I refer to "experimental work done" because for a number of years it will be necessary to utilize all of the data obtainable from experiments that have been tried with other aims in view. This is due to the facts, first, that no attempts have as yet been made by geneticists to breed apple species for the specific purpose of determining their taxonomic position in relation to each other; and, second, that apples are so slow in maturing that it takes half a life time to get three generations. Perhaps I should have put the statement the other way about and said that man lives so short a time that he can manage to see only 3 or 4 generations of apples in his life. Of course, these statements also apply, with more or less aptness, to other perennial fruit crops. The vegetable crops offer a more satisfactory field in point of their shorter individual lives and greatly increased number of generations per given time. These, too, we hope to investigate in the same way.

This whole situation leads much farther than the naming of types of plants. It promises, I believe, a tremendous advance in taxonomic accuracy for the very reason that it may give us a clear-cut definition of a species. Heretofore, a species has always been a concept and no two taxonomists have agreed entirely in their specific concepts. The more variation there is in a group of plants, the greater the diversity of concepts existing among specialists on that group. In cultivated plants, because of the tremendous variations induced by men by selection, crossing, and removal of natural competition and other difficulties in what might be called the "normal life struggle" of the plant, this diversity has been increased many fold. The remarkable thing, it seems to me, is that there exists as much agreement in specific concepts as there is. This new method seems to promise an approximation, at least, to mathematical accuracy. Given a definite number of pairs of chromosomes and a perfectly regular method of cell division allied with a distinct group of other morphological characteristics and we have a good species. Given an indefinite number of chromosomes and irregular division, we haven't a good species but a hybrid of sorts, characterized in every case investigated thus far by considerable variation in gross morphological characters.

If, as I have assumed, the greater part of the difficulties lie in the varying concepts regarding those plants which are not *good* species according to my definition of a moment ago, then a clarification of the status of those plants by reference to their cytological behavior will go a great ways in stabilizing nomenclature of plants in general. Perhaps, I should have said "higher plants," for I fear this investigation of chromosomes will be of little use to the bacteriologists who have yet to find such things in their whole category of delightful pests. However, the bacteriologists by their use of physiological reactions have gone further, I believe, in attaining accuracy in delimitation of related forms than the systematic botanists who deal with seed plants and trust to their eyes alone to determine differences and likenesses.

This may lead to some difficulties in terminology involving among other things the uses of such words as hybrid, cross, variety, form and species. It seems to me that the term hybrid will have to be held merely for those results of crossing in which the ensuing nuclear divisions exhibit irregularity of behavior coupled with varying degrees of sterility. And it is to be noted that so far as known at present some degree of sterility is *always* associated with this irregular chromosome behavior. It seems likewise evident that when the result of a cross is an organism with perfectly regular nuclear division and complete potential fertility, it must be reckoned a good species regardless of whether it has been found wild or is known only under cultivation.

I believe I have exhausted my time and possibly your interest. My own interest, I have to confess, is white hot. I feel that we are in view of some striking advances in taxonomic work and it is a rare pleasure to be in at the very beginning of the adventure.

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SCIENTIFIC EVENTS

THE INTERNATIONAL CONGRESS OF ENTOMOLOGY

THE Fourth International Congress of Entomology is to be held in August, 1928, at Cornell University, Ithaca, N. Y. Previous congresses have met at Brussels (1910), Oxford (1912) and Zurich (1925). Every important interest—educational, scientific and economic—will be provided for in the program. Invitations have been forwarded through the state department to foreign governments to send representatives and later invitations will also be sent to the individual entomologists. A program will be arranged in which some of the leading entomologists of the world will take part. It is planned that in the forenoons throughout the week papers of general interest are to be read before all members of the Congress. In the afternoon sections will be formed dealing with (1) taxonomy, distribution and nomenclature; (2) morphology, physiology and genetics; (3) ecology; (4) medical and veterinary entomology; (5) economic entomology with its subdivisions relating to forest, fruit, vegetable and cereal insects, bees, insecticides

