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The true identity of Pascal's mite and the diachronic use of *ciron*

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Original research

ABSTRACT

The identity of Blaise Pascal's mite is examined. Linguistics, morphology, habitat and size reveal that Pascal's mite is not *Acarus siro* L., as usually thought, but *Sarcoptes scabiei* (L.). The diachronic use of the popular term *ciron* is explored from a number of different perspectives. In everyday language and in Pascal's time, the term used to designate *A. siro* L. was *mite* (used singly, in English and French) and not *ciron*, a word restricted to the scabies mite; its use is also investigated. The classification of mites in the 17th and 18th centuries is reviewed.

Keywords *Sarcoptes scabiei* (L.); *Acarus siro* L.; Blaise Pascal; *ciron*; mite

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To Profs Ph. Lebrun (†) & Y. Coineau

Introduction

Blaise Pascal's *Pensées* was published, after his death, in 1670, but was written at an epoch when the microscope became a recreational tool for laypersons (Armintor, 2011). It was also drafted at a time when the concern for scientific rigor combined with an amazing freshness and austere piety (Bouvier, 1996).

Pascal (1623–1662, France) was completely educated by his father and is considered a child prodigy. When he was eleven, he delivered a thesis about the beginning and discontinuation of sound and, at sixteen, he wrote an essay on conic sections. This “*effrayant génie*” (“scary genius”), as named by Chateaubriand (1802), is renowned as a mathematician (early pioneer in the fields of game theory and probability theory, Pascal's triangle), physicist (the unit of pressure, the pascal, is named after him), inventor (the pascaline is the world's first fully functional mechanical calculator), philosopher (Pascal's wager) and writer. Nowadays, he forms part of the French Baccalaureate Literary Study Program.

Although it is not an acarological book, Pascal's *Pensées* is of interest to acarologists as he illustrated the infinitesimally small with the familiar *ciron*, the French word used in the past to designate a mite: “*Qu'un ciron, par exemple, luy offre dans la petitesse de son corps des parties incomparablement plus petites, des jambes avec des jointures, des veines dans ces jambes, du sang dans ces veines, des humeurs dans ce sang, des gouttes dans ces humeurs, des vapeurs dans ces gouttes...*” (Pascal, 1670: 173–174, translation by Boitano (2002): “Let a mite show him in its minute body incomparably more minute parts, legs with joints, veins in its legs, blood in the vein, humours in the blood, drops in the humours, vapours in the drops...”). Pascal's mite is abundantly cited in recent books: Espagnat (1986), Morali (2004), Jacquard (2004), Onfray (2014), Godin (2016), from astronomical to philosophical works.

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But what was the mite mentioned by Pascal and others? And what does *ciron* and its relative terms mean? Traditionally, Pascal's *ciron* is identified as the cheese mite, *Acarus siro*: Kemna (1904: LII), Molina *et al.* (1975), Sève (1992: 60), Coineau *et al.* (1997: 69), Thibault (2003), Maggiori (2004, 2005), Beurey (2007: 166), Boutibonnes (2008), Sanromán (2009), Bessot *et al.* (2011: 610), Bessot and Pauli (2011: 230), Mailleux *et al.* (2011: 8), Lebrun (2013: vii), Drouin (2014a: 87; 2014b: 378), McConnell (2015), Godin (2016), Mauduit and Chantal (2017), Habbad (2018), Shimano (2018). References cited cover a wide range of documents, from newspapers to textbooks, from medical publications to teacher's books, and from political pamphlets to nature journals. They demonstrate a wide use of the assignation. The identification is even repeated in electronic encyclopedia (Chubret *in* Wikipedia, 2018), sources including several anonymous sites: e.g. anonym (2018).

Material and methods

The true identity of Pascal's mite is elucidated by consulting the 16th and 17th century dictionaries and encyclopedias, i.e. primary sources. Incunables, books and other documents published at that time, or issued earlier, were also scrutinized. Electronic versions of publications were used, for instance from the *Bibliothèque nationale de France*. The optical character recognition (OCR) was used whenever possible. Due to lack of space, some references are not given; for instance, Mersenne, Pascal's mentor in the sciences, cited at least 4 times the *ciron*, but only one reference is mentioned.

There may be marked differences between successive editions (e.g. Malebranche, Mellema, Montaigne). Therefore, the *editio princeps* or the oldest available edition was preferred. Variants differed depending on the epoch, language and countries: *ciron*, *cyron*, *süren*, *syrones*... the original noun was maintained. The term *ciron* also is a patronymic, a French commune, a river... The meaning may be affected by regionalisms: "*cironné*" *sensu* "worm-eaten" is a typical helvetism (Rey, 1998); this regionalism does not apply to cheese crust.

Results

Results are presented in four parts. The first and longest concerns the vernacular term and its variants, *ciron* (glossaries and dictionaries of the 16th and 17th centuries, the diachronic meaning of the word *ciron*, its metonymic use, its origin, its popularity, and its symbolism). The second domain involves the medical word *syrones* and its variants (the school of Salerno, the school of Montpellier, other approaches). The last parts are devoted to the cheese mite and the classification of mites in the 17th and 18th centuries.

A popular approach

French glossaries and dictionaries of the 16th and 17th centuries

Pascal was not an acarologist, nor was he a physician as were Bonomo and Mouffet. How did French dictionaries of the time define a *ciron*? All French dictionaries of the 17th century took the term *ciron*, from the Nicot's *Thresor de la langue françoise*, a document that played an important role in the development of French lexicography, to the 1st edition of the dictionary published by the French Academy. They all described the habits of the scabies mite (Table 1). The inclusion of the word *ciron* in the dictionary released by the French Academy is highly interesting as the dictionary banished terms which rarely entered the spoken language (Ernst, 2015: 87). Technical terms were considered disgraceful and relegated to *Le Dictionnaire des Arts et des Sciences* compiled by Thomas Corneille (Rouleau *et al.*, 2006).

Even better, the bilingual dictionaries of the previous century also reported the term *ciron* and, from 1650, again referred to the scabies mite (Table 2).

Table 1 Definition of *ciron* in some French dictionaries of the 17th century. The original spelling and formatting attributes are maintained in original quotations. Tentative translation or paraphrase in contemporary English.

Source	Original definition	Paraphrase
Mellema (1602: n.p.)	<i>Vn Ciron, Een sierken</i>	A ciron, <i>Dutch equivalent</i>
La Porte (1602: 86)	Ciron. <i>Grateleux, demangeant, petit, gallé, traceux, menuet ou menu, vermelet, galonné, fort porté en amignotant.</i>	Ciron. <i>Scabiousus, itching, small, scabious [?], tracing, minute or tiny, vermiform, gallooned, [?].</i>
Nicot (1606: 125)	Ciron , m. acut. Est une espece de petit ver rond et blanc, au reste d'une petite tache noire qui l'enditte quand on le veut tirer, engendré d'humeur acre et aduste en divers endroits de la personne, mais plus communément és mains, qui ronge et fait demanger où il est concreé.	Ciron , m. acut. Is a kind of small round white worm, in the bottom of a small black scar that exhibits when it is to be withdrawn, begotten acrid humor and adust in various places of the person, but more commonly on the hands, which gnaws and itches where it forms.
Oudin (1607: n.p.)	<i>Un ciron, arador de la mano.</i>	<i>Un ciron</i> , Spanish equivalent.
Cotgrave (1611: n.p.)	Ciron: m. <i>A Hand-worme.</i> Mais dont me vient ce ciron icy entre ces deux doigts? <i>But whence comes this worme betweene these two fingers?</i>	Ciron: m. <i>A handworm.</i> But where does this ciron come from between these two fingers?
Oudin (1627: 77)	Un ciron, un pedicello, arador de la mano.	Un ciron, Italian and Spanish equivalents
Monet (1635: 211)	Ciron, le moindre de tous les animaux, qui s'angeandre an la Cire, an la chair humaine, & autre part : hoc Acari, eos, ios. hic Acarus,ri. Aristoteles quinto de hist. animalium, cap.tricesimo, secundo.	Ciron, the smallest of all animals, born in wax, in human flesh & elsewhere : hence Acari, eos, ios. hence Acarus,ri. Aristotle quinto de hist. animalium, cap.tricesimo, secundo.
Oudin (1655: 122)	Ciron, <i>pilucello, pellicello, bacolino, setola.</i> Cironniere, <i>quantità di baccolini nelle mani.</i>	Ciron, <i>followed by Italian terms.</i> Cironniere, <i>many cirons on the hands.</i>
Pouvreau (1663: n.p.)	Cigarra. Ciron Cigartsua. pleine de cirons.	Basque equivalent. Ciron Basque equivalent. Full of cirons.
Anon. (1677: 150)	Ciron, m. Sedicello, che nasce nella mana, pedicello	Ciron, m. Italian equivalent, born in the hands
Miege (1677: n.p.)	A hand-worm, <i>un ciron.</i>	English equivalent, <i>un ciron.</i>
Richelet (1680: 1, 140)	Ciron, s. m. Petit ver rond & blanc qui est engendré d'une humeur acre qui s'attache principalement à la main & qui cause une démangeaison.	Ciron, m. n. Small worm, round & white, generated with acrid humor which attaches mainly to the hand & causes an itch.
Furetière (1690: n.p.)	Ciron. s. m. Tres-petit animal qui s'engendre sous le cuir, sous lequel il se traine & rampe en le rongeant petit à petit. Swammerdam dit que le ciron sort tout parfait de son œuf, & qu'il croist ensuite peu à peu. Il cause une grande démangeaison & gratelle. Le microscope nous fait découvrir plusieurs parties en un ciron. Mr. Gassendi en observant un ciron, l'a veu émeutir.	Ciron. m. n. Very small animal which reproduces under the skin, where he creeps and crawls and gnaws it step by step. Swammerdam said that the ciron hatches everything perfect and grows gradually. He causes itching & mange. The microscope shows us several parts in a ciron. Mr. Gassendi watching a ciron saw him defecating.
	Ciron, signifie aussi la petite ampoule qui vient à l'occasion du ciron, à force de gratter la peau. On perce des cirons avec une epingle.	Ciron also means the small blister caused by the ciron by scratching the skin. We burst cirons with a needle.
Dictionnaire de l'Académie 1, 1 ^{re} éd. (1694: 192)	Ciron. s. m. Sorte de petit ver, qui s'engendre entre cuir & chair & qui est presque imperceptible. Il n'est pas plus gros qu'un ciron. Tirer des cirons avec la pointe d'une epingle.	Ciron. m. n. Kind of small worm, which reproduces between skin & flesh & which is nearly un conspicuous. He is not larger than a ciron. Extract cirons with a needle.
	Il signifie aussi, La petite ampoule qu'un ciron fait venir à la main, ou ailleurs. Percer un ciron. Crever des cirons.	It also means the small blister that a ciron causes on the hands or elsewhere. To burst a ciron. To blow a ciron.

