A CLEAN TOWN CONTEST

By E. G. TITUS, *Logan, Utah*

This movement has been carried on to some extent in other states and has been supported by mayors, officials, boards of health, and so on, but we intended it to be a state contest. A year ago we started work upon this Utah contest and on the first of June, 1914, we had fifty-six towns entering the contest. These were divided according to population, Salt Lake and Ogden being of course the largest. In the next class, 3,500 to 9,000 towns, three out of the four in the state entered. The next class 2,500 to 3,500, seven towns entered out of eleven in the state; in the next class, 1,500 to 2,500, ten towns out of sixteen entered; Class "E," 750 to 1,500, eleven out of twenty-eight entered; and in Class "F," towns under 750, there were fifteen out of thirty-eight that could have entered the contest. We had a fairly representative number of towns in the state entered. A number of prizes were offered by the Utah Development League. In a number of towns that went through the competition there were also side prizes for better lawns, best appearing lots, best flower gardens, best equipped places in the business section of the town, etc.

The following are the final scores of the towns entered and scored:

CLASS "A": Cities of 25,000 and over.	
Ogden.....	73
Salt Lake.....	70
CLASS "B": Towns of 3,500 to 9,000 population.	
Brigham.....	70.6
Provo.....	64.6
Murray.....	46.5
CLASS "C": Towns of 2,500 to 3,500 population.	
Lehi.....	71.7
Spanish Fork.....	62.5
Springville.....	61.8
Richfield.....	59
Park City.....	59
American Fork.....	55.5
Nephi.....	41
CLASS "D": Towns of 1,500 to 2,500 population.	
Manti.....	82.5
St. George.....	70.5
Beaver.....	70
Smithfield.....	69.3
Cedar City.....	65.0
Richmond.....	52
Pleasant Grove.....	51
Ephraim.....	43
Bountiful.....	40
Payson.....	35.1

CLASS "E": Towns of 750 to 1,500 population.

Farmington.....	67.5
Fairview.....	67
Parowan.....	62
Kaysville.....	59
Panguitch.....	57
Sandy.....	54.4
Coalville.....	52
Fillmore.....	50
Providence.....	48.3
Salina.....	43
Morgan.....	42

CLASS "F": Towns under 750 population.

Hurricane.....	78
Mapleton.....	66.8
Millville.....	56.1
Levan.....	54
Salem.....	54.6
Mayfield.....	52
West Bountiful.....	52
Minersville.....	52
Washington.....	48
Randolph.....	48
Tremonton.....	45.3
Scipio.....	45
Alpine.....	50.5
Garland.....	29.3
Kamas.....	39

The following notice gives the system of scoring:

INSPECTION

Inspection of the towns will begin August 17th and continue until all entering the contest have been inspected and scored. No information will be given as to date when inspection will be made. All towns must be ready for inspection.

TOWNS WILL BE SCORED ON THE FOLLOWING POINTS

	<i>Basis 100</i>	Points
1—Sewage: Disposal of—privies, cesspools, etc.....		15
2—Stables and corrals, disposal of manure, etc.....		15
3—Garbage, collection and disposal.....		10
4—Water supply.....		10
5—Sanitation of school houses and other public buildings.....		5
6—Sanitary marketing of foods.....		5
7—Presence of flies.....		5
8—Sanitation of the home, cleanliness of the home, ventilation, etc.....		5
9—Condition of streets, parks and alleys.....		10
10—General appearance of homes, barns, barnyards.....		5
11—Lawns and flower gardens.....		5
12—Vacant lots.....		5
13—Fences.....		5
Total.....		100

The State Board of Health had charge of the inspection of the towns and the whole competition was carried out in a most friendly spirit. Its developments were remarkable, if only purely in advertising for the state, and this is incidentally one good means of advertising.

