities can be centered in single strong departments within our universities, but it is not too late to attempt to develop in all persons who work with and on plants a sense of solidarity, akin to the solidarity which exists among chemists. The basis of solidarity would be different in the two cases, and perhaps emotionally more difficult to achieve in botany, since the common basis would be one of material worked on rather than of approach and method of study as it is in chemistry. Nevertheless, I think that it is not too much to hope that pathologists, plant geneticists, horticulturists and similar groups may come to feel that they are first and foremost botanists and secondarily specialists in one of the many botanical specialties. If this goal can be approached, botany can increase its stature and standing in the future—if not, it is likely to descend to still lower levels in the pecking order.

A fourth factor which will help determine the relative importance of botany in the curriculum will be the

manner in which the subject is taught, especially at the beginning level. I am convinced that the average introductory course in botany gives a distorted impression of the subject and provides little inspiration for the ingenious and inventive student—the kind we need in botany. The emphasis on structure rather than function, on observation rather than experimentation, is an emphasis which fails to appeal to many of the best students. I would like to see elementary botany laboratories provided with chemical benches and simple physiological equipment, so that the course can follow an outline based on function, structures being studied as part of the machinery responsible for the various steps in the physiological processes dealt with. If the beginning course in botany is made as experimental as the beginning courses in chemistry or physics, I am convinced that it will stimulate an interest in many students who now turn to the physical sciences to find an outlet for their ingenuity.

I believe, therefore, that the future of botany as enrollments expand will depend upon factors which it is in our power to control. Of course, in agricultural and forestry schools, botany will always have a prominent place, just as zoology has in the premedical curriculum. But I do not think that the future of botany rests primarily on the required preagricultural courses which are taken largely to satisfy requirements by persons who have a professional interest elsewhere. It depends at least as much on the status of the subject in those institutions where it is not required, where it has to compete with the other sciences for the best students, and where it can be taught primarily as a pure science. Because the future of botany is not assured in the liberal arts curriculum, as it is in the agricultural program, we must devote major consideration to the situation of botany in the non-agricultural school, and place strong emphasis on making the beginning course in botany dynamic and exciting. Expanding enrollment will give us an opportunity such as we have never had before. Whether the demand for botany in the curriculum grows in proportion to expanding enrollment, and the demand for botanists grows correspondingly will depend on how well we do our job, how tactfully we work with our zoological colleagues, and how broad-gauge an attitude we ourselves take toward the field of plant science. We can convince the world of the strategic importance of plant science or we can turn over the most exciting aspects of the work to the biochemists and microbiologists and sink into relative oblivion.

Finally, it may be asked, will the increased number of students bring about a deterioration in our teaching program? Will we be forced to water down the content of our courses or streamline our methods to the point where they will become machine-like and impersonal? Will we have to appoint poorly or incompletely trained persons to our staffs, or depend to too large an extent on graduate assistants? I believe that the evidence, such as it is, suggests that we do not have to look forward to a teacher shortage of such magnitude that the quality of our work will be impaired.

Between 1900 and 1954 the trend in the production of science doctorates was roughly a doubling of the number each decade (3). During the war years the numbers dropped very low, but they are now catching up and Ph.D.'s are now being produced in line with the long time trend. This is as true of botany as of the other sciences. In the plant sciences (not including the agricultural sciences such as horticulture and forestry), there were produced during the decade 1935-44 an average of 90 Ph.D.'s per year. In the three years 1951-53 the average was 184, about double what it was during the decade 1935-44 (3). Since a majority of botanical Ph.D.'s go into academic work it would seem that, if the trend can be maintained, we should not be significantly worse off 10 years from now than we are at present, except for the shortage produced as a result of the lean war years. If we do a good job in recruitment and make our beginning courses exciting and stimulating, it does not seem that we will be under the necessity of lowering in any fundamental way our standards of teaching.