Last, Power (1663: 22), an English physician, Rohault (1671: 145), a French physicist, and Ozanam (1694: 162), another French mathematician and also popularizer, even stated that the *ciron* had the back covered with scales, a feature that definitely excludes the cheese mite with a smooth back.

The diachronic meaning of the word *ciron*

In medieval Europe, glossaries with equivalents for Latin words in vernacular or simpler Latin were in use. Over the course of the 16th century, successive Calepino's dictionaries were published, originally as a monolingual Latin work, and then enlarged to become multilingual glossaries. The French term *ciron* was then a simple translation of the Latin *acarus* and the translation resulted in a synonymy between the two terms. The translation applies also to the Old German *seuren* (cf Frisius, 1616: 8).

Accordingly, *ciron* and *acarus* were synonyms in the 3rd edition of Robert Estienne's *Dictionarium latinogallicum* (1552: 6), in Dupuys' dictionary (1573: 134) as well as in Nicot's dictionary (1584: 134) and Stoer's dictionary (1593: 172). Similarly, the two terms, *syrones* and *acarus*, were used synonymously by Mouffet who titled his chapter "*De Syronibus, Acaris, Tineisque animalium*" (Mouffet, 1634: 266). Synonymy between *sierkens* (*ciron* in Middle Dutch) and *acarus* was also acknowledged by Swammerdam (1669: 3, margin note). In Pascal's time, the term *ciron* was restricted to a single species, which lived between the flesh and the skin, particularly around the hands (Duret, 1594: 159; La Mothe Le Vayer, 1648: 641) and already found in John Palsgrave's *Lesclaircissement de la langue francoyse* (1530: 290). This monospecific sense was still used in Ludwig's trilingual dictionary with the translation 'ciron-hand worm-seur' (Ludwig and Rogler, 1763: 1015).

In Pascal's time, *Sarcoptes scabiei* was common and received many vernacular names

Table 2 Definition of *ciron* in the French dictionaries of the 16th century. The original spelling and formatting attributes are maintained in quotations.

Source	Original definition	Paraphrase
Palsgrave (1530: 290)	Wormē in the hand — <i>ciron</i> s, m.	Worm in the hand — <i>ciron</i> m, n.
Estienne (1539: 90)	Ciron. <i>Vng ciron, Acarus</i>	Ciron. <i>Vng ciron, Acarus</i>
Estienne (1552: 6)	Acarus, acari, m. g. <i>Vn ciron.</i>	Acarus, acari, m. g. <i>A ciron.</i>
Thierry (1564: 115)	<i>Vn Ciron, Acarus.</i> [Vermiculos seu teredines quibus manus nostrae potissimū infestantur. Chirones vocamus <i>Chirons</i> από τῶν χειρῶν, hoc est à manibus.]	<i>A Ciron, Acarus.</i> Small worm or boring-worm which can infestate on our hands. We call them <i>Chirons</i> . <i>Chirons</i> Greek text meaning on the hands, from the Greek word meaning hands.
Dupuys (1573: 134)	<i>vn Ciron, Acarus.</i> Vermicolos seu teredines quibus manus nostrae potissimū infestantur, Chirones vocamus	<i>A Ciron, Acarus.</i> Small worm or boring-worm which can infestate on our hands. We call them <i>Chirons</i> .
Nicot (1573: 132)	Chiron, voyez Ciron	Chiron, see Ciron.
Nicot (1573: 134)	<i>un Ciron, Acarus.</i> Vermiculos seu teredines quibus manus nostrae potissimū infestantur, Chirones vocamus, <i>chirons</i> από τῶν χειρῶν, hoc est à manibus	<i>a Ciron, Acarus.</i> Tiny worms or grubs that can infest our hands, we call them Chirons, [see above].
Meurier (1574: n.p.)	<i>Vn ciron, m. een sierken</i>	<i>A ciron, m. Dutch equivalent.</i>
Calepino (1586: 18)	Ācārūs, rī. {ακαρος. Gall. <i>Petit vers qui naist dedans la cire, ou ciron</i> . Ital. Il tarletto, che nasce nella cera, és il pedicello ò volgarmente pidocchietto. Germ. <i>Ein milt dic im wachse wechst</i> . Hisp. <i>El arador</i> . Angl. A mitte.}	Ācārūs, rī. {G. Small worm that takes birth in wax, or ciron. Ital. The tarletto, it takes birth in wax, it is the pedicello, or vulgarly pidocchietto (it. name for the scabies mite). Germ. <i>A mite that takes birth in wax</i> . Hisp. <i>Mite in Spanish</i> . Angl. A mitte.}
Stoer (1593: 172)	<i>Un Ciron, Acarus.</i> Vermiculos seu teredines quibus manus nostrae potissimus infestantur. Chirones vocamus. <i>Chirons</i> , hoc est à manibus.	<i>A Ciron, Acarus.</i> Small worm or grubs that can infest our hands. We call them Chirons. <i>Chirons</i> , [a word that] comes from hands.

that varied with regions: *Cigarra* in Basque (Pouvreau, 1663: n.p.), *siere* or *sierken* in Dutch (Meurier, 1574: n.p.; Mellema, 1602), *hand-worm* (e.g. Cotgrave, 1611: n.p.; Miego, 1677: n.p.) or *wheale-worm* (Mouffet, 1634: 266) in English, *ciron* in French (e.g. Mouffet, 1634: 266), *Süren*, *Seur* or *Seuren* in German (e.g. Platter, 1608: 966; Frisius, 1616: 8; Mouffet, 1634: 266), *bacolino*, *sciro*, *sérola*, *pellicello*, *pidoclietto* or *pedicello* in Italian (Aldrovandi, 1602: 544; Mouffet, 1634: 266; Calepino, 1586: 18; Oudin, 1655: 122; Antonini, 1743: 128), *arador de la mano* in Spanish (Oudin, 1627: 77), *sciros* in Taurini (Mouffet, 1634: 266), *brigans* in Valcoses and in Gascony (e.g. Mouffet, 1634: 266; Aubert de La Chesnaye Des Bois, 1759: 337), and *chirones*, *syrones* or *sirones* in medical Latin (Mouffet, 1634: 266) and in English (Bailey, 1736: n.p.).

Over time, however, the term *ciron* was assigned a broader meaning (e.g. anonym, 1695) and referred to a group with several species corresponding to the genus *Acarus* defined by Linnaeus (e.g. Aubert de La Chesnaye Des Bois, 1759; Geer, 1765; Valmont de Bomare, 1775; Olivier, 1791).

Finally, *ciron* meant all mites. The famous French popularizer, J.-H. Fabre, still used *ciron* to designate mites in one of his best-known books (Fabre, 1875). Within a syntagma, it may refer to a specific mite: for instance, the *Ciron rutilant des savanes* was identified as a *Trombicula* sp. by Marc André, a founder of this journal (Sevenet, 1936: 60) and the expression is still used today (Euzéby, 2008: 14). Other recent examples of syntagma are provided by Loschiavo (1984), Mills (1990) and Loiselle (1999). The examples above illustrate the transition from a monospecific assignment of the word *ciron* to a widest use. A similar transition is also observed with the Greek noun *ἄκαρι* used by Aristotle.

The metonymic use of the word *ciron*

The metonymy of *ciron* is a figure of speech in which blisters in the skin are designated. This metonymic transfer is already found in Sarrašin's *Le Roman de Hem* written around 1278 (Rey, 1998: 762). It is the meaning used by the "*Doctor Helveticus*", Paracelsus (1493/4–1541), who designated "pimples or boils on the hands" (Waite, 1894: 383). The metonymic sense is found during the 17th century (Table 1) and continues in the next centuries (Antonini, 1743: 128; Daubenton, 1753: 492; Boissier de Sauvages de Lacroix, 1763: 23; Adams, 1807: 305; Littré, 1863: 628). A similar metonymy concerning *sirones* is used in medical Latin (Rulandus, 1612: 436; Dolæi, 1689: 1528; Blancardi, 1705: 298) and in English (Bayfield, 1662: 101; Cooke, 1685: 212; Bailey, 1736: n.p.; Bailey, 1883: 164; Rulandus, 1893: n.p.). This sense clearly indicates the scabies mite and not the cheese mite. Another transfer concerns the hands that are *cironniere*, hence the English name (hand-worm) as well as the Spanish expression (*arador de la mano*).

The popularity of the word *ciron*

Pascal was not the first and only philosopher to use the *ciron* to illustrate his ideas. In the previous century, Montaigne used the mite image twice (no citation in the first edition of his essays published in 1580, once in the 1588 edition, twice in the posthumous edition). It was perhaps by reading Gassendi (1592–1655) that Pascal adopted the mite image to illustrate the infinitesimally small (Rochot, 1944). Indeed, the term *ciron* was abundantly cited by Gassendi (Bernier, 1678: 66, 143, 145, 163) and his observation was even reported by dictionaries (see La Furetière in Table 1). Du Roure (1654: 17), Malebranche (1674: 41–1677: 45–46), and La Grange (1682: 42) were other philosophers of Pascal's time citing the mite. An alternative approach, also initiated in the 16th century, consisted of comparing the *ciron* to the elephant or to another big animal: Bodin (1577: 9), Montaigne (1588, 1598), Descartes (1647), La Bruyère (1699: 453–454) and more than 30 other authors of this time.

The *ciron* was even sufficiently known to serve as a reference species to describe insects causing itchy feet and hands (Léry, 1578: 181; Pyrrard, 1619: 204; Laet, 1640: 489; La Chesnaye-Desbois, 1759: 360).

