have any power of condensing water vapour from the air, although naturally any moisture condensed on the surface of a plant by a fall of temperature may be taken in by them with their food. Grubs observed under the microscope do not seem to swallow any of the moisture film condensed on glass, although such moisture may be taken in through the general surface of the body. A point worthy of mention is that the percentage of moisture in a dried plant specimen is rarely uniform throughout, and that the grubs may be feeding and thriving on the moister parts of a specimen which seems as a whole prohibitively dry. Nevertheless the experiments show that reduced as are the moisture requirements of the larvae, thoroughly dried specimens kept in dry air in which no condensation of moisture occurs at any time are practically immune from attack. In this connection the absence of anything capable of aiding in the condensation of water is of importance, such as sugary gum and certain kinds of glazed paper.

Note on the Origin of the Name Chermes or Kermes.
By E. R. Burdon, M.A., F.L.S.

[Read 6th December, 1906.]

Great confusion has arisen from the fact that there are two genera of insects, both belonging to the Hemiptera, which bear the same name under different spellings. One of these is the genus Chermes included in the family Aphidæ, while the other belongs to the Coccidæ and is spelt Kermes. According to Kirkaldy (1) there is yet a third genus of the Hemiptera which bears this name, viz. that usually known as Psylla belonging to the family Psyllidæ. Kirkaldy, enforcing the rules of priority in nomenclature, states that Psylla should be called Chermes, and that the name of the family ought to be Cherimidæ instead of Psyllidæ.

I leave it for others to decide whether this statement is correct or not, but even supposing that the correct name of Psylla is Chermes, it would, I consider, be a great mistake to insist upon the observance of the laws of priority in the present instance. The confusion between the Aphid Chermes and the Coccid Kermes is already so great, that it is no easy work to disentangle the literature relating to either genus. This difficulty has to some extent been overcome by a sort of tacit agreement to accept the difference in spelling as sufficient indication of the particular genus referred to. Chermes is used by most authorities for the Aphid genus, and an extensive literature is to be
found not only in English but also in French, German, and Russian scientific records describing the insects under this name. The Coccid genus is, I believe, quite as widely known under the name of *Kermes*. The genus *Psylla*, on the other hand, is certainly better known under that name than under *Chermes*, and even though this latter name may be the correct one according to the rules of priority, I would protest strongly against its adoption in view of the hopeless confusion which would infallibly result from such a step.

It is not my purpose to enter into the question as to which genus—Aphid, Coccid, or Psyllid—should rightly be called *Chermes*. My object is merely to explain how the confusion between the Aphid *Chermes* and the Coccid *Kermes* appears to have originated.

To do this it is necessary to hark back to ancient history, where frequent references are found to an important trade which was carried on in certain "berries" collected from a species of Oak, and valued on account of the brilliant scarlet dye they produced. Thus in Dioscorides (2a) a short account of the trade is given under the heading "πέρι κόκκου βαφικής," and Pliny (2b) also mentions the "berry" several times in his Natural History, using the same name in a Latinized form, viz. "coccum." The "berries" were procured from Asia, Africa, and various countries bordering the Mediterranean, Spain being specially mentioned on account of her having at one time paid tribute in them to Rome. Numerous references to similar passages in other Greek and Latin authors might be added, but the above are sufficient to show that the "berry" was well known in ancient times as the "coccum" of the Oak, and that it was widely distributed all over the South of Europe.

The Greeks and Romans were not acquainted with the real nature of the "berry," which they imagined was a natural production of the Oak itself, and Pliny specially mentions one kind which was valueless because it turned to maggots! The Persians, however, were probably aware of its animal nature, for they called it by the name "kermes" or "kirmis," a word derived from the Sanskrit "krimi" which means a worm.

The Persians apparently introduced both the insect (for the "berry" was of course the insect now known as *Coccus ilicis*, L.) and the name into Arabia. The Arabs in their turn carried the name into Spain, where, as we have seen, the insect was found in abundance.

The trade in *Kermes* lasted right on through the Middle Ages, and into comparatively recent times, when the dye obtained from the Cochineal insect (*Coccus Carci*) supplanted the *Kermes* dye, and was in its turn supplanted through the discovery of aniline dyes.

The name *Kermes*, therefore, was commonly used in Spain for the insect, and it spread thence into all the countries bordering the Mediterranean, where the trade existed and the insect was consequently well known (3).

The name was introduced into scientific nomenclature by Linnaeus (4). In 1740 he published the second edition of his *Systema Naturæ,* and we here
find "Kermes" adopted as a generic name for certain insects which Linnaeus at that time included under the order Aptera:


This insect is undoubtedly the orange louse now known as Lecanium hesperiadam, and we thus see that Linnaeus first applied the name Kermes to one of the Coccid family.

After publication of the second edition Linnaeus very probably referred to Pliny's Natural History, and finding the Kermes dye insect there described under the name of "coecum," he may have decided to adopt this name for the genus instead of Kermes. Be that as it may, Linnaeus gave up the name Kermes, and in the later editions of the 'Systema Naturæ' (5) and also in his 'Fauna Suecica' (6), the genus Coccus appears in its place. His former Kermes Hesperiadam is now entered as Coccus citri, and in the same genus he also includes the Kermes dye insect as Coccus querci-ilicis.

