it is the benzoyl and the acetyl ions and not the oxygen which does the germicidal work.

In close connection with this investigation there is another recent piece of work suggestive of important problems in connection with the chemistry and physiology of plant poisons which I wish to allude to before closing, and that is the paper by Dr. A. P. Mathews entitled 'The Nature of the Nerve Impulse,' published in the March *Century*. This treats of nerve stimulation and nerve paralysis on the basis of our modern theories on the nature of solution, a trend of investigation now being carried on at the Hull Physiological Laboratory of the University of Chicago under the direction of Dr. Jacques Loeb, Professor of Physiology at the institution. The author's conclusions are as follows:

"It has been shown: first, that the chemical stimulation of protoplasm is really an electrical stimulation; second, that the poisonous action of inorganic salts is due to the electrical charges of the salts and probably to the movements of these charges: third, that the negative charges stimulate protoplasm, while the positive prevent stimulation, and if not counteracted by the negative will destroy life; fourth, that muscle contraction is probably in its essence an electrical phenomenon and that the conduction of a nerve impulse is almost certainly an electrical phenomenon; fifth, for the first time we have a physical explanation which agrees with all the main known facts of the nerve impulse and changes in irritability; sixth, we have secured a physical explanation of the way in which an anesthetic produces its effect; seventh, we are led to the hypothesis of the identity of stimulation by light and by chemicals."

The author does not, in this paper, discuss the possible effect of the ions of plant poisons, but it is difficult to see if his theory really holds good for organic compounds, why the complex cathion of so many alkaloids should be so extremely poisonous, and one is forced to wonder how any acid ion could be found which could be powerful enough to offset the toxic effect. One is also tempted to wonder if death can be the complete physiological opposite of life, for is there not a tremendous difference between the automatically reversible character of the cell protoplasm which enables it alternately and in rapid succession to solidify and redissolve, and the simple irreversible solid or liquid state which is the result of death?

In the foregoing paper I have attempted briefly to discuss some of the practical, as well as some of the theoretical, features of plant poisons, throwing out suggestive hints rather than concrete problems here and there, and although I feel that the ground has not been adequately covered, I trust that at least some of you have been interested in the discussion, and I venture to express the hope that some of the suggestions have fallen on good ground and will result some day in a rich harvest of facts giving solutions to some of the problems suggested.

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SCIENTIFIC BOOKS.

Reports on Plans for the Extermination of Mosquitoes on the North Shore of Long Island, between Hempstead Harbor and Cold Spring Harbor. Published by the North Shore Improvement Association. 1902. Pp. 125.

This is an extremely interesting and in some ways a most remarkable publication. It is a sign of the times that a number of men interested in a given territory should form themselves into an improvement association whose principal aim seems to be to do away with the

mosquito pest, though that is not especially mentioned in the published list of objects. It is remarkable that, besides expending many thousands of dollars to attain that end, they should also publish their results at an expenditure of hundreds more, for the benefit of others contemplating similar improvements.

'Reports' contained in the volume are made by the Executive Committee; by their engineer, Mr. Henry Clay Weeks; by Professor N. S. Shaler, of Harvard University; by Professor Charles B. Davenport, of the University of Chicago, and by Mr. Frank B. Lutz, of the same place.

Professor Shaler deals chiefly with the matter of salt marshes, their value when reclaimed, the methods of reclamation and the crops that may be planted on such areas. The paper is an interesting one, general in its scope, without pretense to novelty, but informing in character.

Professor Davenport and Mr. Lutz, each with an assistant, report on the entomological work done, which consisted mainly of a thorough survey of the territory covered by the association, and the determination of the breeding places for mosquitoes of all kinds. *Culex* and *Anopheles* are nearly always lumped and specific terms rarely appear. There is nothing, therefore, to determine what species actually occur and what species are actually troublesome. The usual generalized life histories are given and the usual recommendations applied to the specific conditions are made. No original investigations seem to have been carried on and no novelty is claimed; the report is informing in its general character, and is a model of thoroughness within its scope. It is to be regretted that, especially in *Culex*, the species found breeding in the various localities are not determined. It is by no means certain that for practical purposes all mosquitoes should come under an equal ban, and nothing in the report shows whether the mosquitoes so often referred to were such as were breeding in the waters near by, where larvæ were found.

The report of the engineer is supplemented by an elaborate map on a scale sufficient to admit of the marking of all points where treatment is necessary or where engineering work is required. It is confined to the local problem and no generalizations are attempted.

Altogether the 'Reports' show a well-organized effort, intelligently carried out, which is bound to secure the desired results in due time. It may be a question whether the results could not have been obtained by a somewhat less elaborate and expensive organization; and it may be that the staff employed by its very excellence and the expense incurred may deter rather than encourage smaller or less wealthy bodies from embarking in similar works.

To secure general cooperation in the campaign against mosquitoes the methods must be of the simplest and cheapest that will prove effective. But on this latter point the 'Reports' deserve unqualified praise for the stand taken, that destruction of breeding places, not the never-ending destruction of larvæ, should be aimed at; that permanent works rather than merely palliative measures should be the aim of the asssociation.

JOHN B. SMITH.

NEW BRUNSWICK, N. J.,
June 12, 1902.

Researches on Cellulose, 1895–1900. By CROSS & BEVAN. London, New York and Bombay, Longmans, Green and Co. 1901. 8vo. Pp. 180.

The first work on cellulose by these authors, published in 1895, was an attempt to bring together into convenient shape, and, as far as possible, into logical arrangement, the scattered and largely unclassified knowledge on this important subject. That they made an excellent beginning in bringing order out of chaos few investigators familiar with the subject will deny. The first work has been and is of decided value both to the scientific and the industrial worker. The present volume reviews the researches on cellulose from 1895 to 1900. The matter is arranged under the following sections: Introduction, dealing with the subject in general outline; Section I., 'General Chemistry of the Typical Cotton Cellulose'; Section II., 'Synthetical Derivatives—Sulphocarbonates and Esters'; Section III., 'Decompositions of Cellulose such as