My concern, therefore, is not so much that our teaching will be adversely affected in the coming years as it is that we are not really doing as good a job now as we ought. We are not showing the student what a really exciting field botany is and what a strategic position it occupies. We are in many cases not interpreting biochemical, biophysical, genetical, and pathological studies on plants and plant products as part of the field of botany. We are not making the students aware of the potentialities and opportunities in the field, and we are not showing them that botany is a science which requires as much ingenuity, inventiveness, and close reasoning as any field of endeavor. It seems to me that the decades ahead will furnish abundant opportunity for botanists to vitalize their teaching and to attract a greater proportion of the really outstanding students. As nonreplaceable resources become scarce, the ingenuity of the plant scientists will be called upon more and more to furnish increasing proportions of the materials and energy which man needs. The 21st century is likely to become the biological century, even as the 20th is sometimes called the century of chemistry and physics. The biologist will, of course, be using the tools of chemistry and physics but his attention will be focused on living organisms and how to utilize them most efficiently. Now is the time for botanists to be expending their best efforts to strengthen their science for the benefit of mankind, to make the public and the prospective student aware of the strategic importance of the subject and the interest which is inherent in it.

1. Trytten, M. H. The present situation in elementary and secondary education. In Proc. 5th Thomas Alva Edison Foundation Institute. 1954.
2. Scientific Personnel Resources. National Science Foundation. 1955.
3. Baccalaureate origins of science doctorates awarded in the United States, 1936-1950. National Academy of Sciences—National Research Council, publ. 382. 1955.
4. Manpower resources in the biological sciences. National Science Foundation and the U. S. Department of Labor. 1955.

The Role of Botany in a Liberal Education

HARRY J. FULLER
University of Illinois

My colleagues on this symposium have had a relatively easy time of it, for they have been able to use facts in their papers, remembered and recorded facts, as in Dr. Sinnott's paper, or numbers representing facts, as in Dr. Palmquist's and Dr. Cleland's talks. The topic which Chairman Steiner assigned me is a difficult one, for it is not based on events remembered or on facts numbered; my topic involves essentially subjective material, private opinion, generalities not susceptible of quantitative representation.

I assume that all or most members of this audience are on my side at the outset, that they share my conviction that our science has an important role in liberal education. Thus my function is neither that of devil's advocate nor of a salesman facing a sales-resistant group. My function, as I interpret it, is to inquire into and to evaluate the contributions which botany can make to true education.

Discussion of the role of any discipline in education presupposes some conception of the functions of education. If all the words which have been written on this subject were laid end to end, this would be a good thing or a colossal nuisance, depending upon where the laying was done. I do not propose to examine into this topic in detail or in a frustratedly philosophical manner, but I want to emphasize that two functions loom large on the lists of educational objectives prepared by most American educators. One of these stated objectives is the acquisition of a skill or set of skills or professional training (call it what you will) which enables the educational product to work gainfully with his mind. The other is the development of a set of values, of attitudes, of behavioral traits which make of the educational product a completely social being, that is, one who is an affable, cooperative, well-adjusted, civic-minded, healthy, and (above all) happy extrovert. According to this latter view of educational aims, a major function of education is the improvement of society through the effects of education on the behavior and attitudes of individuals as members of a group. The liberal studies—the humanities, the fine arts, the pure sciences—are supposed to help in achieving this social objective, but pronouncements concerning their efficacy in such achievement are in general only vaguely pious. One suspects that some educational policy-makers subscribe to this view out of deference to tradition, but that they really put their money on courses in family living, group dynamics, social biology, effective citizenship, and consumer economics as bases for the fulfillment of this second objective.

I do not argue against good citizenship, emotional stability, roseate health, jihads against pathogenic bacteria, or happy extroversion. I should like merely to indicate that there are reasons for regarding such virtues with some restraint. Repeated and perhaps undiscrimi-

nating emphasis upon the social functions of education and upon human beings as units of society often leads to excessive veneration of conformity (at which the bees and ants have done rather well) and to a corresponding suspicion of or depreciation of individualism or unorthodoxy. Great creations in music, painting, literature, and pure sciences have in considerable degree been creations of highly individualistic, often socially maladjusted introverts possessed of little social consciousness or little civic virtue. I do not advocate that we strive in education to produce skittish introverts but that we should place more emphasis upon the growth of individual minds, that we teach botany in an effort to stimulate individual minds and outlooks, and that we cease worrying about the possible social justification or social utility of what we teach.