Actually, the term was very popular in France and had already appeared in the previous century, for instance in famous Rabelais' novels: "*Enay qui fut tres expert en matiere de oster les cyrons des mains*" (Rabelais, 1532: 11). The English equivalent depends on the translators: "Who begat Enay, who was very expert in taking the little Worms out of the Hands" (Smith, 1893: 213) or "Who begat Enay, the most skilful man that ever was, in matter of taking the little worms (called cirons) out of the hands" (Urquhart and Motteux, 1935: 292). The word *ciron* was repeated in *Le tiers livre* published in 1546 and in *Le quart livre* released shortly before his death. The term is also found in a poem by Ronsard (1557: 35), sometimes called the 'prince of poets': "*Un ciron qui souvent entame / La peau doiüillette de ma-Dame*". What is noticeable is that both authors, Rabelais and Ronsard, referred to the scabies mite and not to the cheese mite.

The term was featured in *Les Folles entreprises* released in 1505 by Pierre Gringore, poet and playwright (Héricault and Montaiglon, 1858: 35) and in *Le droict chemin de musique* by Bourgeois (1550), composer and music theorist. The Latin equivalent was also used by Scaliger, a philosopher and man of science who spent a major part of his career in France, and synonymies were given: "*Acaris. Garapates. Pedicellus. Scirus*" (Scaliger, 1557: 600). It was contained twice in the collection of proverbs proposed by Meurier (1557: n.p.). In Le Blanc (1556: 198; 1578: 147), *ciron* translated the *acarus* used by the Italian polymath Gerolamo Cardano in his *De subtilitate rerum* published in 1550 (Cardano, 1663: 515). Lastly, the term appeared in works as different as the history book by Crespin (1555: 113), the book on astronomy by Girault (1592: 6), the treatise on wines by Paulmier (1589: 52), the textbook on agronomy (Serres, 1600), the fictional work of the novelist Béroalde de Verville (1612: 184), the comprehensive works on music theory written by Mersenne (1636: 184), and La Fontaine's *Fables* (La Fontaine, 1668, 1678). *Romeo and Juliet*, the tragedy completed by William Shakespeare in around 1595, evoked the scabies mite: "Not half so big as a round little worm / Prick'd from the lazy finger of a maid", an interpretation defended by Keil (1957).

The term remained current in the 17th century. It is used in the correspondance of Nicolas Fabri de Peiresc (letter of 22 May 1622, Jaeger, 1922: Ms. No. 1774, Fol. 407; letter of 2 Feb. 1634 to Gassendi reproduced in Tamizey de Larroque, 1893) and by Christiaan Huygens (letter to Lodewijk Huygens, 4 November 1667 reproduced in Huygens, 1895). It is also used by the French tumbler Tabarin (1622: 85; 1625: 86), the writers Sorel (1641: 834; 1663: 576), and Fortin de La Hoguette (1653: 76) who mentioned the skin, the dramatist Cyrano de Bergerac (1665: 100, 101) who referred to itching and blisters, and the protestant theologian Jurieu (1684: 161).

The symbolism of the word *ciron*

In his seminal text, Pascal (1670) illustrated the infinitesimally small with the *ciron* which remains today a living symbol of smallness. An eloquent example is offered by Grousset's (1942) translation of the *Zhuangzi*, a Chinese canonical text: "*un ciron vaut une montagne*" (the term *wén*, opposed to the mountain, is usually translated by mosquito). In the 17th century, such a sense is common and the smallness of cirons was alluded to by numerous authors who were not physicians: Battista (1529: n.p.), Aldrovandi (1602: 544), Duret (1605: 69), Fuzy (1619: 35), Montluc (1630: 533), Monet (1635: 874), anonym (1651: 1), Aubignac (1655: 116), Du Roure (1665: 123)...

Another close sense is found in texts written by poets (Baudelaire, 1857) and philosophers (Alain, 1931; Sartre, 1942) who stressed the insignificance or the meanness of man. Diverse negative connotations are perceived in Apollinaire (1911 — "*Regardez cette troupe infecte / Aux mille pattes, aux cent yeux / Rotifères, cirons, insectes*"), Le Clezio (Nobel Prize in Literature-1965 — "*Lourde citerne d'eau stagnante où couraient les cirons et les moustiques*") and many others.

Ciron may even become an insult: Rivarol used insulting language against Cubières aping Dorat: "*C'est un ciron en délire qui veut imiter la fourmi*" (statement reported by the Goncourt brothers, 1854 ; Gourmont, 1909).

The remark of the French chronicler Brantôme (ca 1537–1614) is outstanding: “Le cas d’une fille est fait de chair de ciron ; il démange toujours ; et celui des femmes est de terre de marais, on s’y enfonce jusqu’au ventre” (Brantôme, 1881). Around the same period, this erotic symbolism was copied by Tabarin (Duneton, 2014). Such a symbolism associated with the itch mite was already present in Rabelais and in Cotgrave’s dictionary (Screetch, 1995: 179). Lastly, the *ciron* evoked by Breton (1973: 116) is strangely reminiscent of the statement of King James I of England (1566–1625) who has the credit of having declared that “none but kings and princes should have the itch, for the sensation of scratching is so delightful”. A similar allusion is found in the old French song “*J’ai un ciron sur la motte*” (ca 1475–1480 — Tacaille, 2015). Although King James’ remark is associated to scabies (Wilson, 1865: 112; Lyell, 1976: 119; Currier *et al.* 2012: E50), a reference to *Pthirus pubis* may not be excluded: the itch-mite is frequently mentioned with lice in old textbooks but the difference was already stressed by Mouffet (1634: 266).

The medical approach

Even if the history of scabies is fascinating and controversial (Ramos-e-Silva, 1998: 625), it is beyond the scope of this article. Just as an example to illustrate the importance of scabies, in Paris around 1850, 250 to 300 sick people went everyday to the *Hôpital Saint-Louis* where those suffering from ringworm and scabies were treated free of charge (Le Quellec, 2000). Seriously affected scruffy individuals were admitted to a special service providing 60 beds for men and 15 for women (Feulard, 1886).

The school of Salerno

Scabies, important for the 19th century hospital management, was obviously not ignored in the medical world of the Middle Ages. *Syrones* appeared in the *Trotula*, the most influential compendium in medieval Europe, presumably written by Trotula of Salerno (11th or 12th century), alleged to be the first female professor of medicine at the medical school of Salerno (Italy). The book comprises three texts written in Latin; these three popular texts survived in more than 100 manuscripts, were assembled and printed by Kraut in 1544 (*editio princeps*) and were again edited and translated by Green (2001). In *De ornatu mulierum*, there is the following passage: “*Ad syrones rodents capillos...et inde capillos frica inter manu. Hoc syrones expellit et occidit*”. Green (2001: 175) translated this way: “For itch-mites eating away at the hair...and then rub the hair between the hands. This expels itch-mites and kills them” (Green, 2001: 175). This passage probably refers to a head lice infestation and not to a mite. It is, however, indicative of the difficulty interpreting old medical texts. As already commented by Oudemans (1929: 704), the section dealing with scabies is short (2 lines) and did not refer to an animal. However in the 1550 edition, named *Trotulae curandarum aegritudinum muliebrum ante, in, & postpartum Liber*, *syrones* are cited “*vermé de manibus & pidibus*” (Trotula, 1550: 36).

The school of Montpellier

Quite different were the *syrones* described in the *Chirurgia*, also written in medical Latin, by Henri de Mondeville, royal surgeon to French kings Philippe the Fair and Louis the Stubborn: the text, composed between 1306 and 1320, clearly referred to minute animals boring between skin and flesh (Nicaise, 1893: 635).

Guy de Chauliac, who succeeded him in Montpellier (France, the world’s oldest medical school still in operation), also stipulated that *syrones* were small animals, living between “*carnem, & cutem*” especially on the hands and evoked the contagious nature of *syrones* in his *Chirurgia magna* composed around 1363 (Humphery-Smith *et al.*, 1990). The Mal Latin — and the terms *syrones* or *sirones* — remained in vogue for several centuries and these terms were still found in Plenck (1776). These animals became *cyrons* or *cirons* in subsequent

Figure 1 Facsimile of Meschinot's *Lunettes des princes* (1493). Document from the *Bibliothèque nationale de France*. The word *cyrons* is used on the 4th line.

francophone editions, for example by Nicaise (1893) and Gombert and Chevalier (2006). Another consequence of Chauliac's *Chirurgia magna* was the introduction of *ciron* into Middle English (Kurath, 1959: 280-281). Although it is obsolete, the word is still found in the Oxford English Dictionary.

Guillaume Rondelet, also professor of medicine at the University of Montpellier and teacher of François Rabelais, evoked the *cyrones* living “*semper intra cutim & cuticulam*” (Rondelet, 1573: 10) and the women extracting them with a needle (Rondelet, 1573: 11).

Other medical approaches

Prior to Pascal's time, in the 16th century, physicians citing *syrones* include Ambroise Paré (ca 1510–1590, France), Vigo (1534: n.p.; Italy), Lange (1560: 174; Germany), Vidius (1586: 89; France), Boorde (1547: n.p.; UK) and Heurnius (1594: 37; Germany).

The *syrones*, i.e. *Sarcoptes scabiei*, were also well known in Pascal's time and were mentioned by Platter, a medical student in Montpellier in the previous century; the Swiss physician wrote: “*Hos Sirones Germani Suren appellant, rectius fortè Chirones, cum manus occupent*” (Platter, 1608: 966). Pascal was 11 years old when they were studied by Mouffet (1634: 267-269) who cited Aristotle (and alluded to “*cafeo & cerae*”), mentioned his predecessors (Avinzoar, Gabucinus), described their habits, and scripted “*Animalculū est omnium minutissimum*”. The renowned German physician Sennert (1634: 118) referred to *sirones* or *chirones*, also called *seuren* and moreover indicated that, for the most part, they are extracted with a needle (Sennert *et al.* 1661: 2486). Borellus (1656: 16-17 [*observatio XXI*], 21 [*observatio XXXII*]) used a microscope to refer to *vermiculi* associated to scabies and reported turtle-shaped *syrones* in humans, a shape also observed by the German physician Wichmann (1786: 39) and dermatologists Hebra and Kaposi (1870: 673) (but *syrones*, which are Acari on page 17 and in Borellus' index, were associated to *variolis* [*observatio XXXI*]). Similar confusions with regard to diseases were made by the Polish scholar and physician Jonstonus (1657: 93, 130). In contrast, the *syrones* “*in cute*” were appropriately named Wheal-worm, Hand-worm or *acarus* by the English physicians, Merrett (1667: 206) and Charletoni (1677: 52).

