to place XVIII in the midst of a title, and that it would be still more impressive if it reached LXXXVIII? Or will the list of titles not occupy enough space in the 70th year Festschrift unless they are made of double length?

There is surely no good reason for this double title vogue. It is a mischievous habit which should be consistently repressed, not by editors, but by the authors, themselves. Titles should be made as short as they can be made without concealing the nature of the work, in the interests of economy of publication. And every title should be distinct enough to prevent confusion. Occasionally identical titles are used for two different papers. Such papers are easily confused, and wrong citations may be given without authors being aware that they are in error. It is not a difficult matter to select concise and adequate titles of a few words in length. It saves much time in type setting, and much costly space, to make them brief.

As these problems have forced themselves to my attention repeatedly, they are mentioned in the hope that authors who prepare papers for the scientific press will make some effort to cooperate in a difficult situation. Formulation of short titles, and accuracy in citation, would lighten some of the burdens resting upon the publication department of scientific work.

C. A. SHULL

THE UNIVERSITY OF CHICAGO

A FURTHER COMMENT ON THE "PUMPING" HABIT OF PLANT LICE

HAD the writer of the article appearing in SCIENCE, 72: 560, November 8, 1930, entitled "Plant Lice Pumping in Unison," substituted the word "jumping" for "pumping" he would be more nearly correct in describing the synchronous movements of the members of certain aphid colonies. Instead of the described behavior, which has probably been observed with many species of aphids, on many plants by many entomologists, being explained as one of pumping action it is undoubtedly a response to external stimuli. It is a reaction to danger, to shake off or frighten away the small parasitic flies and wasps attempting to place an egg in or on the aphid's body. With the approach of danger or with slight mechanical stimuli, as jarring, the aphid is disturbed and twitches its body laterally or dorso-ventrally without withdrawing its mouthparts from the plant. The wave of twitching is observed to move along the stem as it is taken up by the other members of the colony. It is not a movement performed simultaneously by all members of the colony.

F. M. Webster and W. J. Phillips, in their treatise on the spring grain aphis (*Toxoptera graminum* Rond.) (U. S. Dept. Agr., Bureau of Entomology Bulletin 110, September, 1912), describe the activity of the parasite *Aphidius testaceipes* Cress. among colonies of this aphid. The parasite is said to show little or no fear while among young nymphs but if she is among a number of adult Toxoptera and they begin to kick up their abdomens, she often hurries away, apparently in alarm (p. 106). An aphid, after being pierced by the ovipositor of this parasite (p. 105) or by that of *Aphelinus nigritus* How. (p. 124), is observed to "kick up" her abdomen as if suffering pain and a droplet of liquid often appears at the point of puncture or at the ends of the cornicles. F. M. Wadley and J. A. Hyslop called attention to the above record on *T. graminum* and also kindly furnished notes on the habits of the following species of aphids. They found that mechanical irritation produced occasional jumping in *T. graminum* but did not observe such a response to similar stimuli among colonies of *Brevicoryne brassicae* L., *Aphis rumicis* L., *Rhopalosiphum prunifoliae* (Fitch), or *Illinoia pisi* (Kalt.). In addition these workers have substantiated the observations of the present writer in several instances where jumping has been noted among individuals in colonies of *Prociphilus imbricator* (Fitch) on beech, *Macrosiphum ambrosiae* (Thomas) on ragweed, *M. rudbeckiae* (Fitch) on golden glow, *M. pelargonii* (Kalt.) on cranesbill, *Aphis illinoiensis* (Shimer) on grape, *Macrosiphonella sanborni* (Gillette) on chrysanthemum, and *Aphis coreopsidis* (Thomas) on cosmos and beggar-tick. *Cerosipha rubifolii* (Thomas) on blackberry, and *Aphis rubicola* Oestlund (*A. rubiphila* Patch), *Amphorophora rubi* (Kalt.), and *A. sensoriata* Mason on raspberry, have not been observed to display this habit. From these observations it appears that this jumping habit is present in species of various habits and of various genera and is rare or absent in other species of the same habits and genera. It is apparently not essential to feeding, since representatives of both groups increase with approximately equal rapidity.

The present writer, in his studies on the feeding habits of certain Homoptera, leafhoppers and aphids, has failed to discern any external evidence of "pumping" of sap by any of the species with their beaks in place. The act of insertion of the mouthparts by an aphid or leafhopper into the plant tissues and the extraction of the plant sap calls into play delicate muscles located within the head. The external evidence of such muscular activity would be quite different from that violent action alluded to in the above mentioned article, from which it might be concluded that the aphid's body functioned as a bulb on an atomizer or hand syringe.

FLOYD F. SMITH

U. S. BUREAU OF ENTOMOLOGY