

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 spume 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 buff, 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 soft 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 pot or can having a handle over it, which can be hung on the wrist, 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 managed to a large extent for recreative purposes, and planted with a large variety of crops not of first importance from a food-production point of view. Nevertheless, when—as now—there is every prospect of a scarcity of food for several years, it is of the greatest importance that all such holdings should be planned so as to make those crops dominant which are of the greatest food value and of service over the longest possible season.

This means that crops which come to maturity rapidly and cannot be stored—as in the case of the Cabbage family—should be reduced to a minimum sufficiently low to supply the wants 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, dispose of it to his friends, or allow it to go to waste.

Successional plantings will go a long way to obviate this condition of things, as too often the holder plants all his green 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 Potatos, 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 Potatos 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 or left in the ground until required. Carrots should also constitute a portion of the cropping, as they can also be stored in a shed, or clamped like Potatos. 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.

Looked at from a food standpoint, some of the green crops are more valuable than others; for instance, Savoys and Kales are better than Brussels Sprouts and ordinary Cabbage, and therefore should be made the dominant winter green crops.

Peas 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. Tall varieties of Peas 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 each crop 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. This system assures an equal amount of light and heat to all parts of the plants, and prevents the lines of crops having a shaded side. There is always the tendency for one line of plants to shade another if the lines run east and west.

In laying out allotment areas it is always well to consider the main pathways, so that facilities are available for carting manure. The allotments should run at right angles to the main paths; and where draining is necessary it is always best to have the main drains in the large pathways, with a drain from each allotment entering the main drain at an acute angle. Many allotment areas will never give satisfactory



FIG. 50.—THE FROG-HOPPER OR CUCKOO-SPIT: PHILAENUS SPUMARIUS.

proboscis 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 froth 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 froth that the larvae change into pupae as the autumn approaches; they dry up in such a manner as to form a space within the mass in which the insects lie dry. By degrees the pupa disengages itself from its skin and comes out of its

concealment of shag tobacco boiled in it and allowed to get cold is the usual quantity. An insecticide sprayed over the trees after cleansing assists in preventing the return of the pest, but nothing save 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 "foam-bearing," 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.