

belonging to the natural order *Conifera*. Two of them are hardy European dwarf bushes, the other is a climber from Barbary. They are propagated by layers or suckers.

**EPHEMERA** (Linnaeus.) A genus of neuropterous insects, belonging to the section *Subulicornes* of Latreille, and forming the type of the family *Ephemeridae*, distinguished by the entirely membranous and almost obliterated structure of the mouth, the parts of which are very indistinct, the five jointed tarsi, the small size of the lower wings, which are even sometimes entirely wanting, and the slender threadlike appendages with which the tail is terminated.

The name of this genus has been given in consequence of the very short duration of the life of the insect when arrived at the perfect state, it is derived from the Greek, and signifies living only through a day. The insects are the may-flies of anglers, whose beautiful motions in the blaze of the evening sun, alternately rising and falling, cannot have failed to have attracted the notice of every observer of nature. The body is soft, long, and slender. The antennæ are very short and three jointed, the wings are generally carried either perpendicularly, or slightly inclined. The legs are long and slender, without bristles, the anterior pair being the longest, inserted close to the head, and stretched out in front of the body. The perfect insects generally appear in swarms about sunset, in fine summer or autumn evenings, along the margins of streams, lakes, &c., and occasionally in such numbers, that the ground is shortly afterwards so completely covered with their dead bodies, that in certain districts they are collected in cart loads, and used as manure. One species, *Ephemera albipennis*, is remarkable for the whiteness of its wings, so that its swarms have all the appearance of a fall of snow. It appears to have been this species, the proceedings of which are detailed by Mr. A. H. Davis, in the Entomological Magazine, and whose account, as illustrative of a remarkable peculiarity in the economy of the insects of this family, we here insert:—"On a fine evening, towards the latter end of May, I was collecting in the neighbourhood of Brixton, near some ponds, when I was suddenly covered by a multitude of small species of ephemera. They settled on me, apparently from my being the most conspicuous object near, on which to undergo their final transformation. Their colour was of a dusky white and opaque. They retained their position, without moving, enabling me to observe beneath the glass the process by which these fragile creatures withdraw themselves from the comparatively cumbrous garment which envelopes their beautiful and aerial form. Immediately on settling, the wings were laid flat at right angles with the body, and the insect remained about half a minute in a state of repose. A slight motion then appeared about the basis of the wings, which gradually collapsed, and were drawn alongside the abdomen. At this moment the insect resembled a piece of dirty cotton-wool, with little form. The elevated portion of the thorax now distended, and then gave way longitudinally, exhibiting the bright brown thorax of the insect, which was rapidly followed by the head and anterior legs. After this effort, the insect rested a few seconds. The next discernible motion was in the two or three last segments of the abdomen, where the muscles were in violent agitation, evidently for

the purpose of extricating the fine setæ which adorn that part. The contractions continued upwards, and the wings, freed from their flimsy covering, were fully developed, and in an instant the delivered captive took its flight; the whole process strongly resembling the drawing off of a tight glove. The whole operation did not, in most cases, exceed three minutes; in some cases less. Scarcely an instant elapsed between the full development of the insect and its taking flight, so rapidly did they acquire consistency. In some few instances I observed them coupled, in which case they soon died. I made a dozen or so find their way into a phial; they instantly deposited their eggs, and died; one only, which I believe was a male, survived when I reached home, less than one hour after.

"The number of the insects was truly surprising, they covered every part of my apparel, and my face and hands were not exempt. On my arrival at home, my hat looked like a miller's, from being completely covered with exuviae. I had taken several of these insects during the evening, and had put them into pill boxes; almost all, however, were immature, and died without undergoing their metamorphosis, from which it would appear that light and a free atmosphere are essential to its accomplishment. The principal swarm, however, appeared about an hour before sunset, and enjoyed their hour's existence in one of the finest sunsets of this glorious summer."

The singular circumstance of these insects undergoing a shedding of the outer skin, after they have arrived at their winged state, is an apparent exception to the general rules of insect metamorphoses. It is, however, to be observed, that many insects appear, on bursting from the pupa state, to be enveloped in a delicate membrane, which is immediately burst and thrown off. This has been often observed by persons who rear lepidopterous insects, and it appears to us that this envelope of the ephemera is perfectly analogous to the pellicle of the moth, being however, from its former consistence, retained longer by the insect.

On arriving at the perfect state, the only operation which these insects have to perform is the propagation of their race, the imperfect and rudimental structure of the mouth preventing their taking any nourishment in this state. The female, immediately after impregnation, deposits her eggs in a mass in the water.

But although the may-fly lives only a very short time when it has attained the winged state, its existence in the larva and pupa states has been much longer, sometimes lasting even two or three years. During this period it resides in the water, often concealed during the day beneath stones or in holes, and sometimes in horizontal burrows divided internally into two canals, each having its own orifice. These burrows are always formed in clayey soils, covered by the water, which penetrates its cavities, and it has been supposed that it is upon this soil that the larva feeds. These larvæ differ from the perfect insect, not only by being destitute of wings, but in several other particulars. The antennæ are longer, the simple eyes are wanting, the mouth is provided with a pair of corneous jaw-like appendages, the abdomen is furnished on each side with a series of leaf-like plates, ordinarily disposed in pairs, at the base of which are a kind of false branchiæ or gills, upon which the tracheæ are laid out in a branching direction, and

which serve, not only as organs of respiration, but also of locomotion, being moved with facility. The tarsi have but a single claw. The extremity of the body is furnished with several short ciliated filaments. The pupa differs only from the larva in having rudiments of wing covers.

