sented a paper on the 'Permanent Protection of Iron and Steel,' in which he discussed the different kinds of coatings used for the purpose, with especial reference to the good effects obtainable by the use of a paint made from Portland cement of a certain definite composition. Lantern slides were shown illustrating the microscopical character of cements of various compositions, and the effects of corrosion on structural iron and steel.

ARTHUR M. COMEY,
Secretary.

DISCUSSION AND CORRESPONDENCE.

CONVOCATION WEEK.

TO THE EDITOR OF SCIENCE: I, with doubtless many others, feel indebted to you for the clear exposition, in your editorial on convocation week, of certain problems in the policy of the American Association. The purposes of the association to encourage research and specialization and, at the same time, disseminate scientific and useful knowledge among the people, divides the membership of the association now, more than at any time in the past, into two more or less distinct groups—investigators and popular teachers. Under ideal conditions, taste and ability for these two occupations should be perfectly balanced in each individual, but rarely is this the case. With increasing specialization in science, we are approaching more and more nearly to industrial conditions, where production and distribution are the separate functions of the manufacturer and the merchant. These two deal with each other oftenest not directly, but through a middle man. There is, to be sure, a vast difference between knowledge and merchandise, but the similarity in development deserves attention. It must be admitted that at times in the past the two purposes of the association have gone but lamely together. To some lack of community of interest between them, which I grant ought not to have existed, the birth of some of our separate societies was due. If efficiency in each branch were the sole consideration, it would be better to have investigators and specialists in each science in a group by themselves for their serious work, but some point of contact among specialists in the different sciences and with the public at large must be found, or the whole system will fail from too much intellectual in-and-in breeding, on the one hand, if not from lack of popular sympathy and support, on the other. The convocation week meeting of the association, if wisely conducted, can doubtless bring together the meetings of a large number of affiliated societies, and thus effectually emphasize the common ground and common purpose of the sciences, which is now too often forgotten by both scientific societies and scientific men. The function of the association at such a meeting would be largely that of a clearing house, and the second purpose of the association could receive but the scantiest attention. This would be unsatisfactory to what I take to be the larger and more rapidly increasing part of the present membership of the association. I believe, therefore, some ampler provision should be made for this already too much neglected body by a second meeting at a different time of year, preferably in the summer season. It is plain, however, that the most careful judgment and balance must be shown in making up the programs of the two meetings, to meet effectually the double purpose of the association, and still make both meetings attractive, if not of compelling interest, to the whole membership. Aside from such considerations, the financial aspect of two meetings a year may prove to many a vexing one. It may be true that the association can, with its increased membership, carry the financial burden of two meetings; but how about the individual who in most cases is compelled to live on a salary inadequate to his growing obligations? If those who can attend but one meeting a year can be brought to see that their freedom and convenience are better served when they have two meetings from which to choose, the problem will be simplified.

The suggested change of policy seems to me one of such far-reaching importance that it should receive the broadest discussion from the most varied points of view before a decision is attempted.

ERNEST FOX NICHOLS.

COLUMBIA UNIVERSITY,
February 2, 1904.

JUST now, before the busy scientific men all over the country have allowed the memories of the recent holiday meetings of scientific societies to be covered up with the details of every-day work, is a good time to consider the object of the union of these organizations and how this may be made more effective. For the purpose of reading papers on subjects to which they are devoting their lives and their best enthusiasm, or to discuss the latest information, or to meet and compare notes with men of similar thought and labor, this, I take it, is the impelling motive that brings men together at a scientific association.

That the attendance on the recent meeting of the American Association for the Advancement of Science and affiliated societies at St. Louis was not larger was to be expected, in view of the fact that meetings of those interested in nearly all branches of scientific work have already been announced for next summer in the same city. Many can not sacrifice the time nor bear the expense of more than one visit to St. Louis, and will so time their visits to the fair next summer as to include the session of the scientific meetings. With regard to enthusiasm, and strict attention to the business that brought them together, and in the absence of that sensationalism, which moves every scientific man to shrug his shoulders, the St. Louis meeting was a great success.