MR. C. GORDON HEWITT: We are all aware of the great importance of movements of this kind, and I believe every one of the members here has listened with much pleasure to Professor Titus' account. One of the things that has particularly impressed me, as shown by that small diagram of a section of a town, is the enormous amount of work which has been involved in making a survey of this kind. If Professor Titus' paper has shown us nothing else, it has demonstrated that the entomologist is something more than a man who goes around recommending "how to squirt trees"—but a man who is becoming more and more intimately concerned with the life of the people. We heard last year in our meeting at Atlanta a paper by Professor Hinds in connection with boll weevil work in the south, how the entomologist was becoming more and more concerned with the life of the people and with their economic conditions which are not entirely "entomological." I think this paper by Professor Titus shows the entomologist to be something more than a person who simply destroys insects, and that he is becoming more and more vitally concerned with economic studies and with the movement for improved conditions of life for people generally.

MR. R. A. COOLEY: I would like to ask the amount of expense involved in conducting this campaign?

MR. E. G. TITUS: From the standpoint of the town I am unable to state, not having the figures. We are attempting to gather them and hope to have them tabulated some time this winter. In case of the Utah Development League, the chief expense possibly was the clerical help and the printing of circular letters of the type I have sent around for examination; for a circular of this kind (indicating), another one of this kind (indicating), and all showing the *Clean Town* policy and scheme. And the money expense was defrayed from the expenses of the Utah Development League as part of the advertising campaign. The largest expense was judging the towns. I have not the judges' expense accounts, but I can figure on judging thirteen of the towns, in classes "B" and "C," and I think the judging occupied from two to four days to a town. In class "C," most of the towns could be judged in from one and a half to two days, and in class "B" three days. It would not average over twenty-five dollars a town except for class "A." Of course for the larger towns it cost more and in the smaller town it

dropped down perhaps to four or five dollars. Then there were some more inaccessible. For instance, there was one town one hundred and fifty miles from a railroad, took two days on a stage, and then a day and a half to get to the town with a rig after that, away back in the mountains. There were several towns located in this way and the judging expense of course was high. Some of the towns offered to defray part of the expense in order to be sure that the judge came down and visited them. Perhaps the little town of Manti cost the most to the town since the town offered a large number of prizes and they went into it rather heavily. The interest was so strong that when the judging was postponed for several days, they received word by telephone, and they had a man out in an automobile the next morning with a megaphone announcing that they had "three more days to clean up" and "to get busy." And they did get busy.

So far as the expense is concerned, it is really small, I believe, compared with the benefit the town received from it. Even real estate men were interested and some told me that the increase in the value of real estate was worth many times the cost it had been to the town or state.

A MEMBER: The expense then was borne by the Development League?

MR. E. G. TITUS: Yes, and also the State Board of Health, and others, and then we brought in one man from outside to judge Salt Lake and Ogden. There was considerable rivalry between the two cities—they are close together.

A MEMBER: I want to express my appreciation and hearty approval of this line of work. I know something about such work and judge that it must have taken an enormous amount of energy and labor to carry this contest to a conclusion.

MR. E. G. TITUS: Larvacides were used to a very slight extent; the main thing was to get manure out of the way. In some of the towns we did try out borax and other things. We had some manure containers or large vats built in the state; we built one at the college and I believe there have recently been others built at different times. They suit us pretty well.

MR. F. C. BISHOPP: I am sure Dr. Titus is to be congratulated on the admirable way in which this campaign was conducted. I was much pleased with the results secured in the small towns. From the little we have been doing in the south, we have seen that that is going to be the big problem—large cities will take care of it better. I was very much pleased indeed to see how the small towns showed up in this contest. I wanted also to mention a point that he briefly brought out, that is, the need of caring for breeding-places in the winter time.

In the course of the Texas work the importance of getting rid of the breeding-places in the winter time seems to me to be very great. We have found that by a thorough cleaning-up in the winter we could do very much more than we could by continuing the work during the summer only.

MR. E. P. FELT: How about disposal of manure containing overwintering pupæ?

