## IMPRESSING THE JAPS

Secretary of Navy Denby went to the Orient on a peaceful mission, nevertheless, his stop in Japan did not fail to impress the little islanders. His great size was made more conspicuous as he walked through the palace grounds with Admiral Urui. His wife is with him.

## TIME TO FIGHT THE COTTON LEAF WORM

(By B. B. Coad.)

During the last week of July the Delta Laboratory began to receive scattered reports of the cotton leaf worm or, as it is sometime called, the cotton army worm (Alabama argillacea Hubn.) from the states of Louisiana and Texas. These reports have increased rapidly until it is now obvious that we may expect very serious trouble from this pest in the next few weeks. This species does not overwinter in the United States. It is a native of tropical America and, as the adult moth is a very powerful flier, it migrates into the United States whenever it reaches a degree of great abundance in its native home. Normally the first generation produced by the migrating moths in the United States is limited to the southwestern costal regions of the Gulf of Mexico, and is not sufficiently abundant to do serious damage. The progeny of this generation move northward and eastward, and, as a rule, by the third generation, the entire cotton belt is infested. Generally these generations are fairly well defined. The present infestation, however, is very peculiar in that the first generation has spread over a remarkably large territoy and in unusual abundance. Repots to date show the state of Louisiana to be completely infested, and the majority of Texas is likewise. At least the southern half of Arkansas is now infested, and a scattering infetation occurs practically all over the tate of Mississippi. In addition, scattering reports have been secured from southwestern Tennessee and western Alabama. Throughout much of this territory the worms have already reached defoliating abundance and are seriously injuring the cotton in local spots, which is very unusual for the first generation and indicates an abnormally heavy infestation in the next generation, which may be expected to start to develop within the next ten days. In addition an examination of a majority of fields shows a remarkable variation in the size of the worms, the same field often yielding all stages from newly hatched worms to fully matured ones which have webbed up. This seems to indicate a continual immigration of moths and the probability of more or less continuous damage of a rapidly increasing nature, rather than distinct generations as has usually been the case in the past.

### Possibility of Damage

The question of just how much damage these worms can do is a very important one in determining on control measures. At some points the cotton crop is already so mature that the worms can do little or no harm, but this area is very limited. The majority of the territory where the worms are now present in defoliating abundance is still susceptible to seious injury. Of course, the heaviest invasion will not develop for some two weeks yet, and there will be much more cotton which will be beyond dam age at that time. However, there will still be an enormous amount of cotton which can be seriously injured by the worms even after the first of September, owing to the fact that so much of the cotton crop is from one to three weeks late in maturity. The question of whether or not to attempt to control the worms is going to be an individual one for each grower to decide. Many fields are already so thoroughly infested with weevils that defoliation by the worms can do no harm, and many more fields will reach this condition within the next two weeks. Before deciding on whether or not to poison the worms the grower should examine his fields closely and note especially the condition of the bolls. If there are many bolls present less than two-thirds grown and still uninfested with weevils, and ethe worms start operations in threatening numbers, it will generally pay to poison them. Of course, when a field is completely infested by weevils and practically al lof the younger bolls punctured, defoliation by worms is really more of a benefit than a harm, but it shoud be remembered that defoliation by worms forces premature opening of many bolls and, furthermore, discolors much of the cotton in the districts which have been receiving an excessive rainfall, there is now a considerable amount of boll rot, and under such conditions it is often better to permit the worms to defoliate the plants, allowing the sunshine to penetrate to the lower bolls and thus stop this rotting.

On account of the unusually threatening nature of this invaison, everyone should watch his cotton crop very closely for the first apeparance of the worms, and whenever they are found in threatening numbers in a field, where conditions will justify poisoning, control should be started immediately rather than waiting a few days, when much of the cotton will be stripped, making it much more difficult to poison the worms. Judging from present prospects, worms will probably be found in serious numbers all over the cotton belt within the next two or three weeks, and a tremendous acreage will still be susceptible to serious damage at that time.

### Poisons to Use for Worm Control

The leaf worm is very susceptible to control by the use of arsenical poisons, but the unfortunate feature of the situation is the fact that the unprecedented demand for calcium arsenate for controlling the boll weevil this year has not only consumed the stock of this chemical but has also enormously reduced the supplies of other arsenicals. We have just completed a canvass of stocks of chemicals which can be used for leaf worm control, and find an alarming shortage. Considering every chemical which can be used, there is probably not to exceed three mililon pounds available, and this will be far short of the amount needed if the present indicated infestation develops. A comparatively smal lamount of this material is availablt in the South now, but manufacturers have been notified of the emergency and the majosity of stocks are already rolling southward.

