case; though members of the California Academy who have written on the subject assert that the motion is made by the pupa, which I think very improbable. At all events the bounding motion is great, as the little gall may be thrown 2 or 3 inches from the earth; and there are few things more curious than to witness, as I have done, a large number of these tiny galls in constant motion under a tree. They cause a noise upon the fallen leaves that may be likened to the pattering of rain.

NOTE ON CLUSTER FLIES.

By W. H. DALL.

Having heard several years ago of a fly which was a great nuisance in the country houses near Geneva, N. Y., among members of my wife's family living there, I requested information and specimens when it should be convenient. Some time since a relative visited Geneva, and on his return brought me some of these flies alive in a bottle covered with gauze, which were exhibited at the last meeting of the Biological Society and turned over to Prof. C. V. Riley for identification. Since then a letter has been received, from which I make the following extracts:

"It is probably thirty years since the flies appeared in our neighborhood. I remember little about it except that they were at once a terror to all neat housekeepers, and from their peculiar habits a constant surprise. People soon learned to look for them everywhere; in beds, in pillow slips, under table covers, behind pictures, in wardrobes nestled in bonnets and hats, under the edge of carpets, and in all possible and impossible places. A window casing solidly nailed on will, when removed, show a solid line of them from top to bottom; they are uncanny. They like new houses, but are often found swarming in old unused buildings and go regularly to church, or perhaps only a few good ones abide in sanctuaries; any way they are there. Best of all they like a clean dark chamber seldom used, and if not disturbed form in large clusters about the ceilings. With them are usually found a number of purplish black hornets and some ladybugs (*Coccinella*). They are very cold and feel in the hand like small bits of ice. They are very oily; if crushed, leave on the floor a great grease-spot. I hardly think they breed in the houses, but do not know. About the 1st of April or as soon as the sun shines warm in the early spring they come out in the grass and fly up to the sunny side of the houses. Some possibly creep in open windows, or if the house is closed and sealed they have a faculty of going through any crack. They remain until some time in May, then disappear, and no more are seen until about September, when they come and remain as long as they are allowed to. They are very strong. A powder that suffocates common house flies has very little effect on them, and we attack them with ammonia and drown them with boiling water; even then are not sure they are 'kilt entirely.' Very few are found in the towns or villages; they live in country places altogether.

Words fail to describe their general depravity; it is beyond expression. If you wish to be happy, be sure you don't introduce cluster flies into your family."

The flies are also stated to be very sluggish—crawl rather than fly away when disturbed; hang from the cornice of a room in large clusters, like swarming bees, which can be brushed bodily into a vessel of boiling water; under buildings between earth and floor they are often found in incredible numbers; crawl in quiet, dark rooms between the sheets and under the pillows and vallances of made-up beds, and under the nailed-down edges of carpets, leaving nasty spots and a disagreeable smell wherever they go. If windows and blinds are opened and the room is occupied, they quietly vacate the premises in a little while unless they can crawl into some closet or wardrobe. There are in general appearance very like the common house-fly, but heavier-bodied, somewhat larger and more hairy—in short, coarser-looking.

Professor Riley writes as follows:

"So far as I have been able to investigate the matter your fly is the *Musca familiaris* of Harris (Ent. Corresp., p. 336), synonymous, without much question, with the *Musca rudis* Fabricius. It is not uncommon in New England in houses, nearly disappearing when *M. domestica* most prevails and found most in spring and fall. But I find no account of its abundance and annoyance in the manner you describe. It belongs to the genus *Pollenia* Robineau-Desvoidy."

"CLUSTER FLIES."

The fly presented by Mr. Dall at a previous meeting is the *Musca rudis* of Fabricius, a species known to be common to Europe and America* and redescribed, as *Musca familiaris*, in this country by Harris,† who says of it: "This species, not uncommon in houses in summer, nearly disappears the more abundant *M. harpyia* prevails. It resembles *M. rudis* Fabr., but is larger than the only specimen I have seen, and has the thorax much more densely clothed with fulvous hairs. From *M. harpyia* [*M. domestica* C. V. R.] it differs in the superior size, in having the eyes contiguous in the male, in the prominence of the front, in the hairiness of the thorax, etc. *M. obscura* of Fabricius is also synonymous, according to Meizers, who says of it (vol. V, p. 66) "Ein altes verwischtes Exemplar von *M. rudis*." It belongs to the genus *Pollenia* of Robineau Desvoidy, who made it, in fact, the type of that genus. This author in his "Histoire des Diptères des Environs de Paris," (vol. II, p. 609), mentions about 40 species of Pollenia, and says of *rudis*: "It becomes very common in autumn, and the first frosts compel it to take possession of our apartments. It here accumulates in numbers in the embrasures of windows and in the recesses of walls;

*Cf. Loew's note on this subject in his Ueber die Dipterenfauna des Bernstein's (translation in Sill. Journ. Sc. & Arts., vol. xxxvii, 2d ser., p. 318).

†Entomol. Corresp. of T. W. Harris, p. 336.

it then seems almost deprived of motion." He acknowledges that his *P. autumnalis* is also a synonym of *rudis*.

It will be seen from these facts that the species is not easily identified. This is accounted for on several grounds: 1st, the flies when they have frequented pollen-bearing flowers present a much brighter, yellowish appearance; 2d, the tufts of hairs which characterize it are very easily rubbed off; 3d, most of the insects of the family, as well as other Diptera of allied families, have a great tendency to grease, *i. e.*, they soon acquire in the cabinet a greasy, dark-colored aspect in which the characteristic markings are obliterated.

The genus, which is numerous in species and individuals, is chiefly distinguished by the bulging middle face; by the base of the antennæ being generally fulvous in color, and by the tufts of hairs at the sides of the thorax, to which last character the generic name alludes. The old genus *Musca* has been subdivided into numerous genera founded, as in this instance, on rather trifling characters, so that it becomes very difficult to separate some of them or to properly refer the species to them.

There are two authentic specimens of *Pollenia rudis*, determined by Baron Osten Sacken in my cabinet now in the National Museum, so that there can be no question as to the species.

In reference to the habits of the species it will be seen that what I have quoted from other authors corresponds very well with the facts as communicated by Mr. Dall, though I find no mention of any such unusual swarming in houses and working under bed clothing as communicated by his correspondent. The species is not infrequent in the fall of the year in houses in Washington and is readily distinguished from the common house-fly, even by an ordinary observer, by its larger size and more sluggish movements. The specimens submitted by Dr. Baker and received from Maine are specifically identical. Dr. S. W. Williston, of New Haven, Conn., writes me that he thinks he observed it in numbers clumsily crawling on the snow during mild weather in February and March.

Nothing definite is recorded of the larval habits and development of the species, though, speaking of the genus, Robineau-Desvoidy remarks that the eggs are laid in manure and in decomposing animal and vegetable matter. The larva doubtless lives in such decomposing substances.

It is not improbable that in parts of New York the species may have acquired more troublesome habits than it has elsewhere, for among the Diptera we have such instances of peculiar and injurious habits being locally developed, as in *Trypeta pomonella* Walsh, which in the West confines its work to the wild crabs and haws, while in the Eastern States it proves injurious to cultivated apples. *Lucilia macellaria* is a grievous pest in the Southwest, producing the well-known screw-worm so injurious to stock, whereas in the more northern States we never hear of such injury.