Lastly, after the first rough sketches drawn by Hauptmann in 1657 and by Ettmüller in 1682, an illustration was made by Bonomo (1687: end plate) who knew the difference between *A. siro* occurring in large number in old cheese (“*gran numero nel formaggio vecchio*” — Bonomo, 1687: 14; fig. 13-15 reproduced in Figure 2) and *S. scabiei* (his fig. 1-3 also reproduced in Figure 2).

The origin of the word *ciron*

Two origins were considered by Ménage (1694: 199): either the word derives from the Ancient Greek κείρ (kheir, ‘hand’) (see also Table 2) or the animal is named after the *cire* (French name for wax) where it is born according to Aristotle. Michael (1903: 117, footnote) advanced that

Figure 2 Facsimile of Bonomo's (1687) plate. (A-D) *Sarcoptes scabiei* — (E-G) *Acarus siro*.

the medical terms *sirones* and *syrones* could derive from the Greek Σίπος meaning cavity and be an allusion to the boring habit of *S. scabiei*.

Currently, the word *ciron* is said to derive from the Franconian etymon *seurō* and has a long history. From the second half of the 11th century, the term *seiron* appeared in the *Gloses françaises de Raschi* and designated the *cirons* (Darmesteter and Blondheim, 1929: 130). Around the same period, Hildegard of Bingen (1098–1179) wrote several manuscripts and books and used the medieval German form, *süren* latinized as *suriones*, to refer to “*gracillimi vermicili*”, the scabies mites (Jessen, 1862; Moniez, 1896; Fischer, 1927; Riethe, 2006; Romani and Romani, 2017). The animal was already found small by Simund de Freine (ca 1140–ca 1210) who wrote in *Le roman de philosophie* that “*un cirun tient petit liu / vers le grant munt de Mungi* ;” (Matzke, 1909: 34). At the same time, the term *ciron* appeared in the langue d’oc, more particularly in the ‘sirventés’ of Bertran de Born (ca 1140–ca 1215): “*Dedinz etz plus chaus d’un saïic / E a major cor us soiros*” (Thomas, 1888: 139). Coincy (1177(?)–1236) wrote: “*Je ne pris mie ij. suirons / Toute la gloire de ce monde*.” (Coincy, 1857: 694). Spelt in Old French, it is still noted by Littré (1863) who signaled the passage: “*Ki as surcilz aura ciruns, / Si face ke nus li dirons*” (Ms. St Jean-13th century). In the three citations above, *soiros*, *suirons* and *ciruns* designate respectively the *cirons*.

Subsequently, the term is found in Middle French, in the chronicle of the troubadour Cuvelier dedicated to Bertrand du Guesclin and created around 1385: “*Et cilz François droit là, c’estoient bon Breton / Qui ne present Englois la queue d’un siron*” (Cuvelier, 1839: 192). It is also found in the *Lunettes des princes* written by Jean Meschinot and published after his death (“*Cyrons et tant dauttre vermine / Nous guerroyent*”, Meschinot, 1493, *editio princeps* printed in blackletter typesfaces or Gothic script, Figure 1).

Following the work of Gutenberg, printing made it possible to popularize manuscripts hitherto copied by hand. The *Romant de la rose* written in 1230 by Guillaume de Lorris and completed around 1270–1275 by Jean de Meun was reprinted many times. The verses attributed to the latter, suggest we accept only those who have “*mains belles et nettes, ou de cirons ou de bubettes*”. The examples above attest to the use of the term *ciron* in Old and Middle French, even before Francis I imposed it as the administrative language by the ordinance of Villers-Cotterêts, in 1539.

Similar words (*chiron*, *sirones*...), i.e. derived from the same etymon, were also used in close areas, Germany, Belgium, UK and the Netherlands. For instance, in 1273, *sier* is for the first time recorded in Middle Dutch, as the plural *sieren*, in a text from West Flanders (Vaan, 2016). The plural *zieren* is also found in *Die pelgrimage vander menscheliker creature* (mid-15th century) and in *Het boeck vanden pelgherym* (1486). Pascal’s mite was part of a more global language movement involving other European countries.

The cheese mite, another naming in the 17th century

Acarus siro is not forgotten by 17th century French authors but is designated by another word, the *mite*. The term is not in Estienne (1539) but the 1549 edition clearly referred to the cheese mite. Therefore, the two French terms, *ciron* and *mite* should not be confused as they designate different species, respectively the scabies mite and the cheese mite. They may however coexist, even in the same sentence as exhibited by the letter of Peiresc of 21 May 1622 (Tamizey de Larroque, 1896).

In the 17th century, *A. siro* was usually designated by a single word: *mite* (French with the derived terms *miton*, *midon*), *mijt* (Dutch), *mite* (English, noted by Mouffet, 1634: 266), *midas* (Latin) (references in Table 3). In a letter written in 1622, Peiresc used the words *mittes*, *artisons* and *mitons* to describe mites collected from a piece of cheese (Brunet, 1951). The distinction is still made by Courtin (1824: 50-51). The *ciron* was rarely associated with cheese (e.g. Monet, 1635: 947; 1637: n.p.)

Table 3 Definition of *mite* in the French dictionaries of the 16th and 17th centuries. The original spelling and formatting attributes are maintained in original quotations.

Source	Original definition	Paraphrase
Estienne (1549: 387)	Mites. Midas vermis est innascens fabis & caseis.	Mites, worms of <i>Midas</i> (Latin equivalent) nascent in beans and cheese
Thierry (1564: 309)	Midas vermis est innascens fabis & cafeis. Nos inde dicimus mites, & mitons, quasi midons.	worms of <i>Midas</i> (Latin equivalent) nascent in beans and cheese. We then say <i>mites</i> (French) or <i>midons</i> .
Thesaurus Theutonicae Linguae (1573: n.p.)	Meluwen/ost mijten . Petits vers comme cirons qui rōgent & se procreent en vn fromage sec, mites. <i>Acarus, midu, vermiculi innascentes caseis sine fabis etc.</i>	Vermin mites . Small worms as cirons that gnaw and born in dry cheese, mites. <i>Acarus, mite, small worms in cheese and beans</i> .
Nicot (1584: 459)	Mite, Midas vermis est innascens fabis & caseis. Nos inde dicimus, <i>Mites & Mitons</i> , quasi <i>Midons</i> .	Mites, <i>Midas</i> worms born in beans & cheese. We then say, <i>Mites & Mitons</i> , like <i>Midons</i> .
Mellema (1587: n.p.)	<i>Mijte</i> , Mite ou maille, f.	<i>Dutch equivalent</i> , Mite or [?]
Stoer (1593: 584)	Mites, Midas vermis est inascens fabis & caseis. Nos inde dicimus, <i>Mites & Mitons</i> , quasi <i>Midons</i> .	Mites, <i>Midas</i> worms born in beans & cheese. We then say, <i>Mites & Mitons</i> , like <i>Midons</i> .
La Porte (1602: 268)	Mites ou Mitons. ... C'est un petit ver qui s'engendre ès febles & fromage	Mites or Mitons. ... It is a small worm born in beans & cheese
Nicot (1606: 413)	Mites, F. plur. Penac. Midas, vermis est innascens fabis & caseis.	Mites, plur. F. Penac. Latin name, worm born in beans & cheese.
Oudin (1607: n.p.)	<i>Mites</i> , gusano que roe las hauas y el queso.	Mites, worm that gnaws beans and cheese.
Cotgrave (1611: n.p.)	Mite: f. <i>A mite, the smallest of coynes</i> ; also, <i>the little worme, called a Mite</i> .	Mite: f. <i>A mite, the smallest of coins; also, the little worm, called a Mite</i> .
Poille (1614: n.p.)	<i>Mites</i> , vermi est innascens fabis & caseis.	<i>Mites, Midas</i> , worm born in beans & cheese.
Oudin (1627: 265)	Mites, <i>vermi, que crescemo nelle fava</i> , gusano que roe las hauas y el queso.	Mites, <i>worms that grow up in beans</i> , worm that gnaws beans and cheese.
Arsy (1643: n.p.)	Un Ciron, <i>Een sierken</i>	A Ciron, <i>Dutch equivalent</i>
Miege (1677: n.p.)	MITE, ou Miton, ver naissant dans les fruits & le fromage, <i>the little worm called a Mite</i> . MITE, calendre, ver qui ronge le blé. Item <i>mite, miton, ver naissant dans les fruits & le fromage</i> .	MITE, or Miton, worms born in fruits and cheese, <i>the little worm called a Mite</i> . MITE, calendre, worm that gnaws the corn. Item <i>mite, miton, worm born in fruits and cheese</i> .
Richelet (1680: 2, 42)	Mite, f. f. Sorte de fort petit insecte qui ronge les habits & mange toute la fleur de la farine.	Mite, f. f. kind of very small insect which eats up the clothes & feed upon floor.
Furetière (1680: n.p.)	MITE. Subst. Fem. C'est le plus petit des Insectes, qui naist dans les feves & dans le fromage. Quand on voit une <i>mite</i> dans un microscope, on luy apperçoit huit grands pieds pareils à ceux des faucheurs.	MITE. Fem. Noun. It is the smallet insect that takes birth in beans & cheese. When one sees a <i>mite</i> under a microscope, he has eight large feet like those of harvestmen.
Dictionnaire de l'Académie 2, 1 ^{re} éd. (1694: 74)	MITE , f. f. Petit insecte qui est presque imperceptible, & qui s'engendre ordinairement dans le fromage. <i>Ce fromage est plein de mites</i> .	MITE f. f. Small insect which is almost imperceptible, & usually born in cheese. <i>This cheese is full of mites</i> .

Figure 3 (A-C) – *Sarcoptes scabiei* – (D) *Acarus siro* – (A) Photography in light microscopy modified from André and N'Dri (2013). (B-D) Facsimile of Geer's (1778) plate 5.

It is noteworthy to remark that the cheese mite is clearly visible to the naked eye while the adult female *S. scabiei* is only 300-504 μm long (Arlian, 1989), the size of the cheese mite is thus hardly compatible with the infinitesimally small invoked by Pascal. This significant difference in size between the “smallest of Creatures” and the mite observed in cheese was already perceived by Power (1663: 16-17, 22).

Another difference concerns the shape: “the body of the acarus farinae appears to be more oblong than that of the itch insect” (anonym, 1788: 43; see also Geer, 1778: 97), an oblong shape that contrasts with the special turtle shape of *S. scabiei* as already noted, in Pascal's time, by Borellus (1656: 17).