In the early days Paris green was first adopted as a means of leaf worm control. This gave very satisfactory control, but always produced more or less burning of the cotton plant, which was undesirable though not nearly as serious as the leaf worm damage. Later, when powdered lead arsenate was developed, it was very largely adopted for the same purpose with very satisfactory results. It did not burn the cotton plants in the slightest and stuck to the plants better than Paris green, but unfortunately was not as poisonous to the worms. In the past few years calcium arsenate has been used very extensively for worm control, with very satisfactory results. It is not injurious to the rotton plant and is very nearly as poisonous to the worms as Paris green and much more o than lead arsenate. In addition, however, there are a large variety of other arsenicals which can be used for leaf worm control with satisfactory results. These include such as zinc arsenite, magnesium arsenate, London purple and numerous other trade mixtures of arsenicals. In view of the present shortage, it is going to be necesasry and advisabel for the farmer to take practically any one of these which can be secured, and any of them will accomplish satisfactory leaf worm control. The only arsenicals which should be avoided are the highly soluble ones, such as sodium and potassium arsenate and arsenite, which are very injurious to the plants. The following outline covers the manner in which these materials should be used:

Calcium arsenate should be applied at the rate o fabout three to four pounds per acre, either straight or diluted with one part of lime.

Lead arsenate should be applied without dilution at the rate of four to five pounds per acre.

Paris green should always be mixed in the following proportions: 1 part Paris green, 1 part flour, and from 1 to 5 parts of lime. ' The flour will make the mixture stick to the plant and the lime will reduce the chance of plant injury. The mixture should be used at such a rate that about two pounds of Paris green per acre will be applied.

London purple should be used in the same manner as Paris green.

Magnesium arsenate should be used straight or mixed with 1 part of lime, at the rate of about 5 pounds of poison per acre.

Zinc arsenite should be used with 1 part of lime and applied at the rate of about four pounds per acre of the poison.

The other miscellaneous arsenicals generally contain some soluble arsenic, and it is better to use them with the addition of one or two parts of lime, as a safeguard against plant injury.

### Methods of Aplpying Poisons

The old standard method for treating the cotton leaf worm is the "bag and pole" with which everyone is familiar, and this is still good whenever other equipment is not available. Practically all of these chemicals can be applied with the bag and pole, but it should be remembered that such chemicals as lead arsenate, calcium arsenate, etc., are of a more sticky nature than Paris green, and consequently the bags for applying these should be made of cloth of a more open weave than those used for Paris green. In addition, any standard cotton dusting dachine ordinarily used for boll weevil control can be used for the leaf worm also. In some districts supplies of liquid sprayers are available, and the majority of these chemicals can be applied in the spray form with very good success. Whenever possible, dusting should be done when the air is calm and the plants are moist, but in case of absolute emergency fairly satisfactooy sesults can be secured by dusting throughout the day, especially if dusting machinery is available for use rather than the bag and pole.

The present outbreak of the leaf worm is in some localities complicated by an outbreak of tie fall army worm or grass worm (Laphygma frugiperda). The presence of the latter worm can usually ge noted by the fact that it has a tendency to bore into bolls and squares, eating a large hole through the outside and then practically hollowing out the interior. This worm is not quite as susceptible to poisoning as the leaf worm, but present reports innicate that the poisoning being odne for leaf wors control i also accomplishing a fair degree of success in controlling the grass worm.

This laboratory is attempting to daintain as close a check as possible on supplies or arsenicals, and this inofrmation will be kept up to date. Owing to the shortage of such materials, anyone planning to poison the worm is advised to locate supplies just as soon as possible after the need is evident, and when unable to locate any nearby stocks this laboratory will be glad to assist in any way possible in advising of the nearest source of supply. Furthermore, this information can frequently be secured from your State Entomologist.

## DISGUISING JOINT AND CRACK FILLERS IN CONCRETE ROADS

Unsightly black lines, sometimes jagged and irregular, which mar the appearance of practically all concrete roads and which are due to the natural color of materials used to fill joints and cracks, will be avoided by the use of a material for the purpose developed in the laboratories of the Bureau of Public Roads, United States Department of Agriculture. if tests by actual use prove as successful as expected. This material has the same color as concrete, and when to fill cracks and joints the surface has the appearance of a continuous and unbroken slab to the casual observer.

No particular advantage over other good materials is claimed for the preparation other than its colo, and it is probable that the cost will be somewhat higher but not prohibitive.

For several ceeks a section of road with expansion joints filled with this material has been under observation, and the results are entirely satisfactory, but a longer test will be necessary before it can be recommended for general use.

The mixture consists of approximately 12 parts rosin, 1 part crude rubber, with sufficient barium sulphate to give the desired color. In preparation the rubber is dissolved in gasoline, and the rosin is then mixed in with an application of heat, the coloring material being added as required. Any desired consistency can be obtained by varying the proportions. A material with remarkable adhesive properties is produced and which can be heated so that it will flow into the cracks and joints.

## SUCCESS WITH ONIONS

Clemson College, Aug. 15.—A good example of success in a small way with special crops is reported by the Extension horticulturists from Edgefield, S. C., where H. M. McLaurin planted onions and made 115 bushels per acre, for which he received $1.40 to $1.50 per bushel.

**Subscribe to The Times**