Frequently linked with the view that education should concentrate on the production of good citizens is the thesis that the teaching process should be based upon, and should proceed from, the background of a student, that is, his experience. There are 2 corollaries of this doctrine: 1. It is perhaps educationally unwise to plunge a student into a completely new kind of experience, one in which he has no background, one which constitutes, in other words, a completely new kind of knowledge; 2. Education should answer the "felt needs" of students. But these attitudes overlook the thrill, the mental excitement, the sense of wonder, awe, and beauty which may result when the student mind, perhaps for the first time, encounters facts and ideas of which it has had no forewarning. If the needs of students are to be the major criteria of what we teach, one wonders how he might justify the initiation of students into the Ode on a Grecian Urn, into Christopher Marlowe's Dr. Faustus, into the writings of Thomas Wolfe or Arnold Toynbee or Joseph Conrad, or into the study of the great nature cycles or of organic evolution, topics which, I feel certain, most students are not aware of needing. To capitalize upon the incandescence of discovery, of new vistas is one of the functions of liberal education, one of the duties of truly inspired teachers. To teach a kind of botany which neglects the presentation of new intellectual horizons, of unexpected and unappreciated facts and principles in favor of a kind of botany which emphasizes foundation plantings, or the care and feeding of petunias or what to do about the bagworms on the Pfitzers, is not really to teach botany at all and is clearly not to be effective in providing other than a utilitarian and mundane (although probably socially significant) education in the ways of plants.

Time for a summary of what I have said this far. If we are to grant botany an important place in liberal education, we must be cognizant of two things: 1. We must teach botany in an effort to stimulate and nourish individual minds, without compulsion to assess the

value of our teaching on the yardstick of social utility; 2. We should emphasize the value of opening the minds of students to entirely new facts, ideas, and experiences and we should do what we can to enhance the individual intellectual pleasure and understanding which a student may gain from his contemplation of these entirely new vistas. To create a new need in students, the need to know ever more, is more desirable than to cater merely to those needs which students possess before they enter our classes.

Now the question of what specific contributions botany can make to liberal education; these relate largely, I believe, to the pleasure and intellectual stimulation which come from "being in on the know":

1. Recognition and appreciation of beauty in the plant world, not as a separate kind of unit, but rather as derivative of studying plant structure: Spirogyra, diatoms, microscopic sections of woods, cleistothecia of powdery mildews, flowers, for example. It is an entirely legitimate and a desirable activity of scientists to emphasize beauty wherever it may be found in nature, but such emphasis is only infrequently given, since, in large segments of American science, to mention the word "beauty" is seemingly considered not quite manly. In this connection, the teaching of botany should suggest the ways in which plant forms have been used as motifs in painting, in sculpture, and in design, as such use is shown, for example, in Karl Blossfeld's magnificent "Urkunst der Natur".

2. Making known to students that satisfaction which comes from possessing accurate knowledge, from detecting and rejecting misinformation and superstition. Such satisfaction may arise in large degree from the flattering of the ego, certainly a legitimate function of education, if that flattery is derived from intellectual growth. The erasure from student minds of superstitions and misconceptions about plants (e.g., that spontaneous generation accounts for the appearance of molds on stale foods, that yeast is a chemical, that plants lose their nutritive value if they do not receive "organic fertilizers," that plants poison the air at night, that oaks, poplars, willows, and walnuts do not have flowers, that one may distinguish between edible and poisonous mushrooms by placing a silver coin against a fresh slice of the sporophore and observing the color change), commonly leads to a kind of intellectual pleasure, the delight of being "in on the know".

3. Understanding the interdependence of living organisms, as this may be appreciated through the study of the carbon and nitrogen cycles, of the relationships between flowers and pollinating insects, of parasitism and symbiosis, of nutritional checks and balances, of ecological phenomena. Such study will broaden and deepen a student's conception of the operations of nature, will create or reinforce the idea of order and of symmetry in the world. The awareness of such phenomena may be used to complement or to support a student's religious thought and conviction, a teaching objective which is not per se illegitimate; it may, at least, demonstrate that science is not inherently irreligious. A corollary of the

study of biological interrelations is an understanding of the dangers of disturbing balances in nature, a preliminary to a student's grasp of basic principles of conservation.