Nowadays, up to 10 species are identified in cheese, but only 2 are currently inoculated and could be called cheese mite, *A. siro* and *Tyrolichus casei* (Melnik *et al.* 2010).

Classification of mites in the 17th and 18th centuries

If ticks are excluded, mites known in the first half of the 17th century formed a group limited to 2 species: namely the cheese mite, *A. siro*, and the scabies mite, *Sarcoptes scabiei*. Geer (1778: 83) called them ‘Mittes’ (with two ‘t’, idiosyncratic spelling) and recognized that the species are very different. However, his plate 5 did not illustrate the dorsal scales seen by Power (1663: 22), Rohault (1671: 145) and Ozanam (1694: 162) and typical of the species (Figure 3). Was his microscope so bad? His drawings seem to be so mediocre when they are compared to Goeze's illustrations published by Wichmann (1786) and reproduced in Figure 4.

Many mites were observed during the second half of the 17th century (pre-Linnean works). For instance, Power (1663) reported mites in dust, in figs, in Jujubes, a red variety on spiders, on humble-bees (genus *Bombus*, part of Apidae), and in ponds. In 1758, the 10th edition of the *Systema naturae* was published by Linnaeus who described 31 species of mites, all in a single genus, *Acarus*. Under the heading *Acarus siro*, three species were put together: *siro*, *farinae* and *scabiei*. Provided Geer's *domesticus* corresponds to Linnaeus' *siro*, the confusion was cleared up by Geer (1778) but all the mites, discussed under the heading ‘mittes’, remained in the genus *Acarus* erected by Linnaeus. The classification was repeated in 1783 but the genus *Sarcoptes* was established later by Latreille (1802).

In 1775, Fabricius proposed the genus *Trombidium* for three species (*tinctorium*, *holosericeus* and *aquaticus*), the last two being listed and assigned to *Acarus* by Linnaeus (1758). The following year, Müller erected the genus *Hydrachna*. The dismemberment of Linnaeus' genus *Acarus* had already started as early as the 18th century and is reflected in Vicq d'Azyr's (1792) classification. Still later in the 18th century, Latreille (1795) proposed a division into 11 units (e.g. *Bdella*) and, in 1796, he advanced a final classification (mites were called *Acéphales*) into 18 genera. *A. siro* was part of genus 17. Pascal's mite was not mentioned. His *ciron* referred to the genus *Siro*, his genus 18, currently assigned to Opiliones and not to mites. Obviously, Latreille's *ciron* is not Pascal's *ciron*.

Figure 4 Facsimile of Goeze's figures published by Wichmann (1786). (A) *Acarus siro* — (B-D) *Sarcoptes scabiei*.

Conclusions

Sarcoptes scabiei lies at the crossroads of two traditions: a popular perspective on the one hand, a medical approach on the other hand. The latter referred to Latin word *syrones* and traced its history back to Trotula of Salerno (12th century). The former derived directly from the Franconian etymon *seurō* already used in the 12th century by Hildegard of Bingen; Pascal's mite was part of this long popular tradition. Yet both trends were based on the same etymon.

Pascal's mite is an ancient story involving two species, the cheese vs the scabies mite. The identity of Pascal's mite is simply elucidated by consulting the epoch's dictionaries and encyclopedias, i.e. primary sources. Books and other publications published at that time or issued earlier were also scrutinized. In the days of Pascal, *S. scabiei* was a well-known mite and was designated by the vernacular term *ciron*. In addition to linguistic arguments, the morphology (scales or spines), the habitat (skin) and the size argue in favor of the scabies mite.

Pascal's *ciron* is thus the human scabies as written by Morali (2004). The mix-up between the two species, the cheese and the scabies mite, was made by Goeddart (1662: 125), continued in Linnaeus' successive publications (cf. Oudemans, 1913), in Fabricius (1775: 812) and triggered the gallic affair in Paris, usually presented as a scientific fraud perpetrated by a student named Galès in his medical thesis in 1812 (Janier, 1994; Ghesquier, 1999; Ghesquier-Pourcin, 2011). The confusion was also maintained in the 8th edition of the *Dictionnaire de l'Académie française* (1932) that explicitly referred to cheese and flour (but not in previous editions) and reproduced in Littré's dictionary (1863: 628). It is also found in Rey (1998: 762) and Bonnafé *et al.* (2014). The famous *Encyclopédie* edited by Diderot and d'Alembert probably marked a turning point with two entries for *ciron*: the first entry (natural science) was written by Daubenton (1753: 475-476) and related to the two species while the second one (medicine) was composed by Venel (1753: 476) and dealt only with the scabies mite.

This example illustrates the way that when we look back into the past with modern techniques and equipment (Ratcliff, 2009) and current ideas (Ghesquier-Pourcin, 2011). There is a growing risk of bias in the future, especially when the principle of priority is to be respected.

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References

- Anonym. 1695. Extrait d'une lettre écrite par un religieux de la Chartreuse de Boisville à un de ses amis. *Journal des Scavans*, 17: 685-686.
- Anonym. 1788. An Account of the Infect found in the Itch. *London Medical Journal*, 9: 28-43.
- Anonym. 2018. Wikipedia en français. *Acarus siro*. Available <http://fracademic.com/dic.nsf/frwiki/46230> (Last accessed: 26 May 2018).
- Antonini A. 1743. Dictionnaire françois, latin, et italien (première partie). Paris, chez Prault fils.
- Apollinaire, W.A.VI. Apollinaris de Wąz-Kostrowitzki known as Guillaume. 1911. *Le Bestiaire ou le Cortège d'Orphée*. Paris, Delplanche.
- Arlian L.G. 1989. Biology, host relations, and epidemiology of *Sarcoptes scabiei*. *Annual Review of Entomology*, 34: 139-161. doi:10.1146/annurev.ento.34.1.139
- Arsy J.L. d'. 1643. Le grand dictionnaire françois-flamen. Rotterdam, chez Pierre de Waesbergue.
- Aubert de La Chesnaye Des Bois F.-A. 1759. Dictionnaire raisonné et universel des animaux (tome premier). Paris, C.-J.-B. Bauche.
- Aubignac F.H. 1655. Nouvelle Histoire du temps, ou La relation véritable du royaume de la Coqueterie. Paris, chez Marin Le Ché.
- Barthélémy-Saint Hilaire J. 1885 (Ed. & transl.) Traités des parties des animaux et de la marche des animaux d'Aristote. Paris, Librairie Hachette. Available at <http://remacle.org/bloodwolf/philos>.
- Battista E.G. 1529. Summaire de chroniques, contenans les vies, gestes et cas fortuitz de tous les empereurs d'Europe, depuis Jules César jusques à Maximilian, dernier décédé, Transl. from Latin by Geoffroy Tory. Paris, a Lenseign du Pot Casse.
- Baudelaire C. 1857. Les fleurs du mal. Paris, Poulet-Malassis et De Broise.
- Bailey N. 1736. Dictionarium Britannicum. London, T. Cox.
- Bailey N. 1883. English Dialect Words of the Eighteenth Century. London, Trübner & Co.
- Bayfield R. 1662. Tractatus de externis tumoribus praeter naturam. London, Richard Tomlins.
- Bernier F. 1678. Abrégé de la philosophie de M. Gassendi, Tome I. Lyon, chez Anisson, & Posuel.
- Béroalde de Verville, Brouard N.V. known as. 1612. Le Palais des curieux. Paris, chez la Veuve M. Guillemot, & S. Thiboust.
- Bessot J.-C., Metz-Favre C., Blay F. de, Pauli G. 2011. Acariens de stockage et acariens pyroglyphides : ressemblances, différences et conséquences pratiques. *Revue française d'allergologie*, 51: 607-621. doi:10.1016/j.reval.2011.04.006
- Bessot J.-C., Pauli G. 2011. Les acariens domestiques et leurs allergènes. *Revue des maladies respiratoires*, 28(4): 475-495. doi:10.1016/j.rmr.2011.02.006
- Beurey F. 2007. Opacité et infini. L'œuvre et le temps Thèse de doctorat en Arts plastiques et Sciences de l'art. Paris, Sorbonne.
- Blancardi S., Blankaart S. known as. 1705. Lexicon medicum græco-latinum-germanicum. Francofurti, Henrici Georg. Musselii.
- Bodin J. 1577. Les Six Livres de la République. Paris, chez Jacques du Puys.
- Boissier de Sauvages de Lacroix F. 1763. Nosologia methodica sistens morborum classes, genera et species, juxta Sydenhami mentem et Botanicorum ordinem. Amstelodami, Sumptibus Fratrum de Tournes.
- Boitano J.F. 2002. The Polemics of libertine conversion in Pascal's *Pensées*: a dialectics of rational and occult libertine beliefs. Tübingen, Narr.
- Bonnafé A., Simon X., Duquenne P., Bastide J.C., Laimé D., Le Bâcle C. 2014. Mesure de l'exposition aux moisissures et atteintes respiratoires chez les affineurs de fromages. *Références en Santé au Travail*, 137: 47-57.
- Bonomo G.C. 1687. Osservazioni intorno a' pellicelli del corpo umano. Firenze, Piero Martini.
- Boorde A. 1547. The breuiarie of health vvhetherin doth folow, remedies, for all maner of sicknesses & diseases, the which may be in man or woman. London, Thomas East.
- Borellus, Borel P. known as. 1656. Observationum microscopiarum centuria. Hagae, ex officina Adriani Vlacq.
- Boutibonnes P. 2008. Nanoscopie versus microscopie. *Alliages*, 62: 144-156.
- Bourgeois L. 1550. Le droict chemin de musique. Genève, Jean Girard.
- Bouvier N. 1996. L'Echappée belle. Eloge de quelques pèlerins. Genève, éditions Metropolis.
- Brantôme, Pierre de Bourdeille known as. 1881. *Œuvres complètes de Pierre de Bourdeille seigneur de Brantôme* (tome X). Paris, Mme Vve J. Renouard (posthume).
- Breton G. 1973. Histoires d'amour de l'histoire de France. Genève, Éditions de Crémille.
- Brunet P. 1951. Peiresc et le microscope. *Revue d'histoire des sciences et de leurs applications*, 4: 154-158. doi:10.3406/rhs.1951.2869
- Calepino A. 1586. Dictionarium octo linguarum, in quo primis et praecipuis latinis hebraeas, graecas, gallicas, italicas, [...]. Parisiis, apud Gulielmum Chaudiere.
- Cardano G. 1663. Opera Omnia (vol. 3). Lyon, Jean Antoine Huguetau/Marc Antoine Ravaud.
- Charletoni G., Charleton W. known as. 1677. Exercitationes de differentiis & nominibus animalium. Quibus accedunt mantissa anatomica, et quaedam de variis fossilium generibus, deque differentiis, second edition. Oxoniae, Theatro Sheldoniano.
- Chateaubriand F.-R. de. 1802. Le génie du christianisme ou Beautés de la religion chrétienne. Paris, chez Migneret.
- Chubret R. 2018. Ciron (arachnide). *Acarus siro*. Wikipedia, the free encyclopedia. Available [https://fr.wikipedia.org/wiki/Ciron_\(acarien\)](https://fr.wikipedia.org/wiki/Ciron_(acarien)) (Last accessed: 26 May 2018).
- Coincy G. de. 1857. Les miracles de la Sainte-Vierge. Facsimile reproduced and published by Poquet.
- Coinneau Y., Cleva R., Du Chatenet G. 1997. Ces animaux minuscules qui nous entourent. Delachaux et Niestlé, Paris.

