hand, the surface tension is negative at the surface of a colloid particle, there will be no flocculation, and the particles will not approach each other near enough to crowd the liquid out of the region of surface energy around either particle. This, of course, does not imply that there is any tendency in the latter case for the colloid particles to remain in equilibrium equally diffused throughout the liquid.

ARTHUR L. KIMBALL
AMHERST COLLEGE

THE WHITE PINE BLISTER RUST; DOES THE FUNGUS WINTER ON THE CURRANT?

IN the work carried out in the Province of Ontario during the last two years on this disease, strong suspicions have been aroused that the fungus may in some cases pass the winter on the currants themselves. Several lines of evidence support these suspicions.

1. The commencement of the currant stage each spring here and there over large areas, without any apparent relation to the pines therein.

2. The similar yearly recurrence of the currant rust in one particular district ten miles by four miles in extent. In this area (*a*) the rust outbreaks do not bear any apparent relation to the pines; (*b*) the pines are very few in number; (*c*) many lots of these pines are small and their freedom from disease has been established; (*d*) the evidence from five lots of these young pines growing close to infected currants indicates that the rust was not introduced into this area until 1914, and that therefore the prevalent currant stage of 1915 and 1916 could not be due to pine blisters, which have not yet had time to mature.

3. The finding of six cases of the currant stage early in the year from one to two miles distant from any possible source of pine infection.

4. The occurrence of currant rust in 1916 on two adjacent plants in a large plantation. Early in the year these two only were rusted. The only four plants which were badly diseased here in 1915 included these two.

5. The occurrence of a rust outbreak on a plot of one hundred black currant plants which were badly rusted in 1914, and which had been set out in a disease-free neighborhood in the spring of 1915 to test hibernation.

A hypothesis is advanced which gives a reasonable explanation of the suspected hibernation. The rust often causes early defoliation of the currant plants, and this defoliation is followed by a secondary production of foliage, due to the development of winter buds. The general occurrence of the rust on these secondary leaves suggests that, allowing for the two weeks' incubation period, the infection must take place very early in their growth, and the question naturally follows: can such started buds be infected at such an early stage in their development that if winter conditions set in soon after, the buds are still capable of surviving?

W. A. MCCUBBIN
DIVISION OF BOTANY,
EXPERIMENTAL FARM SYSTEM,
DOMINION OF CANADA,
November, 1916

PAMPHLET COLLECTIONS

TO THE EDITOR OF SCIENCE: I note in SCIENCE for November 24, an article by Tracy I. Storer from the University of California on "The Care of Pamphlet Collections" in which a type of cardboard case open at the back only and "not larger than $12 \times 8 \times 2\frac{1}{2}$ inches" is recommended for this purpose. Permit me to state that such cases differing only in size—mine are $11 \times 7 \times 3$ inches—have been in use in my department since 1904. Several other departments in the university had such cases made after my design and they have been in rather general use here since. I do not remember whether the idea is original with me or not. These cases are arranged alphabetically by authors and the card index is by subject with the catch word first on the card.

CHAS. B. MORREY
DEPARTMENT OF BACTERIOLOGY,
OHIO STATE UNIVERSITY

INDUSTRIAL LABORATORIES AND SCIENTIFIC INFORMATION

TO THE EDITOR OF SCIENCE: The undersigned committee on engineering of the General Committee on Research, of the American Associa-

tion for the Advancement of Science, feel that it is timely to issue the following appeal to the industrial research laboratories of the country.

In the course of work done in the numerous industrial laboratories of America, many physical and commercial constants and data of great scientific interest and value are doubtless arrived at, which may, for a certain period of time, constitute an asset of considerable commercial value to the particular corporations in question. During this period, every one recognizes the proprietary right of the industrial laboratories to the retention of this information.

A time frequently arrives, however, when such scientific information loses its commercial value (often by being duplicated in other laboratories), and just at this point we wish to impress upon the industries their obligation to enrich scientific literature with such facts and data, which might otherwise be lost or forgotten.

Some of our industries have been reproached with the suspicion of acting as sponges, in that they absorb an immense amount of useful information from scientific literature without giving any return in kind. This suspicion would be entirely removed if, from time to time, scientific information which has ceased to be of commercial value were contributed by them to its appropriate channel and thus became available to all scientific workers throughout the world.

If any doubt exists as to the appropriate channel for the publication of such scientific data and communications, the general secretary of the American Association for the Advancement of Science, Dr. J. McKeen Cattell, Garrison-on-Hudson, New York, will be glad to act as intermediary and to forward such communications to the proper scientific body.

A. E. Kennelly,
J. W. Richards,
A. Sauveur,
A. N. Talbot,
C. C. Thomas

Cambridge, Mass.,
January 18, 1917

SCIENTIFIC BOOKS

Lectures on Ten British Mathematicians of the Nineteenth Century. By Alexander Macfarlane. No. 17 of the Mathematical Monographs, edited by Mansfield Merriman and Robert S. Woodward. John Wiley and Sons, New York, 1916.

This posthumous publication contains most interesting biographies of ten of the leading mathematicians of the nineteenth century in Great Britain, namely, of George Peacock, Augustus De Morgan, Sir William Rowan Hamilton, George Boole, Arthur Cayley, William Kingdon Clifford, Henry John Stephen Smith, James Joseph Sylvester, Thomas Penyngton Kirkman, Isaac Todhunter.

These sketches are a part of the lectures given by Dr. Macfarlane at Lehigh University during the years 1901–04. "In a future volume it is hoped to issue lectures on ten mathematicians whose main work was in physics and astronomy." The author's personal acquaintance with some of these men, and with intimate friends of them, enabled him to add personal touches which will be relished by the reader. Particularly gratifying are the details about Boole and Kirkman, concerning whom little had previously appeared in print. The future historian of mathematics during the nineteenth century will find the booklet full of interesting material. The lecturer's aim was evidently to set forth the personalities whose scientific achievements were already known to the listener. Hence the scientific researches of these men are not described, but merely mentioned.

Illuminating information is given in several of the biographies relating to Great Britain as "an examination-ridden country," and relating to the effects of the theological tests formerly demanded of candidates for degrees and competitors for certain prizes. The opinions on the teaching of mathematics held by some of the English mathematicians are valuable at the present time when in the United States the mind-training-value of mathematical study is called into question.

The booklet is manufactured in attractive