THE FROG-HOPPER OR CUCKOO-Spit.

The Frog-hopper is a well-known pest in gardens, and is especially harmful to Roses. It weakens the young shoots and buds by extracting the sap and often causes serious injury, particularly in the best flowering months, June and July, during which the frothy spume may be seen on Roses almost everywhere.

The insect in its early stages appears to be dependent upon this sap for protection from heat, as it is so constituted that it dries up and dies if exposed to the air.

The young Frog-hopper larva is bright green or yellowish green, the yellow tint predominating on the under side. It selects, whenever possible, a juicy young shoot to which it affixes itself, puncturing the epidermis by means of its envelope in the perfect form of the Frog-hopper. It is now clad in an admixture of buff and brown, sometimes plain buff (or rather greyish ochre), but more often with brown markings on the back, the pattern varying in different individuals. In this stage it has the power of making prodigious bounds and is particularly difficult to catch. Strong tobacco water, with a very little soap added, is considered one of the best remedies for this pest, but great care must be taken not to use too much of the soap or the injury done will be greater than that caused by the insect. The tobacco water without soap is sufficient if the following plan is adopted.—Take a tin pet or can having a handle over it, which can be hung on the waist, leaving the hands free. Bend the affected shoot over and wash all the spume with the insects into the can. A gallon of water with 4

PLANNING AND CROPPING ALLOTMENTS AND SMALL HOLDINGS.

In normal times, allotments, cottage gardens, and small holdings, are best managed to a large extent for revenue purposes, and planted with a large variety of crops not of first importance from the economic point of view. Nevertheless, when—as now—a scarcity of food for several years, it is of the greatest importance that all such holdings should be planned so as to obtain the greatest amount of the greatest food value and of service over the longest possible season, and that crops which can be grown quickly and without injury, as in the case of the Cabbage family, should be reduced to a minimum, and that those which are the most useful of the holder's household, without incurring any waste. Crops of Cabbage and Cauliflower often come to maturity in quantity in the late summer, and, as no system of storage has been found satisfactory, the owner has to place his surplus on the market, deliver it to his friends, or allow it to go to waste.

Succesional plantings will go a long way to obviate this condition of things, as too often the holder plants all his crops on the same date, and makes no distinction as to early, mid-season or late kinds and varieties. At least one-half of the allotment should be devoted to Potatoes, and in many instances it is advisable to increase still further the Potato area.

A portion of the Potato area should always be devoted to first and second early varieties, as they give a return when Potatoes are expensive; and when the ground is cleared, facilities are afforded for winter and autumn cropping.

Onions should always be considered by the small grower, and transplanted seedlings should be used in preference to sowing seeds in spring. Beet should also be grown in sufficient quantity to supply household requirements. Parsnips are of high food value, and can be stored at a small cost in the ground until required. Carrots should also constitute a portion of the cropping, as they can also be stored in a barrel, or clamped like Potatoes. Turnips—especially Swedes—are a valuable winter crop, and good strains contain a considerable amount of sugar. They also lend themselves to storing, so long as the building or clamp is frost-proof.

Leeked at from a food standpoint, some of the green crops are more valuable than others; for instance, Savays and Kales are better than Brussels Sprouts and Kale Sprouts, and therefore should be the dominant winter green crops.

Pars and Beans, when dried, provide highly concentrated food, but the space the crops occupy on an allotment is often not commensurate with the weight of the crop produced. The varieties of Pars and Runner Beans are often best grown in single rows, at the extremities of the allotment. French or Kidney Beans are usually grown on allotments, but when picked green—as is the custom—the crop is of low feeding value.

Having discussed, to some extent, the class of cropping and the relative food values, so as to give some indication of the space such crops should occupy, the form of the allotment may next receive attention. All are agreed that the parallelogram is the best shape, and that the longest sides should run east and west—to allow of the cropping-lines running north and south, so as to obtain as much sunshine as possible along the lines of crops at mid-day. The system should be an equal division of light and heat to all parts of the plants, and prevents the lines of crops having a shaded side. There is always a deficiency for crops planted to shade another if the lines run east and west.

In laying out allotment areas it is always well to have the main pathways, so that the areas are available for serving manure. The allotments should run at right angles to the main paths; and any manure drained from the the main paths always best to have the main drains in the large pathways, with a drain from each allotment entering the main drain. The means of the allotment areas will never give satisfactory

FIG. 50.—THE FROG-HOPPER OR CUCKOO-Spit: THALIACRIS SCRAMINARUS.

groscis and remaining for a long time occupied in sucking and absorbing the sap; after which it covers itself with a number of tiny globules produced in an extraordinary manner by continuous movements of its abdomen, which it raises and lowers, turning in various directions; these movements cause a little globule of transparent liquid—a minute bubble—to slide through the under part of its body, and by the constant repetition of this process the fruit is evolved for its protection. As soon as its supply of sap is exhausted it returns to the sucking action, and continues the process until it has provided a sufficient covering. It is in this form that the larvae change into nymphs as the autumn approaches; they dry up in such a manner as to form a space within the mass in which the insect lies dry. By degrees the nymph disengages itself from its skin and comes out of its cocoon of slug tobacco boiled in it and allowed to get cold is the usual quantity. An insecticide sprayed over the trees after chomings assists in preventing the return of the pest, but nothing saves the most careful personal attention, constantly exercised, can deter the insect from its destructive course.

The best known generic name of the Frog-hopper is Aphrophora, which literally means "frog-leaping," and is therefore descriptive, but with insects, as with plants, scientists frequently find the best known name is wrong, in the sense that another name has priority, or where the insect or plant was originally described and placed in a genus in which later investigators prove it has not right to be. Without aid from its wings, a Frog-hopper can jump so far that if an athlete could jump equally as far in proportion to his size he would clear 400 yards without a running start.—K. Ashley.