4. Demonstration that the scientific method is not an esoteric technique peculiar to white-coated gents testing mouthwashes or adding numbers to toothpastes, but that it is basically the method of common sense. Such demonstration may be achieved by having students propose, discuss, and criticize real or hypothetical experiments. The acquisition of some skill in scientific thinking may lead to the development of less emotional, more objective, more calculating methods of viewing controversial questions and problems, to the detection of spurious claims in advertising, to generally more objective modes of thinking.

5. Appreciation of the interrelationships among the sciences and the connections of the sciences with other fields of human thought. The relation between plant production and soil science, that between plant functions and chemistry, that between tree rings and meteorology, and especially that among botany, archaeology, philology, radiation physics, human history, anthropology, geography, and plant breeding in the solution of problems concerning the origins of cultivated plants, are topics which illustrate a phase of interdisciplinary cooperation and reinforcement, an appreciation of which should be a part of the intellectual equipment of every truly educated person.

6. Awareness that the practical applications of the sciences in human life are outgrowths of basic research in the pure sciences. An appreciation of this relationship by educated citizens is prerequisite to the continued and expanding support of research in the pure sciences. Teaching botanists have many opportunities to emphasize this dependence of applied science upon pure science in the treatment of such topics as plant hormones in relation to the horticultural applications of growth regulators, photoperiodism in relation to the control of flowering, mineral nutrition in relation to fertilizers, basic genetics in relation to crop improvement, ecology in relation to conservation, soil control, reforestation, etc.

7. Student understanding of the true nature of botany. Laymen in general regard our science as primarily the study of diseases of cultivated plants and of the management of cultivated plants and of gardens and fields. Certainly the nature of zoology is better understood by laymen; laymen generally would not think of taking a dyspeptic cow to a zoologist for treatment or of requesting a zoologist to prescribe a mash to stimulate egg-laying. But the same persons who appreciate that zoology is not the science of caring for animals quite commonly regard botany as primarily the science of caring for cultivated plants. Our students should certainly recognize clearly as they study botany that the management of cultivated plants, the learning of names of ornamental and truck-garden plants, and the study of landscaping do not constitute the core of botany, that they are only indirectly related to the central purpose

of our science. Such understanding of the nature of botany by our students is essential to the support of and hence to the continuing progress of botany.

8. Organic evolution and its implications, which are so obvious that they do not require further comment.

The questions which now arise are these: How shall we proceed to teach general botany so that we may achieve these desirable results in liberal education? What techniques shall we use? What subject matter should be emphasized? I shall not attempt to answer these questions, because I know no absolute and specific answers to them. The achievement of these important educational aims is, after all, a function of the teacher and of his background, his personality, his enthusiasm for working with young minds and for botany. As the late Neil Stevens wrote in a paper in the *Journal of The American Society of Agronomists* in 1944, "Teaching may be a little like love-making. If the available literature is to be believed, many techniques have been successful in this field, but there appears to be no written record of a successful lover who was not interested in his subject." Thus, the methods and techniques of teaching toward the liberal education ends which I have listed are, I suspect, as numerous and as varied as are teachers of botany. One thing is certain about teaching botany in such fashion as to render it contributory to sound liberal education, and that is that the teachers of general botany must be broadly educated in their science. It would be a distinct advance for our science and its potential contributions to liberal education if taxonomists no longer winced at the mention of the Krebs cycle or of photoperiodic induction, if plant physiologists knew more of telomes and had at least heard of *Index Kewensis*. Our effectiveness in promoting the cause of liberal education through botany, in other words, is inextricably tied to the quality of our liberal education.

NOMENCLATURE OF CULTIVATED PLANTS

Dissension over the provisions of the current edition of the International Code of Nomenclature of Cultivated Plants (1952) prompted the International Union of Biological Sciences to activate recently its International Commission on the Nomenclature of Cultivated Plants. The Commission is composed of eight representatives each of horticulture, agriculture, and forestry, plus a Chairman and Rapporteur général. American members of the Commission, which held its first meeting in Utrecht, November 22-24, 1956, under auspices of I. U. B. S., are Martin Weiss (agriculture), U. S. Dept. of Agriculture, Elbert L. Little (forestry), U. S. Bureau of Forestry, and George H. M. Lawrence (horticulture), Bailey Hortorium, Cornell University.

