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On a Parasite Bred from the Eggs of the Orange Tree Plant Bug; Being Another Insect Friend of the Orange-Grower.

Editor of The Florida Agriculturist:

On pages 39 and 40 of my pamphlet on "Orange Insects," is described a plant bug often captured on orange trees.

The species bears the scientific name *Brochymena arborea*, given to it many years ago by Thomas Say.

Like many other insects, its early stages are yet unknown.

In going over my orange trees many weeks ago I discovered a cluster of twenty-three eggs, securely fastened to the upper surface of an orange leaf, and which, I am satisfied, are the eggs of the above species.

These were somewhat barreled-shaped, with the edges of the top and bottom rounded off, perfectly smooth, and of a greenish white color. Surrounding the marginal edge at top, was a row of minute, elevated dots giving it a most beautiful appearance, and which readily distinguish it from other eggs.

Removing these carefully, I placed them away in a breeding-box to await developments.

When lo! on opening the box several days later imagine my surprise—to perceive—not what was expected—young plant-bugs, but several little, wonderful, broad headed four-winged flies!

These diminutive specimens of insect life were evidently as much surprised at the sight of me as I at them, and my huge and astonished countenance created as much consternation amongst them as did Gulliver among the Lilliputians.

Moreover they exhibited their surprise in a remarkable manner—by running swiftly about in the box and rapidly vibrating their antennea; and again sidling up to each other, putting their heads together and touching each other's feelers, and in these and other ways demonstrated my presence and doubtlessly communicated ideas respecting my presence and personal appearance.

These little flies are beneficial, and belong to a family closely allied to the *Chalcididæ* termed by entomologists *Proctotrupidæ*. In habits they are similar to the chalcids, being parasitic in the eggs, larvæ and pupæ of other insects.

The female of our proctotrupid friend referred to above, is a close attendant upon the plant-bug and follows it from place to place. As soon as the plant-bug has laid her cluster of eggs, and while they are fresh and tender, our diminutive friend mounts upon the top of one—thrusts from beneath her abdomen her ovipositor—which she stabs into the plant bug's egg—penetrating it to the center, at the same time depositing her own egg therein.

Mounting one after another, she continues her good work until she has deposited into each a single egg.

The larva which hatches therefrom finds food and sustenance in the albuminous substance of the plant-bug's eggs—living and passing thro' its various transformations within this narrow domain—until at last it reaches maturity—bursts asunder its prison wall and comes forth a living wonder—a beautiful four-winged fly.

Mr. Editor, having now introduced our little friend to orange-growers, I herewith submit the following name and description.

It may be popularly known as the "Tree Plant Bug's Egg Parasite." *Telenomus Crochymenæ*—n. sp.

Female—Length, .05 inch. Brown-black. Head very large, much wider than thorax, three times as broad as long, black and slightly shining, microscopically cracked; ocelli transversely arranged, one back of each eye and the other in the center of vertex, and the surface surrounding it being depressed; eyes dark brown; *antennæ* 11-jointed, rufous, and rather long, scape little over half the length of flagellum, dilated; 2nd joint (1st joint of flagellum) large, 3d smallest, following, gradually widening to 8th pubescent; the others forming a large, broad, densely pubescent club; thorax broader than long, black opaque, punctate, and appearing brownish in certain lights; a short medio—dorsal furrow, extending from scutellum not less than ⅓ the length, with two sub-dorsal furrows, one on either side of this extending half, or slightly more than half the length of the thorax; scutellum transverse semilunar, black, smooth and shining, with the posterior margin fringed with short hairs; metathorax punctate; abdomen small, oval, slightly flattened, black and shining; basal joint longest; wings hyaline, iridescent, with reddish costal veins, and with posterior marging ciliated; legs rufous, tarse slightly paler but dark at tip.

I am indebted to Mr. E. A. Schwarz and Prof C. V. Rily for indicating the germs to which this probably belongs.

WM. H. ASHMEAD.

Jacksonville, Fla. Oct. 15, 1881.

Doctor Nichols and the Muck Delusion.

