What that means is, perhaps, not altogether clear because "dependable automatists" are to be trained and awarded certificates, abnormal cases are to be treated, and negotiations with other institutions are encouraged, but surely not without fee. No, my chief criticism is simply: why do all this under the name of *psychology?* There is hardly an academic institution that would designate this subject as anything but "psychic research"; and certainly, if I judge aright, no scientific body of psychologists would endorse the selection of so ambitious a title for organizations at work in the field described in the pamphlet. The use of such a name involves bad taste and delusion, if it does not also bespeak audacity and professional discourtesy. Especially at this time of national service in an emergency ought scientific bodies to be particularly sensitive lest those in authority who are susceptible to misinformation proceed to belittle and to caricature the achievements already won. This is peculiarly true of so youthful a scientific discipline as psychology.

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THE POSITION AND PROSPECTS OF BOTANY

TO THE EDITOR OF SCIENCE: There are times when it is perhaps to be expected that the naturalist should feel, more insistently than other scientific men, the impulse to justify the pursuits with which he has chosen to occupy his time. The recent address by Dr. Gager, concerning the position and prospects of botany, printed not long ago in SCIENCE, prominently conveys an attempt of this kind. Like most of the pleas advanced by investigators in defence of their performances, this address develops the traditional theme of economic benefit accruing to society at large, and more specifically to certain groups of business interests, as the result of research activities.

It is strange that the peculiar futility of this type of apologetic seems not to be more generally appreciated. That the results of scientific inquiry contribute to the well-being of humanity is a tiresome truism, which has no bearing upon the support of research by business interests. Perhaps in despair at the lack of other common ground upon which to engage in discussion with nonscientific acquaintances, perhaps from the honest conviction that economic good is the main consideration in this matter, investigators have at any rate been far too willing to point to useful inventions, commercial practises and hygienic improvements, as the crowning fruits of the spirit of discovery. To this habit may in large degree be traced the origin and perpetuation of that conception, commonly enjoyed by cultivated people of nonscientific interests, that science is a vaguely delimited mélange of engineering, sanitation, surgery and what not else.

To encourage the demand, upon specific economic grounds, that research in biology should receive the financial support of commercial organizations is futile and dangerous: it is also a tactical error of the first magnitude. It is futile because the appeal fails, and in the nature of things must fail, to impress the people for whom it has been designed; because it omits to reckon with the fact that "usefulness," in the ordinary understanding of that attribute, is an accidental by-product of research. It is dangerous because, as Dr. Sumner has clearly expressed it in another connection,[1] "the investigator who derives his support from the public treasury often finds his intellectual honesty sorely strained. More or less fictitious benefits to the community are conjured up in justification of work which ought to stand upon its own merits. The mental processes involved are insidious and the deceiver often ends by being himself deceived." It is a tactical mistake because it fosters a false conception of the relations of science to other pursuits; the continual insistance upon the "practical" justification, especially when this is urged as a basis for the commercial support of research, can only delay the arrival of a social readjustment which, by reducing the grossly disproportionate material rewards of commerce, will help to insure for science the social and

[1] Sumner, F. B., 1917, *Bulletin of the Scripps Instn. Biol. Research,* No. 3, p. 3.

political position it rightfully should occupy. That public eulogists of scientific achievement have rarely undertaken to dwell upon anything beyond the "practical" result argues that there is in them either a want of vision, or a lack of courage to force the consideration of a viewpoint devoid of popular appeal; perhaps both.

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LEAF BURN OF THE POTATO AND ITS RELATION TO THE POTATO LEAFHOPPER

Throughout the northern section of the United States, from Montana to New York and south at least to Iowa and Ohio, there has been a remarkable epidemic of leaf burn on potatoes. The margins of the leaves of early varieties turned brown, the dead areas gradually widening until the leaves dried up and the whole field took on a burned appearance. In severe cases the stalks also withered and died.

Every potato section of Wisconsin was affected and a careful study by the writer showed that in every case the injury was directly proportioned to the number of potato leafhoppers (*Empoasca mali* LeB.) present. The nymphs of this species feed on the undersides of the leaves and first produce a wrinkling of the whole surface, with a slight upward rolling of the margin, and then the marginal burning appears. Long after the leafhoppers have acquired wings and flown away it is possible to determine the cause of the damage by observing the cast skins adhering to the under surfaces and the egg scars in the mid rib or veins of the burned leaves.

In cage experiments, using large numbers of leafhoppers, typical leaf burn was produced in four days. The relation of this injury to what has been previously diagnosed as "tip burn" is an interesting subject for future determination. The characteristic marginal burn is frequently so definite that it is possible that there may be something injected that produces more definite and widespread results than the mere mechanical extraction of the sap. There does not, however, seem to be the same specific relation that exists between the beet-leafhopper and the curly-leaf disease of beets.

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"FATS AND FATTY DEGENERATION": A RESPONSE TO BOOK REVIEWS BY BANCROFT AND CLOWES

Wilder D. Bancroft[1] has recently reviewed in the pages of the *Journal of Industrial and Engineering Chemistry* a book entitled "Fats and Fatty Degeneration,"[2] by Marian O. Hooker and myself. He has also published in his *Journal of Physical Chemistry* a review by G. H. A. Clowes,[3] which in spirit is identical with his own. My attempt to answer both of these reviews in the pages of Bancroft's *Journal* has met with the editor's refusal.

Bancroft and Clowes's adverse criticisms are of two kinds: (1) those contradicting my observations and their interpretation, and (2) those implying unacknowledged borrowings from the works of others, more specifically their own writings. As to the first, it is the privilege of any critic to correct errors and to disprove arguments when truth and logic are on his side; as to the second, no reputable investigator would, even if moved by nothing better than the low ideal of his material future, jeopardize truth by taking it ready-made from another without noting that fact, or would pose as the discoverer of laws already set forth by authorities working in the same field. Those who know either me or the history of emulsion chemistry will easily find their way here. Yet, deferring to another article my answer to the scientific objections of Bancroft and Clowes—an answer that should be apparent to any careful reader of my book—I purpose in this note to comment upon their purely personal criticism.

Bancroft says:

> It is also interesting to note that the author does not cite Pickering's first paper, though he must be familiar with it. . . . It is certainly being overcharitable to say that the author has the unhappy

[1] Wilder D. Bancroft, *Jour. Ind. and Eng. Chem.*, 9, 1156, 1917.

[2] Martin H. Fischer and Marian O. Hooker, "Fats and Fatty Degeneration," New York, 1917.

[3] G. H. A. Clowes, *Amer. Jour. Phys. Chem.*, 23, 73, 1918.