Scores of proposals for changes in the present Code had been studied previously and were voted on at this session. Paramount among the decisions adopted unanimously was that to retain the name *cultivar* as the international term for all cultivated variants (reserving the technical term *varietas*, and its abbreviation *var.*, for the well known botanical category), and to authorize use of the alternate term in various national languages (such

as "Sorte" in German, "razza" in Italian, and "variety" in English).

The Commission agreed on the need of a single Code for all concerned with cultivated plants, and took steps to simplify the present one. Ample opportunity will be provided all interested groups to study the new edition now in preparation, following which it will be submitted to several international bodies for endorsement and adoption. Persons desiring further information on the work of this Commission or wishing to submit proposals for its consideration are invited to write to its secretary, Harold R. Fletcher, Royal Botanic Garden, Edinburgh, Scotland, or any one of the above-named American representatives. (Communicated by George H. M. Lawrence)

NEW BOTANICAL FOURSOME

A committee of four appointed by the presidents of Amherst College, Mt. Holyoke College, Smith College and the University of Massachusetts has submitted a report dealing with modes of cooperation in botany between the four institutions. The report emphasizes keen interest in such cooperation, especially at the graduate level. The committee endorsed in principle a cooperative program that would make it possible for a student at any of the four institutions to earn the Ph.D. degree in botany under a committee representing each of the institutions. Staff and student cooperation in seminars was also encouraged. The committee considered cooperation at the undergraduate level somewhat difficult in laboratory courses because of distance between campuses. Admission of Amherst College students to courses at the University of Massachusetts was encouraged because both are in the same town and because the University offers more courses in botany. It was further recommended that courses passed at any of the four institutions be credited toward the major by the institution granting the undergraduate degree. Members of the committee included Sarah Bach-Wiig, Smith College; Fredda Reed, Mt. Holyoke College; Henry T. Yost, Jr., Amherst College, and Theodore T. Kozlowski, University of Massachusetts.

FUTURE OF PLANT SCIENCE BULLETIN

The vote on the question posed in the Oct. 1956 number of PSB, namely, should PSB be continued beyond its two-year trial period, now stands at 293 in favor of continued publication, 2 opposed to continued publication. While this vote does not represent a majority of Bot. Soc's. members, it doubtless represents a fair sample of the opinions of our members. Thus, publication of PSB will doubtless continue, although the Council has not yet had the opportunity to render an official decision. The Editorial Board is grateful to those 295 members for their votes and for their constructive suggestions. If you have not sent your vote to the Editor or have not made suggestions to him, remember that it's not too late.

MISCELLANY

Additional donors to Golden Anniversary Fund: Ronald Bamford, Univ. of Maryland; Regina Duffy, N. J. State Teachers College.

The headquarters of the International Academy of Proctology are in Flushing N. Y. (*Science*, Nov. 23, 1956, p. 1023).

Item from Oswald Tippo: "By action of the Corporation of Yale University on October 13, 1956, the name of the Plant Science Dept. has been changed to the Dept. of Botany as of the above date".

NEW RESEARCH FACILITIES

The Brooklyn Botanic Garden has acquired a 223-acre woodland tract at Kitchawan, N. Y., to be used as a field station for research. Gifts totalling \$150,000 for purchase and development of the station have already been made. The Garden wishes to raise \$250,000 which would include a partial endowment fund.

New York Botanical Garden recently dedicated a new one million dollar laboratory, which contains 32 research rooms with controls of light, temperature, and humidity and which will be used for research in plant nutrition and propagation, plant diseases, antibiotics and antiviral substances, etc. The city of New York contributed \$185,000 toward cost of the new lab. and will contribute toward some of the administrative and operating expenses.

California Institute of Technology has dedicated the new Norman W. Church Lab. for Chemical Biology. Erected at a cost of more than 1½ million dollars, the lab. houses 70 investigators and technicians and includes elaborate equipment for their studies. Rockefeller Foundation has contributed about 1½ million dollars during the past 7 years to support research in chemical biology. Other donors include National Foundation for Infantile Paralysis, Carl F. Braun Trust Estate, Ford Foundation, plus several anonymous donors. Research in the new lab. will be under general direction of George Beadle and Linus Pauling.