and appliances. According to the number of papers announced, each section may be subdivided or several sections may be united. Time will be arranged for an all-day visit to the Geneva Experiment Station where the forenoon will be spent in looking at the exhibit of spraying machinery and insecticides, in examining the methods and machinery used in controlling the European corn borer, and in observing a demonstration of airplane dusting. The afternoon will be devoted to a general program. In addition, the summer meeting of the New York State Horticultural Society will be held at Geneva on the same day, which will serve to give the visiting foreign entomologists more ideas of the general interest of American farmers in entomology. Certain afternoon excursions will also be made to nearby places of entomological interest, while immediately after the meetings some general excursions are planned to Niagara Falls, to entomological museums of eastern cities, and to the laboratories of the U. S. Bureau of Entomology devoted to the study of the gipsy and browntail moths, the corn borer and the Japanese beetle.

THE WALTER RATHBONE BACON SCHOLARSHIP

UNDER the terms of the will of the late Virginia Purdy Bacon, of New York, the Smithsonian Institution receives a bequest to establish a traveling scholarship as a memorial to her husband, Walter Rathbone Bacon.

The secretary of the Smithsonian Institution has established rules which are to regulate the award of the Walter Rathbone Bacon scholarship for the study of the fauna of countries other than the United States of America. The amount available is the interest on the capital invested (about $3,000 a year), the incumbent to hold the scholarship not less than two years.

Applications for this scholarship, addressed to the secretary of the Smithsonian Institution, should be submitted not later than January 1, 1928. The application should contain a detailed plan for the proposed study, including a statement as to the faunal problems involved; the reasons why it should be undertaken; the benefits that are expected to accrue; the length of time considered necessary for the carrying out of the project; the estimated cost, and the scientific and physical qualifications of the applicant to undertake the project.

The scholarship will be awarded for a term of two years. If at the expiration of the term it is desired to extend the time, the incumbent shall make application a sufficient time in advance, accompanied by a statement as to the necessity for such extension.

All collections, photographs, records and equipment become the property of the institution.

The incumbent shall not engage in work for remuneration or receive salary from other sources than the institution or its branches during the period of occupancy of the scholarship.

THE LINTHICUM FOUNDATION PRIZE

THE faculty of law of Northwestern University, administering the income of the Charles C. Linthicum Foundation, announces that the sum of one thousand dollars and a bronze medal, as a first prize, and two sums of one hundred dollars each, as second prizes, with honorable mention, will be awarded to the authors of the best essays or monographs submitted by March 1, 1929, on "Scientific Property," *i.e.*, the extension of the patent or copyright laws so as to recognize a right, in the discoverer of a scientific principle, to some share of the profits that may accrue to an inventor who makes use of that discovery to devise an "art, machine, manufacture or composition of matter" (as the statute defines it) and thus obtains a patent. The law has hitherto not recognized such a right.

The subject of the award in 1927 was "The Law of Radio-Communication," and the prize was awarded, on June 16, 1927, to Stephen Davis, Esq., member of the bars of Oklahoma and New York, and formerly solicitor to the United States Department of Commerce.

The present offer was originally opened only to members of the legal profession in the United States or Canada, but has now been enlarged to include all countries of the world.

The award will first be made public in June, 1929, on the occasion of the annual meeting of the Alumni Association of the Law School.

Further information may be obtained by addressing the Linthicum Foundation, Northwestern University Law School, Chicago. The work submitted may be one already published in print at the time of submission. Manuscripts submitted must be typewritten on paper of size of legal cap or typewriter or commercial note, and in the English language. A work submitted in French, German, Italian or Spanish may be examined, at the discretion of the faculty; but, if awarded the first prize, it must be translated into English for publication, at the expense of the author.

THE ENGINEERING INDEX SERVICE

PLANS have been completed in a comprehensive scheme for indexing the engineering literature of the world, to be initiated the first of the year, with the new weekly engineering index service of the American Society of Mechanical Engineers.

This task is so extensive as to include the preparation of index items for the 1,500 technical publications