- Cooke J. 1685. *Mellificum chirurgiæ, or the marrow chirurgery*. London, William Marfhall.
- Cotgrave R. 1611. *A dictionarie of the the French and English Tongues*. Londres, Adam Islip.
- Courtin E. 1824. *Encyclopédie moderne ou Dictionnaire abrégé des sciences, des lettres et des arts*, tome 3. Paris, bureau de l'encyclopédie.
- Crespin J. 1555. *Histoire mémorable de la persécution et saccagement du peuple de Merindol et Cabrieres et autres circonvoisins, appelez Vaudois*. Genève, J. Crespin.
- Currier R.W., Walton S.F., Currie, B.J. 2012. Scabies in animals and humans: history, evolutionary perspectives, and modern clinical management. *Annals of the New York Academy of Sciences*, 1230: E50-E60. doi:10.1111/j.1749-6632.2011.06364.x
- Cuvelier. 1839. *Chronique de Bertrand du Guesclin par Cuvelier, trouvère du XIX^{ème} siècle*, publiée pour la première fois par E. Charrière, tome second. Paris, Firmin Didot Frères.
- Cyrano de Bergerac S. de 1565. *Histoire comique des estats et empires du soleil*. Paris, Charles de Sercy (posthumous edition).
- Darmesteter A., Blondheim S. 1929. *Les gloses françaises dans les commentaires talmudiques de Raschi*. Tome premier, Texte des gloses. Paris, H. Champion.
- Daubenton L. J.-M. 1753. CIRON. In: Diderot D. & D'Alembert (eds). *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métier* T. 3. Paris, chez Briasson, David, Le Breton & Durand.
- Descartes R. 1647. *Méditations philosophiques*. Objections et réponses. In : *Œuvres de Descartes* (tome 2) par Victor Cousin, 1824. Paris, chez F. G. Levrault.
- Dictionnaire de l'Académie française, dédié au Roy. vol. 1, 1st ed. 1694. Paris, Vve de Jean-Baptiste Coignard.
- Dictionnaire de l'Académie française, dédié au Roy. vol. 2, 1st ed. 1694. Paris, Vve de Jean-Baptiste Coignard.
- Dictionnaire de l'Académie française, 8th ed. 1932. Paris, librairie Hachette.
- Dolæi J., Dolaus J. known as 1689. *Encyclopaedia chirurgica rationalis*. Francofurti, Ad Moenum.
- Drouin J.-M. 2014a. Entretien avec Anne Segal et Gérard Cartier. *Secousse, Revue de Littérature*, 13: 85-92.
- Drouin J.-M. 2014b. *La philosophie de l'insecte*. Paris, Le Seuil.
- Duneton C. 2014. *La puce à l'oreille*. Paris, Le livre de poche.
- Dupuys J. 1753. *Dictionnaire françois-latin auquel les mots françois, avec les manieres d'user d'iceulx, sont tournez en Latin*. Paris, de l'imprimerie de Gaspar de Hus.
- Duret C. 1594. *La Seconde Semaine de G. de Saluste, seigneur Du Bartas, reveüe par l'auteur... avec les argumens, commentaires et annotations de C. D. B. [Claude Duret.]* Lyon, Benoist Rigaud.
- Duret C. 1605. *Histoire admirable des plantes et herbes esmerveillables & miraculeuses en nature*. Paris, N. Buon.
- Du Roure J. 1654. *La Philosophie divisée en toutes ses parties, établie sur des principes évidents*. Paris, chez François Clouzie.
- Du Roure J. 1655. *Abrégé de la vraye philosophie, lequel en contient... les définitions, les divisions, les sentences, & les questions principales*. Paris, chez l'auteur.
- Ernst G. 2015. La diachronie dans la linguistique variationnelle du français. In Polzin-Haumann C., Schweickard W. (Eds) 2015. *Manuel de linguistique française*. Berlin, De Gruyter (pp. 72-107). doi:10.1515/9783110302219-005
- Espagnat B. d'. 1982. *Un atome de sagesse*. Paris, Le Seuil.
- Estienne R. 1539. *Dictionnaire françoislatin, contenant les motz & manieres de parler françois, tournez en Latin*. Paris, de l'imprimerie de Robert Estienne.
- Estienne R. 1549. *Dictionnaire françois-latin : autrement dict les mots françois, avec les manières duser diceulx, tournez en latin...* Paris, de l'imprimerie de Robert Estienne.
- Estienne R. 1552. *Dictionariolum puerorum*. Lugdoni, apud Theobaldum Paganum.
- Euzéby J. 2008. *Grand dictionnaire illustré de parasitologie médicale et vétérinaire*. Paris, Lavoisier. doi:10.1016/S1773-035X(09)72549-3
- Fabricius J.C. 1775. *Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus*. Flensburgi et Lipsiae, Officina Libraria Kortii. doi:10.5962/bhl.title.36510
- Feulard H. 1886. *Teignes et teigneux. Histoire médicale. Hygiène publique*. Paris, Bibliothèque interuniversitaire de médecine. <http://www.bium.univ-paris5.fr/histmed/medica/cote?TPAR1886x193>.
- Fischer H. 1927. *Die heilige Hildegard von Bingen*. München, Verlag der Münchner Drucke.
- Fortin de La Hoguette P. 1653. *Testament, ou conseils fidèles d'un bon père à ses enfans*. Leide, Jean Sambix.
- Frisius J. 1616. *Novum Latino-Germanicum et Germanico-Latinum Lexicon*. Francofurtiad Moenum, Typi Egenolphi Emmely.
- Furetière A. 1690. *Dictionnaire universel contenant généralement tous les mots françois tant vieux que modernes, & les termes de toutes les Sciences & des Arts*. Den Haag, A. et R. Leers (posthumous edition).
- Fuzy A. 1619. *Le franc-archer de la vraye Eglise, contre les abus et enormités de la fausse*. Aux despens de l'auteur.
- Geer C. de. 1765. Description d'une singulière espèce de Ciron. *Mélanges d'histoire naturelle*, 1: 26-29.
- Geer C. de. 1778. *Mémoires pour servir à l'histoire des insectes* (Tome 7). Stockholm, Imprimerie Pierre Hesselberg.
- Geer C. de. 1783. *Genera et species insectorum*. Lipsiae, apud Siegfried Lebrecht Crusium.
- Gervais P., Beneden P.-J. 1859. *Zoologie médicale. Exposé méthodique du règne animal*. Paris, J.B. Bailliére et Fils.
- Ghesquier D. 1999. A gallic affair: The case of the missing itch-mite in French medicine in the early nineteenth centur. *Medical History*, 43: 26-54 doi:10.1017/S002572730006470X

