They are smaller than *Pulex irritans* and do not bite so severely. Scores of them marched up my legs as I sat in pyjamas. I bought some tins of that best-known of "insect powders." I covered my legs with it. It had no effect whatever. The fleas bit and jumped with undiminished zest. Before taking steps to rid the bungalow entirely of the creatures, I took a dozen of them, and placed them in an empty biscuit box, and another dozen in a box containing a layer a quarter of an inch thick of the powder. In twenty-four hours the fleas in both boxes were all alive; some were resting actually on the deadly powder. I also shared with many in the trenches the bitter experience that these insect powders had no effect on lice.

LP. DE COSTOBADIE.

Mottram, nr. Manchester,
November 5.

LEST the good work of American entomologists should be ignored by default, may I direct the attention of your correspondent on the above subject (October 27, p. 622) to two valuable papers recording the results of definite experiments planned against clothes moths? The first, by E. W. Scott, W. S. Abbott, and J. E. Dudley, appeared in 1918 as Bull. 707 of the U.S. Department of Agriculture, "Results of Experiments with Miscellaneous Substances against Bed-bugs, Cockroaches, Clothes Moths, and Carpet Beetles"; the second, "Clothes Moths and their Control," by E. A. Back, appeared in July last as Farmers' Bulletin, No. 1353, of the same Department. These papers contain a mass of information regarding the relative effects and best methods of employing very many different substances against clothes moths belonging to species found in Britain; and curiously enough, in view of the experience of your correspondents, both papers agree in regarding naphthalene in good condition as "one of the safest and best materials for protecting fabrics against moth injury," although it must be used in moderately tight receptacles so that the fabrics remain in a naphthalene-permeated atmosphere. Camphor used in the same way is said to be almost as effective, its fumes killing all stages of clothes moths.

JAMES RITCHIE.

The Royal Scottish Museum, Edinburgh,
November 6.

My own experience of clothes moths in museums extends over many years, and I regret that I cannot agree with "E. E. A." in NATURE of October 27, p. 622, that paper is a barrier. The clothes moth "fauna" of Britain is changing. At one time the chief pests were moths belonging to the genus *Tinea*, which are animal feeders, attacking furs, feathers, wool, silk, etc. To-day the most dangerous pest is *Ecophora* (or *Acompsia*) *pseudospretella*, which, according to Meyrick, was first introduced about 1840. This species eats both animal and vegetable substances. I know it as a disastrous guest of neglected herbaria, preying indifferently on the dried plants or on the paper; and I have observed that it has perforated and penetrated the newspaper coverings of mounted birds and mammals. Fabre, apparently, was unacquainted with this species when he stated that paper is a sure barrier. *Pseudospretella* certainly prefers slightly damp surroundings, and is known to be a lover of cool climates; it is extremely abundant in London, and is much more conspicuous than any species of *Tinea*. Perhaps it is not yet established in central or southern France.

Without making any careful experiments, I have

believed that naphthalene scattered in cases keeps moths away to some extent. It is not unusual to find a single larva in a store box of mounted insects in circumstances which suggest that the parent has insinuated the egg through a crevice. The larvæ are immune from many well-known insecticides. Fuming with hydrocyanic gas has no effect. The fumes of chloroform cripple the larvæ for a few days; but in a week or so they become active again, and may probably complete their metamorphoses. Drenching with motor spirit is also useless. Larvæ dropped in a strong solution of naphthalene, and then dried until they are thickly encased with a crystal coat, begin to crawl about when the naphthalene is sufficiently evaporated to give freedom of action to the segments. Bisulphide of carbon, in my experience, kills the larvæ.

Bisulphide of carbon, a week or two ago, proved useless in dealing with a small colony of "Museum Beetles"; but drenching the specimen (a mounted bird) with motor spirit appears to have been successful. I take this beetle to be *Ptinus germanus*, described as "scarce" in Cox's "Handbook of Coleoptera," the only work available here at the moment. *Ptinus fur* is the better-known species. Probably the latter insect will require different handling. My own experience of the mites belonging to the genus *Glyciphagus* is that hydrocyanic gas has no effect, although it is advised by high authority for these disagreeable pests. Like many other "insects," they withstand drenching in petrol, and the only remedy is successive fumings with sulphur dioxide—a plan not always possible in varied collections. A really comprehensive work on museum (and household or warehouse) insects would be very welcome. The losses in stored collections, although for obvious reasons kept secret, are certainly great. This is due not always to neglect, but to the curator's faith in one or other of the well-known insecticides.

I have been told (and certainly credit the tale) that constant vigilance is needed to protect stocks of "Insect Powder" from the ravages of some sort of warehouse pest. Yet this powder, when pure, is very useful indeed in collections, in spite of its comparatively high cost and its messy qualities. Crude experiments on my own part suggest that a mixture of equal parts of borax, sulphur, insect powder, and naphthalene might be scattered or otherwise used as a deterrent. I have tried plunging valuable and delicate specimens, such as mounted butterflies and pressed plants, in a solution of celluloid in amyl acetate. When dry, a thin and perfectly invisible "size" of celluloid is left behind. The specimens are thus protected from damp and fungi, and are probably safe from mites also.

An example of the work of *Ecophora* can here be described. About two years ago a duplicate stuffed wheatear was placed in a glass cupboard, faintly illuminated, and distinctly damp. Three months ago, in clearing out the cupboard, I found that the bird had lost its skin entirely; even the horny rhamnotheca of the beak, and the scales of the feet, had disappeared. Nothing remained except the wires, the bones, and the stuffing; and, strange to say, the stuffing was neither tow nor cotton wool, but waste silk. I have known *Ecophora* larvæ feeding on a Chinese "joss stick," a compound of resins used as incense, and have found one in an excavation in a "vegetable ivory" nut. In the latter case no other insects were visible, and everything pointed to the moth caterpillar as the culprit.

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