

seen that the swedes were most benefitted by the manure which contained the largest amount of phosphate of lime rendered soluble by means of sulphuric acid, although the total amount of bone earth (insoluble phosphates) was less in Nos. 6 and 6 than in Nos. 1 2, and 3, more especially in No. 2. The whole of these experiments were superintended by myself with every possible care, so as to avoid any error. The greatest objection to the above experiment was the small quantity of ground experimented on; therefore next season I intend allotting one-eighth of an acre to each experiment. In conclusion, I may mention that the season was generally fine, not much rain having fallen until after the roots were about two-thirds grown.—
T. KENSINGTON, F. C. S.—*Gardener's Chronicle.*

Insects the Past Year.

The following letter of Dr. Fitch to the Directors of the New York State Agricultural Society, and published in the last number of their monthly journal, will be found to contain much useful and interesting matter.—*Eds.]*

Gentlemen:—The past year has furnished an unusual amount of important material for investigation in the department in which I am occupied. And I had contemplated with much satisfaction, the account of the year's researches which I should have to present in this address at the annual meeting. I will endeavour to briefly sketch the leading topics I had intended to speak of, and if you deem this will be of any interest to the meeting, it may be read as some amends for my non-appearance.

The insects with which my attention was most occupied the past year, were the grain beetle, the army worm and the wheat midge.—and I will aim to notice some of the more important facts that have been thus come to with respect to these insects.

The first of these, the grain aphid, made its appearance in a most remarkable manner. That an insect never seen before and not known to be present in our country should suddenly be found everywhere in New England and most of the State of New York, in profuse numbers in every grain field of this wide extent of territory, and generally swarming upon and smothering the crop in many fields, was a phenomenon which probably has no parallel in the annals of science. Now it was possible for this insect so suddenly to become thus astonishingly numerous, was a mystery which seemed to most persons to be unexplainable. It is the most prolific of any insect which has ever been observed. I find it commences bearing when it is but three days old, and produces four young daily. Thus the descendants of a single aphid will in twenty days amount to upwards of two millions, each day

increasing their number to almost double what they were the day before. This serves to account for the surprising numbers which we had of this insect.

The aphid was everywhere supposed to be a new insect, and one writer went so far as to name and describe it scientifically, in full confidence that the world had never before known anything like it. My examinations, however, fully assured me that it was identical with a species which has long been known in the grain fields of Europe. And on my announcing this, the erroneous views which one and another were adopting, were speedily abandoned.

Our best European accounts of this insect, however, are very imperfect. They only speak of it as occurring in June and July, whereas I find it is present on the grain the whole year round. And when the grain is but a few inches high, if half a dozen of these insects happen to locate themselves on the same plant, they suck out its juice to such an extent that the plant withers and dies.

As yet I have never been able to find a male of this species. They are all females. This is proved by placing any one supposed to be a male in a vial; next morning too or three young lice are always found in the vial with it. The general habits of insects of this kind are well known. The aphid on the apple and other fruit trees, when cold weather arrives, give birth to males. The sexes then pair, and the female thereupon deposits eggs, which remain through the winter to start these insects again in the following year. I had supposed it would be the same with this aphid on the grain. I thought, when autumn arrived, I should meet with males and find eggs dropped on the blades of the grain. But there were none. The females and their young continued to appear on the grain till the end of the season. They are everywhere on the grain now, buried under the snow, ready to warm into life and activity again when the spring opens. And on grain growing in flower pots, on which I am keeping these insects in full activity through the winter to notice what I can of their habit, no males have yet appeared. When, and under what circumstances this sex will be produced, is a most curious subject, still remaining to be ascertained. It at present looks as though the female and their descendants were prolific permanently, without any intercourse of the sexes.

Last summer, such multitudes of parasites, lady-bugs and other destroyers of this aphid, had become gathered in the grain fields at harvest time, that it seemed as though it would be exterminated by them. But at the end of the season, this insect appeared as common on young rye as I had noticed it at the opening of spring. The present indications, therefore, are that this aphid will be as numerous on the grain the coming summer as it was the past, if the season proves favourable to its increase.