their cotton in the fall as soon as it is safe to do so without
danger to the sound bolls, that is, about ten days before they
intend to commence the final picking.

As a final precaution, however, the writer wishes to state
that he does not consider the experiments here reported to be
justification for a recommendation to top Sea Island cotton indi-
iscriminately. In the central and southern parts of the Florida
Sea Island Belt early picking followed by the destruction of the
stalks is undoubtedly much better than fall topping. In the
northwestern part of the belt, however, it has not yet been
demonstrated that Sea Island stalks can be destroyed sufficiently
early in the fall to prevent heavy infestations the following
spring, though no doubt they could be reduced appreciably by
this means. It is in the northwestern part of the Florida Sea
Island Belt that the writer believes fall topping might prove
especially beneficial by considerably reducing what would other-
wise be extremely heavy spring weevil populations. At present
these very heavy populations make control by poison applica-
tions, for the average Sea Island Cotton grower at any rate, impracticable.

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MIGRATIONS AND FOOD PREFERENCES OF THE
LUBBERLY LOCUST

J. R. Watson

We spoke at last year’s meeting of the breeding grounds and
remarkable migrations of the young Lubbers to neighboring
narcissus fields at Doctor’s Inlet. We pointed out that the

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breeding grounds where the females lay their eggs are restricted to rather narrow limits as to the character of the soil; that they avoid alike as a place for oviposition the lower, more compact soils of the flatwoods and the extremely dry, sandy soils of the scrub or long-leaf pine-turkey oak association. Their favorite soils are the upper edges of the flatwoods where the pines are beginning to be mixed in with live oaks. There is usually but little suitable food for the young hoppers in this plant association and when a week or so old there is a heavy and almost complete migration, doubtless induced by need of more succulent food. As pointed out last year this migration is almost complete. A week or ten days after the last hoppers have hatched there will be very few left on the original breeding grounds.

The hoppers are quite generally found in low and swampy land where they cannot possibly have hatched. Doctor Tissot called our attention to such a colony just this side of Cedar Keys last summer. It was evident that they could not have hatched there, but within an eighth or a quarter of a mile there were what appeared to be suitable breeding grounds although at that date no hoppers were found in these dry situations. As pointed out last year the hoppers migrated toward a narcissus field at Doctor's Inlet to the northeast of the breeding grounds and approximately a quarter of a mile away from the center of the grounds. They traveled in definite trails and there were fifteen of these trails within one-fifth of a mile over an asphalt road. We expressed the opinion that they must have located the narcissus by smell or kindred sense. This year that field was not planted to narcissus, but a field adjoining the breeding grounds on the west was planted and this year the migration was not to the northeast as last year's, but almost due west, again towards the narcissus field. As was the case last year they practically all left the breeding grounds by the time they were a week old. This migration is not a haphazard scattering in all directions, but a very definite movement along definite trails toward the field of narcissus. In one trail this year there were about seventy-five hoppers per yard of the trail which was only two or three inches wide, but extended the full length from the breeding grounds to the narcissus field. Hatching and breeding this year were about two weeks later than last year, due undoubtedly to the cold, damp spring.

Mr. Bratley took up the problem of feeding the hoppers at Gainesville on different food plants. Some were raised on nar-
cissus, others on tread-softly, others on poke berries, and still others on a mixture of grasses and weeds growing in an uncultivated field on the Station grounds. By June 26th about nine-tenths of those fed on narcissus had become adults; a few of those fed on tread-softly were also adults, but comparatively few of those that were fed on the mixture of grasses and weeds had completed their growth. Those fed on poke berries were intermediate. Also a larger proportion of those fed on narcissus lived to maturity. It is thus seen that the character of the food has much to do with the rapidity of development and the number that reach maturity. The hoppers all came from the same batches of eggs. Of the different foods tried, the most favorable was narcissus; the second, tread-softly, a plant, by the way, not at all related to narcissus; the third, poke berries, again very different botanically; and the poorest of all those fed were the grasses and weeds. If offered a choice of the four in a cage, the hoppers would first consume the narcissus, then tread-softly, then poke berry. It is thus seen that there is truth in the contention of the farmers that neighboring fields of narcissus do cause a marked increase in the amount of Lubberly Locusts in the neighborhood where no measures are taken to combat them.

As during last year a ditch as much as a foot deep with straight, steep sides made an effective barrier for the migrating hordes. This year the main breeding grounds at Doctor's Inlet was burned over during the time of the active hatching of the hoppers with a very marked effect on their numbers. If the hoppers emerged more uniformly in time, this burning of the fields just after the eggs had hatched would be a very effective means of control. It would take a very hot fire to kill the unhatched eggs or nymphs in the ground. The grower at Penney Farms who last year took active measures against the hoppers suffered very little damage this year, whereas last year the damage was severe.

In addition to the host plants mentioned above they were about as fond of crinums as of narcissus. They fed on gladiolus, but much less eagerly than on narcissus or crinums; for day lilies, they did not seem to care. In the swamps their favorite foods were Pickerel Weed, Cyperus (a sedge), Lizards' Tail (Saururus), and Sagittaria. They were seen also feeding on the flowers of Chamaecrista.