RECENT DEATHS

Brother Leon, Colegio de La Salle, Havana, Cuba; A. J. Mix, Univ. of Kansas; LeRoy Abrams, Stanford Univ.; Henry N. Ridley (at the age of 100), former director of Singapore's Botanic Gardens and originator of Malaya's rubber industry; Thomas H. Kearney, U. S. D. A. and Honorary Curator of Botany, Calif. Academy of Sciences; George T. Moore, Director-emeritus, Missouri Botanical Garden, and Engelmann Professor-emeritus, Henry Shaw School of Botany, Washington Univ.

INCREASED FELLOWSHIP STIPENDS

The Director of National Science Foundation and the Surgeon General of the Public Health Service jointly announce their agreement to increase stipends of fellowships awarded by these government agencies. Stipends will be increased for all awards activated on and after

Jan. 1, 1957. New stipends at predoctoral levels for first year will be \$1,600, intermediate year \$1,800, terminal year \$2,000 (former stipends \$1,400, 1,600, and 1,800 respectively). The new stipends at the postdoctoral level for the first year will be \$3,800, second year \$4,200, third year \$4,600 (former stipends \$3,400, 3,700, and 4,000 respectively). Allowances, which include tuition, certain travel expenses, and \$350 for each dependent, will remain unchanged. (Communicated by Katherine S. Wilson, Exec. Secy., Research Fellowships Branch, Division of Research Grants, Dept. of Health, Education, and Welfare, Public Health Service, National Institutes of Health, Bethesda 14, Maryland.)

RHUSTIC REPORT

HARRIET CREIGHTON
Wellesley College

When the Council of the Society, at East Lansing, discussed means of getting publicity for the Golden Jubilee of the Society, it did not know that the Treasurer had friends among the press corps. Your President, lucklessly, made the discovery at Storrs when the United Press correspondent trapped her into a story on *Rhus toxicodendron* and its effects on vulnerable humans. To Mr. Ubel's credit be it said that he made clear that I was playing golf on the fairway and not in the rough when I encountered the poison ivy leaves chewed up by a rotary mower. Also to his credit is the mention, in all the reports I saw (and over 40 were sent in to me), that the Botanical Society was celebrating the 50th anniversary of its founding. So we got our publicity, not exactly as I had imagined it would be obtained.

From letters and conversations resulting from the national and world-wide coverage (*Time*, Miscellany Column, domestic and foreign editions) I have gleaned several bits of information about poison ivy which may be of interest to botanists, and particularly teachers thereof. Did you know that the lacquer made for centuries by the Chinese and Japanese comes from *Rhus vernicifolia* (also called *R. vernicifera*) and that before it has aged it can cause the tell-tale, itchy blisters? Whole families are engaged in growing the trees and collecting the sap. The children must develop an immunity, or die young. Occasionally adults who have worked with the stuff for years become sensitive and have to change occupations. When the lacquer is used to cover furniture, or vases, or jewelry, or tea sets it may be still loaded with the toxin. Our esteemed Treasurer tells the story of his father, a sailor on a Navy ship in the Spanish-American War, getting blisters on his arms while he was in mid-Pacific from the wardroom chairs which had been refinished when the ship was in port in Japan. I was told of a lady on a round-the-world cruise who gave a nice case of poisoning to one of her friends to whom she served tea from a lacquer tea cup she had just bought ashore. Still another yarn concerns the blotch of blisters a woman got on her neck right under a lacquer pendant that her husband had

brought her from Korea. And then there is the poisoning from a lacquer screen that had been given to a retiring professor at Cornell. His wife who was very susceptible to poisoning really got a case. So beware of lacquer objets d'art.

I have gathered a little information on the length of time that the poison will remain toxic. Dr. Petry, formerly at Cornell and now at Hofstra, tells me that he put on some gloves with knitted wristbands two years after wearing them when pulling out poison ivy vines and got a row of blisters around each wrist. Can anyone beat that one?

Among the letters from assorted people who read about my encounter with the weed I got one from a man who told me that his wife had a bad case from burning brush with some ivy leaves in it. He said, "She is just about crazy with it (and I am nearly so too, from putting up with her)." Another wanted the name of a plant which grows "either in India or Africa" which gives immunity to the natives. She wants to cultivate some in her garden so her "twin boys three years old and another expected at Christmas" won't get poison ivy. Anyone know it?