The plan that has been inaugurated, of having all societies interested in a common work meet under the same auspices, at the same place, during 'convocation week,' has been carefully considered. That it is satisfactory is attested by the meetings already held under this arrangement; but it should receive the hearty support of every one and the cooperation of all scientific societies. Any subsection or class of specialists has a perfect right to hold a meeting elsewhere at the same time, but though a closer fellowship with men of the same cult may perhaps be attained, the larger benefit of association with those possessed of culture, and who are men of ideas, in other allied or, indeed, widely different subjects, is not attained. It is of as much importance that the horizon be extended as that we knit closer the bonds of fellowship in a limited circle. An annual meeting of affiliated societies brings about just the desired result.

It may be assumed that a large per cent. of those attending the meetings are associated with different educational institutions, and for them a winter meeting will no doubt prove most convenient, when local conditions, such as meetings of state educational and scientific bodies, are adjusted to this condition of affairs. It has been found that a general meeting held during the summer, even if as late as the last week in August, breaks in upon a vacation at the seashore, in the mountains, by the lakes, or seriously interrupts some laboratory investigation or scientific excursion. On the latter account many biologists especially have frequently been unable to attend the meetings.

There can certainly be no valid objection to having semi-annual meetings of sections or of affiliated societies held during the summer at appropriate and convenient localities, but this should not be allowed to interfere with attendance at the larger and more important *annual* meeting, held in the winter at some central and convenient point.

It will, I think, be found that the men of the central west can be depended upon to attend meetings held during convocation week, if they are not obliged to travel over from 500 to 800 miles. Some will double these distances for the sake of the advantages that a meeting of this kind affords. If the men along the Atlantic coast will do as well there will be no lack of attendance. By concerted action and hearty cooperation, then, it is possible to make the annual meeting of scientific societies, even more than it has been for the last fifty years, a center of scientific life and enthusiasm.

E. H. S. BAILEY.
UNIVERSITY OF KANSAS.

As is well known, the American Association for the Advancement of Science used to meet in midsummer and the different professional societies in midwinter. Now the American Association for the Advancement of Science has changed its meetings to winter and the

professional societies, many of them at least, do not feel like giving up their winter meeting. The result has been considerable friction between some of the section meetings and the other societies. The difficulties have not been removed entirely, but are being adjusted by compromises.

It occurs to me that the trouble might be removed in large measure by having meetings of the sections of the American Association for the Advancement of Science in mid-summer. They need not all meet at the same place. In fact it would be better for them not to meet at the same place, as the summer meetings should have for their paramount objects excursions and field trips, and the locality that would be highly interesting to the geologist might have little to attract a chemist or botanist.

Furthermore, the sections by meeting separately could go to smaller places which could not entertain the entire association, and thus whatever good influence these meetings might possess would be more widely distributed. The meetings in the smaller cities would probably have a greater influence than in the large cities, because in the smaller place they would be 'events' that would attract the attention and interest of nearly every one, while in large cities they attract little attention, being lost in the bustle of the city.

This arrangement would enable a greater number of the scientists to partake of the benefits of the meetings, as many could attend the summer meetings in one place who could not attend the winter meeting in another and *vice versa*.

Let us then have the meetings of the sections in the summer in a locality containing points of interest to the section concerned. For instance, Syracuse, with its many objects of geological interest, would make an admirable place of meeting for the geological section. Another summer it could go to the iron district of Lake Superior or Alabama, again to the cave district of Kentucky or Indiana, and so on from year to year.

T. C. Hopkins.

Syracuse University,
January 14, 1904.

To the Editor of Science: Referring to the questions noted in your editorial in a recent number of Science, I beg leave to suggest:

It is more and more apparent that the naturalists of the country are laboring under certain serious disadvantages by reason of which we are likely, unless we are cautious, soon to lose the whole inspiration which should come from organization. In the first place, this is an exceedingly wide country and we are, by the nature of the case, much scattered, unable to meet together in one place without a considerable sacrifice on the part of the greater number, both of time and of money. In the second place, in an effort to better this and for possibly other reasons not here to be discussed, we are at present overwhelmed with a multiplicity of organizations. The botanists, for example, are in this particular no better off than any of the rest.

