

# THE MICHIGAN HORTICULTURIST.

*Devoted to Horticulture and Allied Subjects.*

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## *BOTANY AT THE MICHIGAN AGRICULTURAL COLLEGE.*

At the recent June meeting of the Michigan State Horticultural Society convened in Lansing, one of the most pleasant hours of the convention was occupied by members of Prof. Beal's class in botany. Seventeen young ladies and gentlemen, fresh from original work in the botanical laboratory, gave three-minute-talks to the assembled horticulturists upon topics which they had been studying by the aid of the microscope.

The work these young people are doing at the Agricultural College, was not attempted in any of our colleges twelve years ago. They are taught to be independent of what has been printed, and are placed at once in the field of original investigation. The glimpse they gave us of their methods spoke well for the work Prof. Beal is doing.

The subjects of the talks given us were as follows.

1. Structure of a leaf.
2. The mouths of a leaf.
3. Young hairs of a leaf.
4. Sting of a nettle.
5. Protoplasm in motion.
6. Palisade cells in a leaf.
7. Starch of common and wild Arizona potato compared.
8. The frame work of a leaf.
9. Fibers of cotton, flax and wood compared.
10. Why nuts are hard.
11. Tough and brittle white ash, as seen magnified.
12. Structure of a grain of wheat.

13. Pollen and its growth.
14. Quince rust.
15. Corn smut.
16. A study of common mould.
17. Effects of severe cold or heat in cells and their contents.

The drawings made by the students and employed in their explanations were admirably executed, and on the whole the entire exercise was as interesting as anything ever presented to the Society.

The students were questioned upon the topics they elaborated, by the horticulturists present, and the answers given were prompt and clear.

The botanical department of our Agricultural College has a beautiful building in which these young people work, a cut of which forms our frontispiece.

The laboratory which is also used for a class room occupies a space of 48x44 feet on the first floor. It is admirably lighted and furnished with tables, simple and compound microscopes, and other accessions required for the best class work.

The upper stories contain a valuable botanical museum, embracing as a special feature specimens, which index the forest products of Michigan. The conservatory and a botanic garden are near at hand, furnishing material for study.

The work done here is rendered attractive to the students and is certainly calculated to stimulate original investigation in the field which the "New Botany" occupies.

Prof. Beal believes that a knowledge of the science of botany as he interprets it to his students, is an important factor in the

education of young people for rural pursuits; especially adapted, perhaps, to those who will follow horticulture for a livelihood. A knowledge of vegetable physiology will guide the horticulturists to avoid many errors in the management of plants for profit, and it is this very lack which disqualifies many practical gardeners to succeed when transferred to a country in whose climate they have had no experience. A gardener well grounded in the principles of plant growth, will soon be master of the situation wherever he may go. A large number of the queries which are found in horticultural publications from men engaged in growing fruits, flowers and vegetables, exhibit the fact that the querists have not had opportunities to study the simplest botanical truths.

A knowledge of botany lies at the bottom of progress in the production of new plants and fruits; and a knowledge of botany is absolutely necessary for the prosecution of investigation of the fungus diseases that are so disastrous to the agriculture and horticulture of our day.

It is through the information gathered in the study of botany that the farmer is readily enabled to detect frauds in seeds, and thus avoids impositions destructive to success.

With regard to the intimate relationship of botany to successful horticulture, Prof. Beal says:

"The horticulturist may think he could get along without a knowledge of botany. He may believe he could learn everything by practical experience. This is a very slow way. He will acquire only a moderate amount of information in a life-time. We get most of our knowledge at second hand. We can not begin at the foundation of everything we come in contact with.

"It is true that there are many good horticulturists who have but slight knowledge of botany, but they have absorbed a large amount of information from botanists and from those who have learned from botanists. As colleges and normal schools are necessary to educate teachers, make books, and maintain an interest in education, that we may have good common schools, so botany is necessary to the advancement of horticulture. It is very likely that some of the lesser discoveries in horticulture

have been made by persons who knew very little of botany, but with a fundamental knowledge of plants, the same persons would have made much more rapid advancement in horticulture.

"In many respects botany will make horticulturists more capable. It will make them better observers, closer reasoners, strengthen their judgment, cultivate their taste, broaden their views, and weaken their respect for the 'traditions of the fathers', sharpen their wits and enable them to be more progressive and better citizens."

It is in the direction of practical assistance to agriculture and horticulture that Prof. Beal hopes to make his laboratory and those who go out from it, useful. As these practiced fields of life-work become more scientific, he argues that they require more technical knowledge of the unseen elements that mould success and failure; hence he hopes, through the aid of the microscope, and the field of observation which it opens, to render valuable assistance to those who are to gain their livelihood in dealing with plants that support life.

The importance of the relationship of instruction in botany to the demonstration of many of the most intricate problems that vex those engaged in rural pursuits, has led us to inquire of some of our leading botanists and horticulturists, who are connected with industrial colleges, their views with reference to the question touched upon in this article, the responses to which will be given in this and succeeding numbers of the HORTICULTURIST.

#### BE SURE OF ENOUGH.

N. J. SHEPHERD, ELDON, MISSOURI.

It has been fully demonstrated time and again through the agricultural and horticultural press, that with a little care and work, no more scarcely than it will take to raise a sufficient supply of potatoes, it is possible to have a full supply of small fruit of all kinds. Yet, how many farmers have enough.

You may induce them to purchase a few plants, and they will secure a few messes, but they are considered a kind of rarity or to be used for making into jellies or preserves for the next winter; but as to hav-