Editor Florida Agriculturalist

I notice an article in which he speaks of Dana's Muck Manuel, as "a little book published by a Lowell chemist, employed in a dyeing establishment," and this book is "full of errors and absurdities, and had led the farmers into more serious expenditure without satisfactory results than any book on manures ever written," and proceeds in a mystical vaporing way to say how, and why. Now it is not my purpose to defend Dr Samuel L. Dana, or his Manuel, even if it seemed to be required of anyone, but it is due to the public, and to his memory to say that I am an unbeliever in Dr. Nichols' ability to judge the man or his writings. My knowledge of Dr. Dana dates back fifty years and prior to the time when he became the chemist at the corporations of Lowell; and it was while he had charge of the largest chemical works in the county, that I had the pleasure of listening to his teachings. Who Dr. Dana was, is well known. What Dr. Nichols is, may perhaps be infered from his barn floor lecture; but if he is to be judged by such medley of fact and fancy and fugacity, the writer at least, must class him with Agassiz's non-observers, and think that he may have mistaken his vocation. It is not my intention to discuss his merits, or that of his lecture knowing my inability, but will only give a few extracts and running comments to show that his house of glass should have been better protected, and as preliminary to the *muck allusion*: on page ten he says "that an animal in milk like a cow, cannot yield excrement of high value." Practical men say that it depends on the kind of food she eats; if rich, the manure is rich, same page. "Bones must be rendered soluble in water before they can enter plant structure," a mooted question, and the writer thinks the evidence about equal, page 11. "That the great bulk of vegetable structure comes from the air." Not proven by Gray or anyone else that the writer has ever heard of; if it were the case, it is hard to see how the world has increased in fertility, since the Azoic age. Thus, the theory that the earth's fertility depends on the disintegration of the primordial granite, is pleasantly brushed aside with a butterfly's wing; finally for the lecture, page 36. "Lime must always be applied to the soil in its caustic state, because it forms a soluble humate of lime etc." This is simply incorrect; he might as well have said soluble Roman cement, else why does he limit the quantity to two bushels to the cord of muck, why not two barrels, or bulk for bulk, if caustic lime is harmless.

The soil needs lime, and the more the better, should be the rule for harmless fertilizers. His remark in this connection is of no consequence, only to show how *careless* a man may be *when he is educated* up to it; and to hold Dr. Dana responsible for the inability of farmers to distinguish good muck from poor, seems to be doing him some injustice. He was probably well aware that much of it held as low as five per cent. of organic matter, and that some would rank above ninety per cent., running parallel with Florida in all resspects except quantity of the latter. While that which he holds up to ridicule, as holding only thirty per cent., and "one well calculated to deceive," might impress some as likely to benefit land containing less than three per cent. in Massachusetts, as well as in Florida. He says it "holds no available plant food, although it contains some nitrogen, and corbonaceous elements," by which, if he means anything, that those two elements are pure, and therefore not available. It is hardly conceivable, but perhaps he can figure it out on his famous blackboard. But enough has been said to caution farmers not to place too much reliance on those who are determined to establish the assumption that mineral salts are complete manures, and to all farmers and chemists who cannot, among such a chaos of evidence, determine nothing short of actual experiment will suffice, and even then some may be like the oblivious man in the fight "who didn't see or hear much of anything."

BOSTON.

An Excellent Authority on the Orange Business.

Editor Florida Agriculturist:

Mr. Manville's excellent article on the species and varieties of the citrous family suggests a few remarks. In summing up, he speaks of the insipid, thick-skinned, early, oblong variety, but does not describe or name it in the list. The original trees were imported by Zephaniah Kingsley more than fifty years ago, and planted at Orange Mills. Seedlings raised from them nearly always produce the round fruit; whence we may conclude that this oblong variety is a sport, perpetuated by budding, and in the seed reverting back to its parent. Mr. Parsons, of Flushing, brought down an orange that appears identical with that of Kingsley in every particular, with the exception of being a truer and more elongated oval, instead of the somewhat pyriform shape of the latter. This is probably the St. Michael's Egg. Now this oblong orange becomes sweet and palatable several weeks before others are ripe enough to eat, for which reason it has been raised to meet the demand for an early fruit, but as soon as other oranges are in season it falls into the back ground by reason of its insipidity or lack of sprightliness. An extra early orange would be a decided acquisition, because the supply from Europe falls off before ours are ready for shipment, thereby leaving the market bare during a short period, when even indifferent fruit would command a highly remunerative price.