For the botanists, I beg to offer the following suggestions:

Let us maintain at all hazards the botanical section of the American Association for the Advancement of Science as part of a national organization of the utmost value to the people of this country for educational reasons, if for none other. Then let us have a single Botanical Society of America to have at least two meetings per year, one of which shall always be in connection with the meeting of the American Association for the Advancement of Science. Let the program of Section G consist of two parts, the one to be offered, say, in the forenoon of each day, to be of more popular character, open to all America; the other to be in charge of the Botanical Society, to contain papers of a purely professional character, reports of research work, contributions to knowledge.

In some such way as this, it seems to me, we can preserve the high standard of our association meetings, gain the inspiration which comes from a general assembly, and at the same time not lose sight of the objects sought in the way of popular impulse, encouragement and education.

The Botanical Society might hold as many meetings as it likes, be divided into as many subdivisions as might be deemed convenient,

for purposes of local assembly and fellowship, but always with the understanding that the great meeting of the year should be with the association, which shall shift about in its sessions as heretofore.

THOMAS H. MACBRIDE.

IOWA CITY, IA.

REPLY TO AN ADDRESS: PRESENT STATUS OF SOIL INVESTIGATION.

SOME criticism of Bulletin No. 22, U. S. Department of Agriculture, has appeared recently, the tenor of which is that the authors of the bulletin have proposed new chemical methods for the determination of soil fertility, and that they have concluded that the use of fertilizers is of no value in affecting the yield of crops. These criticisms have generally been copied from Circular No. 72, Agricultural Experiment Station, University of Illinois, in which parts of sentences from Bulletin No. 22 are brought together in an attempt to show a meaning which they do not possess in their proper position. The first paragraph of an 'Explanatory Statement' prefixed to the Circular is as follows:

> This address was written for the purpose of calling attention to certain discrepancies in the work of the different prominent investigators in the subject of soil fertility, especially such as have a bearing upon investigations and conclusions touching soil conditions in Illinois. The paper deals particularly with the recently issued and much advertised Bulletin No. 22, from the Bureau of Soils, United States Department of Agriculture, on 'The Chemistry of Soils as Related to Crop Production,' which says that 'practically all soils contain sufficient plant food for good crop yields,' and that 'this supply will be indefinitely maintained.' This is commonly understood and is certainly intended to mean that the use of farm manure, the growing of clover and other leguminous crops, as a source of nitrogen, or the application of bone meal or other fertilizers has little or no tendency toward permanent soil improvement, and that even the effect which they do produce is due very largely, if not entirely, to improved physical condition of the soil, which effect, the Bureau of Soils believes, can be better obtained by 'a simple rotation and change of cultural methods,' and the statement is added that 'the effect due to cultivation is also more permanent than the effect due to fertilizers.'

As a matter of fact, these statements are utterly at variance with the complete context and plain meaning of the bulletin, but they have been copied in the lay publications of this country to such an extent as to call for an explicit denial. That the authors of the bulletin fully recognize the importance of the proper use of fertilizers is made perfectly plain by the following quotations (pp. 58 and 59):

> There is no question that in certain cases, and in many cases, the application of commercial fertilizers is beneficial to the crop. The experience of farmers, the enormous sums expended for commercial fertilizers, and the many experiments carried on at the experiment stations prove that under certain conditions fertilizers are very beneficial in increasing the yield of crops. The fundamental idea under all of this work, however, has been that of supplying plant food in an available form; that is, adding to the supply existing in the soil. It is significant that other conditions of growth have so much influence on the yield that in but very few instances, even after long-continued experiments, has it been demonstrated that any particular fertilizer ingredient or ingredients are required for any particular soil, and that even then the effect of the fertilizer varies so greatly from year to year that no specific law has been worked out, even for a particular soil, from which the fertilizing requirements could be deduced in any exact manner.
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> In cooperative experiments carried on by Atwater, numerous cases are cited where phosphoric acid is said to be a regulating ingredient and the predominating factor in controlling crop yields one year, while it is more or less efficient in the same soil in other years, and is inefficient in many cases in the same soils in still other years. The same fact is brought out in regard to potash and nitrogen, and it is clearly and unquestionably demonstrated that the effect of fertilizers is dependent upon the season, it being so influential in one season as to be designated as a dominant factor in the yield of the crop, while on the same soil in a different season it has no apparent effect. It is not that the effect is one year greater and the next year less, which might be attributed to the previous application, but it is just as likely to be inefficient one year and the controlling factor the next year as it is to be a controlling factor one year and inefficient the succeeding year.