One of the species, which, from its abundance, has been termed *Ephemera vulgata*, is well known to the angler as a famous bait for the trout. It appears in May and June. Gilbert White says of it:—"June 10, 1771—Myriads of May flies appeared for the first time on the Alresford stream. The air was crowded with them, and the surface of the water covered. Large trouts sucked them in as they lay struggling on the surface of the stream, unable to rise until their wings were dried. This appearance reconciled me in some measure to the wonderful account that Scopoli gives of the quantities emerging from the rivers of Carniola. Their motions are very peculiar, up and down for many yards almost in a perpendicular line."

The number of species of this family ascertained to be inhabitants of this country is about fifty, the majority of which are as yet undescribed. They are divisible into generic sections, from the number of wings and caudal filaments, as follows:—

- Genus *Baetis*, Leach; filaments 2; wings 4. Type, *E. biloculata*, Linn.  
 — *Cloeon*, Leach; filaments 2; wings 2. Type, *E. diptera*, Linn.  
 — *Ephemera*, Linn.; filaments 3; wings 4. Type, *E. vulgata*, Linn.  
 — *Brachycercus*, Curt.; filaments 3; wings 2. Type, *E. brevicauda*, Fab.

We presume that the latter genus was intended to have been named *Macrocercus* (long-tailed), instead of *Brachycercus* (short-tailed), the tails in the typical species being exceedingly long. The largest species in the family is the *Ephemera Swammerdamiana*, being that whose transformations and anatomy were described by Swammerdam. It belongs to the genus *Baetis*, if indeed it be not the type of a distinct genus, as its large size seems to indicate. The largest British species of the family is the common may-fly described above.

**EPIDENDRUM** (Linnæus). A rather extensive and curious genus of plants, belonging to the natural order *Orchidææ*. Generic character: sepals free, spreading, labellum clawed, claw united to the tube of the column; the lip often three-lobed; pollen masses parallel. This genus, like all the rest of the order, are remarkable plants. One section of the epidendra has a kind of gouty stems, which are neither bulbs nor tubers. Another section is destitute of these swollen stems, and is more terrestrial than the others; some of which are epiphytes, living on the stems of trees, and when removed will preserve their vitality for a considerable time, and flourish suspended by a string without either earth or condensed water; hence they are called air plants.

**EPIGÆA** (Linnæus). A small creeping plant found in North America. It belongs to the tenth class of Linnæan botany, and to the natural order *Rhodoracææ*. It is a hardy plant, and thrives well in our common borders.

**EPILOBIUM** (Linnæus). A genus of herbaceous plants, mostly perennials and natives of Europe. Class and order *Oxandria Monogynia*, and natural order *Onagraricææ*. One of the most common is the willow

herb, often seen in shady places in hedge banks; nine others are natives of Britain.

**EPIPACTIS** (Richard). A genus of two orchideous plants, both natives of Britain, found in most woods and marshes. The *E. latifolia* was formerly called *Serapias latifolia* by Linnæus. They are admitted into the flower garden, where they thrive much better than many other wild orchises.

**EPIPHYLLUM** (Haworth). A genus of remarkably showy succulent plants separated from the genus *Cactus*. The flowers are icosandrous, and the plants belong to the natural order *Opuntiacææ*. These plants are leafless, but the stems are dilated into leaf-like forms, and bear their splendid crimson flowers on the edges. They require a dry compost of a little loam and lime rubbish. The pots should be small and well drained, the plants needing but little water. They are readily struck from cuttings, which should be laid to dry for some time before they are planted.

**EPOMIS** (Bonelli). A handsome genus of coleopterous insects, belonging to the section *Pentamera*, family *Carabidææ*, and sub-family *Harpalidææ*, separated from *Chlenius*, to which it is very closely allied, by having the maxillary palpi terminated by an elongated hatchet-shaped joint, which is more dilated in the male than in the female; the lower lip has a bifid tooth in the centre. The type of this genus, of which there are but very few species, is the *Carabus circumscriptus*, two or three specimens of which existed in the old British collections.

**EQUISETACEÆ**—the horse-tail family. A natural order of acotyledonous or cellular plants, containing only one genus, but numerous species. This is a remarkable order of plants, having little affinity with any other tribes. It may be said to approach the *Cycadæææ* and *Coniferææ*. It resembles the fern-tribe in the want of the sexes and the presence of annular ducts without spiral vessels; while its germination is similar to that of mosses.

The essential characters of the order are: fructification terminal, in spikes or catkins, consisting of many-sided, shield-like scales, on the lower side of which are from four to seven involucretes. These open longitudinally, and contain numerous round bodies having at their base four elastic club-shaped filaments, twisted spirally round them when dry, but expanding when moistened.

The plants belonging to the order are branched and leafless. Their stems are rigid, streaked, and hollow, and consist of several easily separated joints, each of which is surrounded by a membranous toothed sheath. Under the cuticle a quantity of siliceous or stony matter is secreted. The branches are mostly in whorls.

The *Equisetacææ* are widely dispersed over the globe, and generally grow in moist, marshy places. None of the species have as yet been found in New Holland. It would appear from the fossil remains discovered, that a great part of the original vegetation of our globe consisted of gigantic equisetums several yards long, much larger than any of our present species, which have generally weak stems, and seldom exceed three or four feet in height.

*Equisetum* is the only genus of the order. It includes numerous species, and some of which were formerly used medicinally as astringents and diuretics. From the quantity of stony matter which they contain, they are used for various domestic purposes, such as polishing furniture. The flint in the living