MR. E. G. TITUS: Manure has been carried some distance from the town and we have fairly good assurance that the flies will not come back in the spring. We found some that would go through the winter in the pupal state and these appear to be destroyed when the manure is properly scattered. Where possible the manure is taken out and scattered in fields and we found we could accomplish fairly complete destruction. In other cases, the manure was piled in ricks in the field.

MR. E. P. FELT: Does that hold true in the north where they are frozen up?

MR. E. G. TITUS: I couldn't say, but I think that by breaking up the manure and scattering it over the ground you will destroy many of the puparia. We found them hibernating in piles against barns and other protected places, and by cleaning those out you can greatly aid the matter.

MR. E. N. CORY: I would like to have your opinion of the distance that flies will travel.

MR. E. G. TITUS: We marked somewhere between seven thousand and eight thousand flies the last few years and then hunted for them afterward. We found a few of them but I found no flies at any time a half a mile away from the place where they were liberated.

In Salt Lake City, Utah, there was complaint that flies were coming from the city dumping-ground. You remember our Salt Lake blocks are large and four of them would make a pretty good-sized distance to walk. In the country we found the same thing, where we took them out into the farm region and liberated them in the pastures, and under those conditions we never found any that would reach beyond half a mile. Now perhaps our conditions are different; the dry air may have something to do with it, and I would like to hear if anyone has done anything on that line. It is quite essential on our end of the work on the fly.

MR. T. J. HEADLEE: Mr. C. H. Richardson of our department carried on some flight experiments during the past season. Flies marked in various ways were liberated at a distance of 1,715 feet from the pig barn on the college farm at New Brunswick. About three thousand individuals were liberated at a time in one place and in most of the trials from ten to fifteen marked flies were recovered in the traps at the pig barn.

MR. C. GORDON HEWITT: As Professor Titus has raised the question of the flight of the house-fly, I should like to give my own experience in the matter; as important results were published in a report by the British Local Government Board, on the carriage of infection by flies. Two or three years ago I had some experiments carried out in the city of Ottawa to study the flight of flies under city conditions. Flies were bred out and then marked with rosolic acid. They were liberated at a given point in a fairly well-inhabited region, throughout which Tanglefoot papers were distributed in the houses. These Tanglefoot papers were collected from day to day. Out of the 13,500 flies that were liberated, 172 marked flies were recovered at varying distances from the point of liberation, the farthest being 700 yards. In a further report of the British Local Government Board, experiments carried out by Copeman, Howlett and Merriman in Norfolk, England, demonstrated that under rural conditions flies travel from three hundred to seventeen hundred yards from the refuse in which they are bred; their flight depending largely on the prevailing winds. Experiments are recorded by Nuttall, Merriman and Hindle who carried on experiments under urban conditions in Cambridge, England, which bear out on the whole the limited range of flight of flies under city conditions. I think those interested would do well to consult these reports, which I think could be easily obtained.

PRESIDENT H. T. FERNALD: The next paper will be read by Glenn W. Herrick.

ADDITIONAL DATA CONCERNING THE CONTROL OF THE FRUIT-TREE LEAF-ROLLER IN NEW YORK

By GLENN W. HERRICK

During the past three years the fruit-tree leaf-roller, *Archips argyrospila*, has been exceedingly abundant in parts of New York State and has caused serious losses to fruit-growers. In the spring of 1912 an extensive series of experiments in an orchard in Genesee County was conducted in an attempt to control the leaf-roller by destroying the larvæ with poison and contact sprays. In all, over seventeen combinations of materials were tried on different groups of trees in the orchard. Most of the applications were made before the cluster of flower buds had separated. At this time, however, a large part of the eggs had hatched and many larvæ had already worked their way down among the cluster buds and were feeding on the buds and bud stems.

The results of the whole series of experiments were really very discouraging so far as prevention of injury to the fruit was concerned.