For years I have been on the *qui vive* to discover a variety combining the sprightly flavor, smooth skin, and large size of the round, with the early ripening of Kingsley's oblong. After fruiting the Homosassa for several seasons, I am forced to conclude that, although a most superior kind, it is yet no earlier than the average. In the Nonpareil, however, I have been agreeably disappointed. I had set that down for a mid-season orange, but find that every year it will do to gather as soon as it turns yellow, in fact, as soon as Kingsley's oblong, to which, in every respect, it is far superior, being very sweet, delicate and aromatic, and retaining its good qualities for a longer time, besides being an equally heavy bearer and far more vigorous grower. Right here I may mention as a singular circumstance, that when other oranges were but slightly dessicated by the frost of last winter, the Nonpareils wherever they happened to be, were left with scarcely a drop of juice in them. The trees, however, exhibited no marks of injury. Now, who will come forward with something combining all the good qualities of the Nonpareil with quicker maturity?

We often see it stated that the Navel can never fail to be recognized in market by its peculiar mark. True it is, that an orange without the mark is not a Navel, but the presence of the mark is by no means a proof of genuineness. When the bloom of other oranges has been in contact with the pollen of the Navel, the mark often appears on them, and so plainly as to out Herod Herod. A few Navel trees scattered through a a grove will thus be the cause of the production of numbers of similar oranges on those adjacent. Since the Navel belongs to what Mr. Manville calls the China class, trees of this class are more readily affected by its proximity. I saw last winter a small tree of the early oblong, bearing between one and two hundred fruits, *every one* of which bore the Navel mark in bold, John Hancock style. A branch of the Navel in a tree of the Maltese Blood, will not unlikely make Navels of them all. So we see that this trade mark is very far from being a conclusive proof of genuineness. Nor can the Duroy always be distinguished by the stripes of light and dark green, or the longitudinal ribs, after the fashion of a muskmelon. I have trees of this variety, that some seasons are liberally ribbed and splashed, while in others not a mark can be found.

Mr. Manville states that the Tardiff or "Hart's Late," does not differ materially from a number of varieties he enumerates. There must be a mistake here, for the Tardiff is one of the most distinct of all oranges. Any one conversant with the orange could hardly fail to recognize it by touch and at sight; certainly not the moment he applied it to his mouth. I have fruited it six or more years, and found its peculiar characteristics always the same. The skin is of a whitish yellow; the pulp a deep golden hue, not pale as with the Duroy, and almost seedless. The tissues enveloping the pulp are thin, but very tough, the rind is also thin and tough, and it is probably owing to this toughness of the outer and inner envelopes that the juices are retained in perfection so long. Year after year I have seen it hanging on the tree till August and September, in *prime condition, solid and heavy* as a rubber ball, and as fresh and plump as when the green first changed to gold. It is not uniform in size, but varies on the same tree from small to very large. In shape it inclines to oval, and is often as elongated as Kingsley's oblong. The flavor harsh and sour at first, begins to tone down about the month of March, and by early summer it becomes one of the sweetest of oranges, without losing a crisp sprightliness, and lapsing into insipidity. Persons who have never tasted this variety during the summer months when it reaches the acme of perfection, can have but a faint conception of its excellence at that time. To off-set these good qualities, it has always borne small, though regular crops, if I may except the present season, in which the trees are well loaded. I may add that besides the loss and diminution from various other causes, fruit left on the tree till mid-summer is liable to be more or less injured by being sucked by insects, thereby lessening the amount of juice next the rind, and often causing it to drop, so that it must needs bring a high price to be equally profitable with earlier sorts,

E. H. HART.

Federal Point, Fla., Oct. 13.

Dr. S. A. Wauchope has teosinthe growing in his yard which has fourteen stools or sprouts from ten to twelve feet high, and these are throwing out sprouts and additional suckers. It resembles millet, except that the top preserves the appearance of a grass by the blades remaining clustered, at a distance a hill of this plant resembles a cabbage plametto. Cows and horses are said to be very fond of it. The Doctor intends to preserve some of the seed, which are said to grow on an ear like corn, but in appearence resembles a bean. It is certainly a vigorous forage plant and if hay is an object worth planting for, it deserves a fair trial in our State.—*Reporter.*