- Ghesquier-Pourcin D. 2011. Itinéraire des idées: L'affaire de la gale. Paris, Hermann.
- Girault S. 1592. Globe du monde contenant un bref traité du ciel & de la terre. Lengres, Jehan Des Preyz.
- Godin C. Le grand bestiaire de la philosophie. Paris, Les éditions du Cerf.
- Goedart J. 1622. Metamorphosis et historia naturalis insectorum. Medioburgi, apud Jacobum Fierensium sub insigni Globi.
- Gombert P., Chevalier J. 2005. Leçons sur les maladies de la peau - dans lequel ces maladies sont disposées en classes, genres et espèces. Paris, Editions Louis Pariente.
- Goncourt E. de, Goncourt J. de. 1854. *Histoire de la société française pendant la révolution*. Paris, E. Dentu.
- Gourmont R. de. 1909. Rivarol. In : *Promenades littéraires. Troisième série*. Paris, Mercure de France.
- Green M.H. (ed. and trans.) 2001. The 'Trotula': A Medieval Compendium of Women's Medicine. Philadelphia, University of Pennsylvania Press. doi:10.9783/9780812204698
- Grousset, R. 1942. Histoire de la Chine. Paris, Club des Libraires de France, s. d.
- Habbad S. 2018. Allergie aux acariens. Rabat, Université Mohammed V, Faculté de médecine et de pharmacie, unpublished D. Med. thesis.
- Hebra F. von, Kaposi M. 1870 Handbuch der speciellen Pathologie und Therapie. Erlangen, Verlag von Ferdinand Enke.
- Héricault C. d', Montaiglon A. de. 1858. Œuvres complètes de Gringores réunies pour la première fois par Charles d'Héricault et Anatole de Montaiglon. T. I. Paris, P. Jannet.
- Heurnius I., Heurne J. van known as. 1594. De morbis qui in singulis partibus humani capitis insidere consueverunt. Lugduni Batavorum, apud Officina Plantiniana.
- Humphery-Smith I., Théodoridès J., Touratier L., Le Flohic A-M. 1990. Parasitology in France : The Past. Parasitology Today 6 : 217-224. doi:10.1016/0169-4758(90)90198-D
- Huygens C. 1895. Oeuvres complètes. Tome VI. Correspondance 1666-1669 (ed. Johannes Bosscha jr.). Martinus Nijhoff, Den Haag.
- Jacquard A. 2004. Tentatives de lucidité. Paris, Editions Stock.
- Jaeger F.M. 1922. Cornelis Drebbel en zijne tijdgenooten. Groningen, Noordhoff.
- Janier M. 1994. Histoire du sarcopte de la gale. Histoire des sciences médicales, 28: 367-379.
- Jessen C. 1862. Über Ausgaben und Handschriften der medicinisch-natur historischen Werke der heiligen Hildegard. Sitzungsberichte der Mathematisch-Naturwissenschaftliche Classe 45: 97-116.
- Jonstonus J., Jonston J. known as. 1657. Historiae naturalis de insectis libri III, de serpentibus et draconibus libri II, cum aeneis figuris. Amstelodami, apud Ioannem Jacobi pyrrard
- Jurieu P. 1684. L'Esprit de Monsieur Arnaud (vol. 2). Deventer, chez les héritiers de Jean Colombius.
- Keil H. 1957. Scabies and the Queen Mab passage in Romeo and Juliet. Journal of the History of Ideas, 18: 394-410. doi:10.2307/2707799
- Kemna A. 1904. La taille des animaux. Annales de la Société royale zoologique et malacologique de Belgique (Bulletin des séances), 39: LI-LXXXI.
- Kurath H. 1959. Middle English Dictionary. Ann Arbor, the University of Michigan Press.
- La Bruyère J. de. 1689. Les caractères de Théophraste traduits du grec; avec les caractères ou les mœurs de ce siècle 12^e éd. Revûë, corrigée & augmentée. Paris, chez Etienne Michallet.
- La Chesnaye-Desbois, A. de. 1759. Dictionnaire raisonné et universel des animaux, ou le Règne animal. Tome 4. Paris, C.-J.-B. Bauche.
- Laet J. de. 1640. L'histoire du Nouveau Monde ou description des Indes Occidentales, contenant dix-huit livres, enrichi de nouvelles tables geographiques & figures des animaux, plantes & fruits. (Traduction française de Nieuwe Wereldt, [1625]) Texte intégral [archive]. doi:10.5962/bhl.title.110573
- La Fontaine, J. de. 1668. Fables. Livre I, premier recueil. Paris, chez Barbin.
- La Fontaine, J. de. 1678. Fables. Livre IX, second recueil. Paris, Thierry et Barbin.
- La Grange J.-B. de. 1682. Les Principes de la philosophie, contre les nouveaux philosophes... Paris, chez Jean Couterot.
- La Mothe Le Vayer F. de. 1648. Petits traitees en forme de lettres écrites à diverses personnes studieuses. Paris, A. Courbé.
- Lange J. 1560. Secunda epistolarum medicinalium miscellanea. Basileæ, ex officina Nicolai Brylingerii, expensis Ioannis Oporini.
- La Porte M. de. 1602. Les Épithètes. Lyon, Pierre Rigaud.
- Latreille P.A. 1795. Observations sur la variété des organes de la bouche des Tiques, et distribution méthodique des insectes de cette famille d'après les caractères établis sur la conformation de ces organes. Magasin Encyclopédique, ou Journal des Sciences, des Lettres et des Arts, 4: 15-20.
- Latreille P.A. 1796. Présis des caractères génériques des insectes, disposés dans un ordre naturel. Paris-Brive, Prévôt-F. Bourdeaux. doi:10.5962/bhl.title.58411
- Latreille P.A. 1802. Histoire naturelle, générale et particulière des crustacés et des insectes. Tome 8. Paris, F. Dufart.
- Lebrun P. 2013. Préface. In: André & N'Dri.
- Le Blanc R. 1556. Les livres de Hiérome Cardanus,... intitulés de la subtilité et subtiles inventions, ensemble les causes occultes et raisons d'icelles. Paris, Guillaume le Noir.
- Le Blanc R. 1578. Les livres de Hiérome Cardanus,... intitulés de la subtilité et subtiles inventions, ensemble les causes occultes et raisons d'icelles. Paris, chez G. Beys.
- Le Clezio J.-M.G. 1965. La fièvre. Paris, Gallimard.
- Léry J. de. 1578. L'Histoire d'un voyage fait en la terre du Brésil, autrement dite Amerique. La Rochelle, Antoine Chuppin.
- Le Quellec S.C.J. 2000. Histoire des urgences à Paris de 1770 à nos jours. Thèse, Paris, Université Paris 7 - Denis Diderot.

- Linnaeus C. von. 1758. *Systema naturæ per regna tria naturæ, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Tomus I. Editio decima, reformata. Holmiæ, L. Sweden. doi:10.5962/bhl.title.542
- Littre É. 1863. Dictionnaire de la langue française vol. 1 (A-C). Paris, Hachette.
- Loiselle R. 1999. Démythifications les acariens! Bulletin de l'entomofaune, 21: 12-22.
- Loschiavo S.R. 1984. Insectes, acariens et moisissures nuisibles aux grains entreposés à la ferme dans les provinces des Prairies. Ottawa, Agriculture Canada, Publication 1595F.
- Ludwig C., Rogler J.B. 1763. A Dictionary English, German And French. Leipzig, printed for John Frederick Gleditsch.
- Lyell A. 1976. Dermatitis artefacta in relation to the syndrome of contrived disease. Clinical and Experimental Dermatology, 1:109-126. doi:10.1111/j.1365-2230.1976.tb01407.x
- Maggiori R. 2004. Le ciron de Pascal. Libération, 24-08-2004.
- Maggiori R. 2005. Un animal, un philosophe. Paris, Julliard.
- Mailleux A.-C., Astudillo A., Clotuche G., Le Goff G., Dermauw W., Van Leeuwen T. 2011. Balade au pays des acariens. Parcs et réserves, 66 : 4-16.
- Malebranche N. 1674. La recherche de la vérité (tome premier). Paris, chez M. David.
- Malebranche N. 1712. La recherche de la vérité (tome premier). Paris, chez André Pralard.
- Matzke J.E. (ed). 1909. Les œuvres de Simund de Freine publiées d'après tous les manuscrits connus. Paris, Firmin Didot pour la Société des anciens textes français.
- Mauduit X., Chantal Laure de. 2017. Crapoussin et Niguedouille, la belle histoire des mots endormis. Paris, Stock.
- McConnel K. 2015. Admiration and Isolation in Pascal's "Disproportion de l'homme". Equinoxes (unpublished conference at Brown University consulted <https://www.brown.edu/conference/equinoxes/index.php?q=kelly-mcconnell>).
- Mellema E.E.L. 1587. Dictionnaire ou promptuaire flameng-francoy. Anvers, Jan van Waesberge.
- Mellema E.E.L. 1602. Dictionnaire ou Promptuaire françois-flameng. Rotterdam, Jan van Waesberge.
- Melnyk J.P., Smith A., Scott-Dupree C., Marcone M.F., Hill A. 2010. Identification of cheese mite species inoculated on Mimolette and Milbenkase cheese through cryogenic scanning electron microscopy. Journal of Dairy Science, 93: 3461-3468. doi:10.3168/jds.2009-2937
- Ménage G. 1694. Dictionnaire étymologique de la langue française. Paris, chez Jean Anisson.
- Merrett C. 1667. Pinax rerum naturalium Britannicarum : continens vegetabilia, animalia et fossilia, in hac insula reperta inchoatus. Londini, T. Roycroft.
- Mersenne F.M. 1636. Harmonie universelle, contenant la théorie et la pratique de la musique. Paris, par Pierre Ballard.
- Meschinot J. 1493. Lunettes des princes. Nantes, chez Etienne Larcher.
- Meurier G. 1557. Colloques ou nouvelle invention de propos familiers. Anvers, Christophe Plantin.
- Meurier G. 1574. Dictionnaire françois-flameng. Anvers, chez Jean Waesberge.
- Michael A.D. 1903. British Tyroglyphidae. II. London, The Ray Society.
- Miege G. 1677. A new Dictionary French and English with another English and French. London, for Thomas Basset.
- Mills J.T. 1990. Protection des grains et des graines oléagineuses stockés à la ferme contre les insectes, les acariens et les moisissures. Ottawa, Agriculture Canada, Publication 1851/F.
- Molina C., Aiache J.-M., Tourreau A., Jeanneret A. 1975. Enquête épidémiologique et immunologique chez les fromagers. Revue Française d'Allergologie et d'Immunologie Clinique, 15: 89-91. doi:10.1016/S0335-7457(75)80018-9
- Monet P. 1635. Inventaire des deus langues françoise et latine , assorti des plus utiles curiositez de l'un et de l'autre idiome. Lyon, chez la veue de Claude Rigaud.
- Monet P. 1637. Abrégé du parallèle des langues françoise et latine rapporté au plus près de leurs propriétés... Rouen, chez Jean-Baptiste Behourt.
- Moniez R. 1896. Les Parasites de l'homme (Animaux et Végétaux). Paris, Librairie J.-B. Baillière et fils.
- Montaigne M. Eyquem de. 1580. Les Essais. Bordeaux, Simon Millanges.
- Montaigne M. Eyquem de. 1588. Les Essais (5^e éd.). Paris, A. L'Angelier.
- Montaigne M. Eyquem de. 1598. Les Essais. Paris, A. L'Angelier (posthumous edition).
- Montluc A de. 1630. Les jeux de l'incognu. Paris, T. de La Ruel et al.
- Morali C. 2004. Pascal. Pensées. Fragments classés sur la religion et la condition de l'homme. Paris, Nathan.
- Mouffet T. 1634. Insectorum sive minimorum animalium theatrum. London, Thom. Cotes.
- Müller O.F. 1776. Zoologiae Danicae prodromus, seu animalium Daniae et Norvegiae indigenarum characteres, nomina, et synona imprimis popularium. Impensis auctoris, Havniae, Crusius. doi:10.5962/bhl.title.13268
- Nicaise E. 1893. Chirurgie de maître Henri de Mondeville, chirurgien de Philippe le Bel..., composée de 1306 à 1320 / traduction française, avec des notes, une introduction et une biographie. Paris, Félix Alcan Éditeur.
- Nicot J. 1573 Dictionnaire françois-latin, augmenté outre les precedentes impressions d'infinies Dictions Françoises, spécialement des mots de Marine, Venerie & Fauconnerie. Paris, chez Jaques du Puys.
- Nicot J. 1606. Thresor de la langue francoyse tant ancienne que modern. Paris, David Douceur.
- Norri J. 2016. Dictionary of medical vocabulary in English, 1375-1550. London, Routledge. doi:10.4324/9781315577081
- Oudemans A.C. 1913. Acarologisches aus Maulwurfsnestern. Archiv für Naturgeschichte, 79A: 1-69.
- Oudemans A.C. 1929. Kritisch Historisch Overzicht der Acarologie. Tweede gedeelte 1759-1804. Leiden, E.J. Brill.
- Oudin C. 1607. Thresor des deux langues françoise et espagnolle. Paris, chez Marc Orry.