Being, however, in want of a name for another group of Hemipterous insects which resembled his genus Coccus in many points, but differed in possessing four wings instead of two, he evidently thought the name now set at liberty suitable for them, and accordingly the genus Chermes was established to receive them.

As regards the spelling Linnaeus appears to have used either "Ch" or "K" indiscriminately, for although he more often spelt the word Chermes, the other spelling, Kermes, is found both in his Itinerary though Öland and Gothland (7), and in the second edition of the 'Systema Naturæ' already mentioned (4).

Living in Sweden, Linnaeus naturally was not very familiar with the Kermes dye insect (i. e. his Coccus ilicis), and was unaware how firmly the name Kermes was established in the South of Europe, or he would never have made such a regrettable blunder as to adopt it as the generic name for another group of hemipterous insects.

In France, where of course the dye insect was well known, this new application of the name Chermes was unintelligible to naturalists. In 1764 Geoffroy (8) pointed out that the insects which Linnaeus called Chermes had nothing to do with "le Kermés," and he therefore gave them the name Psylia, and he adopted the name Chermes for the Coccid genus, originally called Kermes (S. N. 2nd ed.), but subsequently Coccus by Linnaeus. In this Geoffroy was followed by Müller (9) and several other writers of Southern Europe. In popular parlance the name was spelt with a "K," and only with "Ch" when used as a generic name. In 1828, however, Boitard (10) who, like Geoffroy, applied the name to certain insects of the Linnean genus Coccus, spelt it with a "K," and we here find the dye insect under the name Kermes ilicis (= Chermes ilicis, Geoffroy = Coccus ilicis, L.).
With regard to this last writer, Cockerell (11) in 1899 wrote as follows:—

"The name Kermes had been used in a popular sense from early time, but Boitard is the first author I find using it as a genus in scientific nomenclature."

Newstead repeats this statement in his recent work on Coccidae (12).

In view of the facts mentioned above this hardly seems correct, unless Cockerell intended to restrict his meaning to the word when spelt with a "K," and even then both spellings were used by Linnaeus. But to return to the genus Chermes, established by Linnaeus for the group of four-winged insects referred to above, the diagnosis of the genus was very broad, and allowed the inclusion of all Hemipterous insects with "Rostrum pectorale, antennæ thorace longiores, alæ 4 deflexæ, thorax gibbus, pedes saltatorii." As time went on it was seen that this diagnosis resulted in many insects being placed in the genus, which in reality belonged not only to separate genera but even to separate families. Most of the Linnaean species of Chermes have accordingly been redistributed amongst other genera such as Psylla, Schizoneura, Vacuna, &c., but the Spruce gall-insect has been left in as Chermes abietis.

In 1837 Hartig (13) revised the diagnosis of the genus but retained the Linnaean name Chermes, and from this time onwards this name has been accepted by the majority of observers, such authorities as Ratzeburg, Kaltenbach, Blochmann, Eckstein, Dreyfus, and, last but not least, Cholodkovsky, having been content to take Chermes as the generic name for these Spruce gall-insects.

Numerous attempts have been made at different times to christen the genus afresh—Adelges, Cnaphalodes, Elatiptus, Sacchiphantes, being a few of the names under which this unfortunate genus has been described. But none of these names has been generally accepted, and the attempts to change the name have only resulted in adding to the confusion.

It will thus be seen from the foregoing that the existence of the same generic name in two families of the Hemiptera is due to the following causes:—

1. That the dye insect of the Oak had been known since the Arab conquest of Spain by the popular name of Kermes all over the South of Europe.
2. That Linnaeus, apparently unaware of this fact, put the Kermes dye insect into the genus Coccus, and employed Chermes as the generic name for another group of insects, amongst which he placed the Spruce gall-insect.
3. That Geoffroy, objecting to this misapplication of a well-known popular name, used Chermes as the generic name for the dye insect which Linnaeus called Coccus.
4. That Boitard used the name for the same insects as Geoffroy but spelt it Kermes.
5. That the majority of workers at the Spruce gall-insects have retained the Linnean name of *Chermes*, and at the same time Coccid authorities have naturally continued to use the name *Kermes* for the insect which had popularly been so called from early times.

It would certainly have saved infinite trouble had one of the earlier names given to the Spruce gall-insects been generally accepted, but in view of the wide acceptance which both *Chermes* and *Kermes* have now obtained, any alteration in the name of either genus at this hour of the day would only make "confusion worse confounded."

References.

(2b) Pliny, C., Hist. Nat., Lib. 9, cap. 41; Lib. 16, cap. 8; Lib. 22, cap. 2; Lib. 24, cap. 4.
(4) Linnaeus, C., Syst. Nat. 2nd ed., 1740 (Stockholmiae).
(14) —— Gemar’s Zeitschrift für Entomol. vol. iii. 1841, pp. 359–76.