No one wrote me giving a sure cure. William Randolph Taylor says he sandpapers the blisters and then applies potassium permanganate, but I am looking for something a little less painful. I would like some chemist to decompose urushiol or the important ones of its four catechol components with a quick and effective treatment. (NOTE: The Editor uses alcohol!).

RETIRED MEMBERS

The following members of Bot. Soc. for 30 or more years have transferred from active to retired membership during 1956: Gertrude E. Douglas, Feura Bush, N. Y.; Walter S. Fields, USDA, Demarest, N. J.; Edna L. Johnson, Univ. of Colorado; George R. Johnstone, Los Angeles, Calif.; Mildred E. Manuel, Northwestern Univ.; George W. Martin, State Univ. of Iowa; Irving Melhus, Iowa State College; Dwight M. Moore, Univ. of Arkansas; A. E. Murneek, Univ. of Missouri; Charles H. Otis, Bowling Green (Ohio) State Univ.; C. P. Sideris, Pineapple Res. Sta., Honolulu; O. A. Stevens, North Dakota Agricultural College; Robert B. Wylie, State Univ. of Iowa; L. Edwin Yocum, George Washington Univ. and Cornell. The Editorial Board of PSB wishes long, happy, and healthful retirement periods to these veteran members.

RESEARCH ITEMS WANTED

Prof. T. N. Khoshoo, Dept. of Botany, Univ. of Panjab, Amritsar, India, wants seeds of *Sisymbrium irio*, *Alliaria*, *Arabidopsis*, and *Descurainia* (all of the Cruciferae). Dr. Khoshoo would also be most appreciative of reprints on any of these plants. Seeds and reprints may be sent to Dr. P. Kachroo, Dept. of Botany, Univ. of Michigan, Ann Arbor, Mich., who will forward them to Dr. Khoshoo.

1957 Summer Botany Institute at Cornell

National Science Foundation has made a grant of \$43,500 to the Botanical Society of America to support a summer institute in botany at Cornell Univ. during the summer of 1957, this institute to be modeled in general upon that of 1956, which was so highly successful. Harlan Banks, chairman of botany at Cornell, who was director of the 1956 institute, will serve as director of the 1957 institute. Object of the institute is to encourage college teachers of botany to become acquainted with recent advances in various fields of botany through lectures, demonstrations, field trips, and seminar discussions to be conducted by prominent specialists in various botanical fields and through informal contacts and exchange of information and teaching ideas with other college teachers. A second object is to stimulate college teachers to initiate or continue research activities in botany at their several institutions.

Housing will be provided in a special Cornell dormitory reserved for participants and lecturers. Rooms will be completely furnished, including towels and bedding, and will be rented at about \$10 per week. Meals will be served at university cafeterias at about \$14.50 to \$18.00 per week. Off-campus housing for families with small offspring will be available.

Recreational facilities are available in abundance at or near Cornell: snack bar, swimming pools, state parks, and picnic grounds (for masochists who eschew the civilized pleasure of eating at comfortable tables). Director Banks may unofficially make private deals for devotees of faro and black-jack.

College teachers from all sections of the U. S. who are engaged in teaching botany are eligible for the 40 NSF-supported scholarships for the 1957 Summer Institute. Interested persons should write to Harlan Banks, Dept. of Botany, Cornell Univ., Ithaca, N. Y. for application blanks. A 3-man committee consisting of Dr. Banks and two other members of Bot. Soc. will select recipients of these scholarship awards. Preference will be given to applicants from the faculties of small colleges. Each scholarship will provide a financial grant of \$450, plus certain additional allowances for dependents. The summer institute will commence on June 30th, will end on August 10th, 1957. Work at the institute will not grant academic credit, but holders of scholarships who complete the work of the institute will receive official certificates from the Botanical Society of America, attesting to their participation in the activities of the institute. *Applications for the summer institute scholarships must reach Dr. Banks before April 15, 1957.*

Details of the institute topics for 1957 have not been completed. The April 1957 number of *Plant Science Bulletin* will publish details of the topics to be treated, the names of lecturers, and the scheduling of the topics.