scum five kilograms of euglenae were obtained as a non-hygroscopic, dusty, gray-green, granular powder.

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SYRPHID LARVÆ AS PESTS

WE are all accustomed to regard the predacious larvae of several of our syrphid flies as distinctly beneficial insects. It was, therefore, a great surprise to learn, a few days ago, that the larvae of some of these flies were the cause of the closing of several canneries in the Santa Clara Valley, California.

During the past few years the business of canning spinach has grown until it is now an industry of considerable importance in California. Hundreds of acres are sown to this crop, the grower receiving about $20 a ton for the spinach cut and crated in the field. The average yield is four to six tons per acre.

Soon after the spinach began to come into the canneries this spring it was noticed that there was an unusual number of "worms" on the leaves and that many of these were not removed in the usual washing process and that some of them even found their way to the cans that were ready for sealing. The cannery men immediately stopped canning and sent word to the growers that no spinach infested with the "worms" would be received. This meant the loss of hundreds of thousands of dollars to the growers as well as tremendous losses to the cannery men who had already contracted to deliver what they had every reason to believe would be the largest output in their history.

An investigation showed that the principal cause of all this trouble was the larvae of one of our most common syrphid flies *(Lasiophthicus pyrastri)* which were feeding on the aphid *(Rhopalosiphum persicae)* which is a common pest of the spinach. The larvae of other syrphid flies were present also, but this *L. pyrastri* was the most common. The season had been a particularly favorable one for the flies and we found that the larvae were doing a remarkable work in destroying the aphids. But as some of them would stick to the leaves even through the washing process and turn white when the spinach was in the scalding water, their presence on the leaves when it was ready for the can was easily detected and, of course, the product could not be used.

A few days later the number of larvae to be found on the spinach in the field began to decrease very rapidly and at the end of a week they were so scarce that some of the cannery men decided to see whether by using particular care in picking over the spinach in the cannery they could not get a clean product. Even the most careful work, however, failed to dislodge all of the larvae and it was decided not to pack any more spinach this season, as the cannery men are determined that the pack that goes out from their places shall be perfectly clean. This means that the growers in this valley will lose approximately $400,000 because of the presence of this "friendly" insect in their fields.

Spinach that is planted early in the fall and is ready for the cannery in March is not infested by the aphids to any extent and the syrphid larvae are not to be found until the aphids are there. Early planting, then, is the remedy.

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APRIL 23, 1923

ON THE VITALITY OF COTTON SEED

AMONG our most destructive cotton diseases is anthracnose which is caused by the fungus *Colletotrichum Gossypii Southw.* So widespread and destructive is this disease in the cotton growing states that its literature is now quite extensive. In common with other members of the genus, the fungus infects the seed and in this way is carried over from one season to the next. It is, therefore, necessary in order to combat the disease effectively to secure uninfected seed for planting.

Treating the seed with fungicides has been tried with negative results. The difficulty encountered was the inability of the disinfectant to penetrate the seedcoats and so reach the fungus. The hot water method of treating seed was also tried and promised well but was later abandoned as unpracticable. The thermal death point of the fungus appeared to be too near that of the seed. From the results of previous work it appears that the ordinary method of seed treatment will give unsatisfactory results.

It is generally thought that the thermo death point of cotton seed is about 80°C., but the writer finds that the temperature which cotton seed can endure without affecting the vitality of the seed depends upon several factors. First, the amount of moisture present in the seed; second, whether heated in dry or moist atmosphere; third and perhaps the most important, whether there is oxygen present during the process of heating. If cotton seed containing a normal amount of moisture are placed in water at 70° to 80° C. the life of the seed will be destroyed. On the other hand if the cotton seed are thoroughly dried at low temperature, they can then be heated for ten to fifteen minutes at 100° C. in a dry atmosphere without affecting the vitality. But this treatment destroyed only a small percentage of the fungus. We have found that by thoroughly drying and heating cotton seed in a vacuum or any inert atmosphere, such as nitrogen, to prevent oxidation of the fats and proteins in the seed they will endure the temperature of boiling water for hours without affecting their vitality.

In fact we have heated the seed of Weber 49 variety of cotton for 26 hours without impairing their vitality and by this treatment have completely destroyed the fungous anthracnose. The seed so treated have a much higher percentage of germination than the untreated seed. Very highly infected seed of the Weber 49 variety were used in all our experiments. We are applying our method of treatment to other varieties of cotton seed and diseases carried by seed of other crops.

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MISUSE OF THE WORD "CREATION" BY NATURALISTS

THE word *creation* is sometimes used by naturalists in a sense that is not only inaccurate but which, even from the standpoint of the author's own belief, is actually misleading. I refer to its application *to the mode of origin* of animals or plants in a state of nature.

Such use of the word is objectionable for two reasons: (1) It implies a sudden coming into existence, ignoring ancestry; (2) it implies the act of a superior power, for how can there be a *creation* without a *creator?*

The proper meaning of the word as defined by leading lexicographers would seem to be free from ambiguity. Webster's definition is, "To bring into being; to cause to exist, said especially of the divine fiat by which the world is regarded as brought into being out of nothing." Similarly, the Century Dictionary definition is, "To bring into being; cause to exist; specifically to produce without the prior existence of the material used, or of other things like the thing produced; produce out of nothing." Both authorities take their first example from the Bible:

> In the beginning God created the heaven and the earth.

In reference to the origin of living organisms, does it not go without saying that the words *creation* and *development* (or *evolution*) convey diametrically opposite meanings—the one implying a sudden origin independent of ancestry; the other a gradual development from an antecedent form? Then why should one use *creation* when he means *development* or *evolution?*

In connection with the phantom of creation it may not be amiss to mention that the Mosaic conception of the origin of man as a definite act of a creator finds a close parallel in the beliefs of certain of our North American Indians. Thus, a California tribe holds that man was created by three deities—the Coyote, the Bear and the Lizard. Coyote wanted man to be fashioned after himself; Lizard objected, insisting that man should have five fingers like himself, so that he could take hold of things; while Bear maintained that man should have large flat hind feet in order that he might stand erect. So they compromised, Bear giving man his hind feet, Lizard his five fingers, Coyote his mental alertness.

This, like the Mosaic conception, pictures man as the result of a definite and deliberate act of creation. The circumstance that the Mosaic belief is monotheistic, the Indian belief polytheistic, is of no consequence from the standpoint of man's origin, both agreeing that he was created out of raw materials by a pre-existing deity or deities.

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