- Oudin C. 1627. Le thresor des trois langues, espagnole, françoise, et italienne : auquel est contenuë l'explication de toutes les trois, respectivement l'une par l'autre. Genève, Jacques Crespin.
- Oudin C. 1655. Seconde partie des recherches italiennes et françoises, Paris, Antoine de Sommaville.
- Onfray M. 2014. Bestiaire nietzschéen. Les animaux philosophiques. Paris, Éditions Galilée.
- Ozanam J. 1694. Récréations mathématiques et physiques, qui contiennent plusieurs problèmes d'arithmétique, de géométrie, de musique, d'optique, de gnomonique, de cosmographie, de mécanique, de pyrotechnique, & de physique. Avec un traité des horloges élémentaires. 1st édition. Paris, chez Jean Jombert.
- Palsgrave J. 1530. Lesclarcissement de la langue françoise. [London, J. Haukyns].
- Paré A. 1575. Les oeuvres de M. Ambroise Paré,... : avec les figures, portraicts tant de l'anatomie que des instruments de chirurgie, , de plusieurs monstres. Paris, chez Gabriel Buon.
- Paré A. 1598. Les Oeuvres d'Ambroise Paré,... divisées en 29 livres...reueuës et augmentées par l'Autheur peu avant son décès. 5^e édition. Paris, chez la veufue Nicolas Buon.
- Pascal B. 1670. Pensées de M. Pascal sur la religion, et sur quelques autres sujets, qui ont esté trouvées après sa mort parmy ses papiers. Chez Guillaume Desprez, Paris.
- Platter F. 1608. Praxeos tractatus tertius et ultimus de vitiis. Basileæ, Typis Conradi Waldkirchii.
- Plenck J.J. 1776. Doctrina de morbis cutaneis. Viennæ, apud Rudolphum Græfferi
- Paulmier J. de. 1589. Traité du vin et du sidre. Caen, chez Pierre le Chandelier.
- Poille G. 1614. Le grand dictionnaire François-latin. Paris, chez Nicolas Buon.
- Pouvreau, S. 1663. Glossaire basque-français avec annotations d'Augustin Chaho et d'Antony Serpeille. Unpublished ms, housed at the *Bibliothèque nationale de France*.
- Power H. 1663 (1664). Experimental Philosophy, in three books. London, printed by T. Roycroft, for John Martin and James Allestry (reprinted and published in 1966 from the original edition, Johnson Reprint Co., New York).
- Pyrard F. 1619. Voyage... aux Indes Orientales, aux Moluques et au Brésil. Paris, chez Samuel Thiboust et la veuve Remy Dallin.
- Rabelais F. 1532. Les horribles et espoventables faictz et prouesses du très renommé Pantagruel Roy des Dipsodes, filz du Grand Géant Gargantua, composez nouvellement par maistre Alcofribas Nasier. Lyon, maison de Claude Nourry (published under the pseudonym Alcofribas Nasier, an anagram of François Rabelais).
- Rabelais F. 1546. Le tiers livre. Des faicts et dictz héroïques du bon Pantagruel. Paris, Chrestien Wechel.
- Rabelais F. 1552. Le quart livre. Des faicts et dictz héroïques du bon Pantagruel. Paris, Imprimerie de Michel Fezandat S. Hilaire.
- Ramos-e-Silva M. 1989. Giovan Cosimo Bonomo (1663-1696), discoverer of the etiology of scabies. *International Journal of Dermatology*, 37: 625-630. doi:10.1046/j.1365-4362.1998.00400_1.x
- Ratcliff M.J. 2009. The quest for the invisible. Microscopy in the enlightenment. Ashgate Publishing Ltd.
- Rey A. (Ed.) 1998. Dictionnaire historique de la langue française. Paris, SNL, Le Robert.
- Richelet P. 1680. Dictionnaire françois contenant les mots et les choses. Genève, J. H. Widerhold.
- Riethe P. 2006. Scabies und die Bedeutung der "Suriones" in den Handschriften Hildegards von Bingen. *Sudhoffs Archiv*, 90: 203-218.
- Rochot B. 1944. Les travaux de Gassendi sur Épicure et sur l'atomisme. Paris, Vrin.
- Rohault J. 1671. Traité de physique (t. 1). Paris, chez la Veuve de Charles Savreux.
- Romaní J., Romaní M. 2017. Causes and cures of skin diseases in the work of Hildegard of Bingen. *Actas Dermo-Sifiliográficas*, 108 :538-543. doi:10.1016/j.adengl.2017.05.015
- Roncagli R.A. 1987. The history of scabies in veterinary and human medicine from biblical to modern times. *Veterinary Parasitology*, 25: 193-198. doi:10.1016/0304-4017(87)90104-X
- Rondelet G. 1573. Methodus curandorum omnium morborum corporis humani. Parisiis, apud Carolum Macæum.
- Ronsard P. de. 1557. Les amours. Rouen, par Nicolas le Rous.
- Rouleau A., Gauthier H., Cormier M.C., Boulanger J.-C. 2006. Les termes des arts et des sciences dans le *Dictionnaire de l'Académie française*. Le discours des préfaces et sa réalisation dans le *Dictionnaire*. In Candel D., Gaudin F. (Eds). Aspects diachroniques du vocabulaire. Rouen, Publications de l'Université de Rouen et du Havre, pp. 185-208.
- Rulandus M., Martin Ruland the Younger known as. 1612. Lexicon alchemiae sive Dictionarium alchemisticum. Zachariæ Palthenii, Frankfurt.
- Rulandus M., Martin Ruland the Younger known as. 1893. A Lexicon of Alchemy (translated by A.E. Wait). London, John M. Watkins.
- Sartre J.-P. 1942. Les mouches. Paris, Gallimard.
- Scaliger J.C. 1557. Exotericarum exercitationum liber quintus decimus : de subtilitate, ad Hieronymum Cardanum. Lutetiae, ex officina typographica Michaelis Vascosani.
- Screech M.A. 1995. François Rabelais. Le tiers-livre. Édition critique commentée par M.A. Screech. Paris, Librairie Droz.
- Sennert D. 1634. Practicæ Medicinæ liber 5. Wittenberg, Schürer.
- Sennert D., Culpeper N., Cole A. 1661. The Art of chirurgery explained in six parts. London, Printed by Peter Cole and Edward Cole, Printers and Book-fellers.
- Serres O. de. 1600. Théâtre d'agriculture et mesnage des champs. Paris, Jamet-Métayer.
- Sève B. 1992. Pascal. Pensées (sur la religion). PhiloSophie, Académie de Grenoble.
- Sevenet G. 1936. Qu'est-ce que le "Pou d'Agouti" de la Guyane? *Bulletins de la Société de pathologie exotique et de ses filiales de l'Ouest africain et de Madagascar*, 29: 60.
- Sanromán D.L. 2009. Declaraciones de Georges Étiévant-Déclarations de Georges Étiévant (Edición bilingüe). Introducción, traducción y notas de Diego L. Sanromán. Madrid, Agitprov Editorial.

- Shimano S. 2018. Why do mites and ticks have the most number of valid species in Arachnida? TAXA, Proceedings of the Japanese Society of systematic zoology, 44: 4-14.
- Smith W.F. (transl.) 1893. Rabelais. The five books and minor writings (vol. 1). London, A.P. Watt.
- Sorel C. 1641. La vraye histoire comique de Francion. Paris, Pierre Billaine (anonymously published).
- Sorel C. 1663. La vraye histoire comique de Francion. Roven, chez Jean Berthelin (published under the pseudonym of Nicolas Le Moulinet).
- Stoers J. 1593. Le grand dictionnaire françois-latin, augmenté outre les precedents impressions d'infinies dictionnaires françois. Genève, Imprimerie de Jacob Stoer.
- Swammerdam J. 1669. Historia insectorum generalis, ofte algemeene verhandeling van debloedeloose dierkens. Utrecht, Meinardus van Dreunen.
- Tabarin, A. Girard known as. 1622. Recueil général des rencontres, questions, demandes et autres œuvres tabariniques avec leur réponse. Paris, chez A. de Sommaville.
- Tabarin, A. Girard known as. 1625. Recueil général des rencontres, questions, demandes et autres œuvres tabariniques avec leur réponse. Paris, chez Ph. Gavltier.
- Tacaille A. 2015. L'air et la chanson : les paroliers sans musique au temps de François I^{er}. Lettres Sorbonne Université, unpublished thesis.
- Tamizey de Larroque P. 1893. Lettres de Peiresc à sa famille et principalement à son frère. 1602-1637. Paris, Imprimerie nationale.
- Tamizey de Larroque P. 1896. Lettres de Peiresc. Tome quatrième. Lettres de Peiresc à Borriilly, à Bouchard et à Gassendi. Lettres de Gassendi à Peiresc. 1626-1637. Paris, Imprimerie nationale.
- Thesaurus Theutonicae Linguae. 1573. Antverpiae, ex officinal Christophori Plantini.
- Thibault J. 2003. L'air au quotidien. Paris, Odile Jacob.
- Thierry J. 1564. Dictionnaire françois-latin, Auquel les mots Francois, avec les manieres d'user d'iceulx, sont tournez en Latin. Paris, chez Jehan Macé.
- Thomas A. 1888. Poésies complètes de Bertran de Born. Toulouse, E. Privat.
- Trotula. 1550. Trotulae Curadarum egritudinum Muliebrium. Parisiis, Apud Ioannem Fucharium.
- Urquhart T. and Motteux P. (transl.) 1935. The works of Francis Rabelais (vol. 1). London, H.G. Bohn.
- Vaan M. de. 2016. Etymologie: zier. Neerlandistiek. Elektronisch tijdschrift voor de neerlandistiek. <https://www.neerlandistiek.nl/2016/09/etymologie-zier/>.
- Valmont de Bomare J.-C. 1775. Dictionnaire raisonné universel d'histoire naturelle, contenant l'histoire des animaux, des végétaux et des minéraux, et celle des corps célestes, des météores et autres principaux phénomènes de la nature, avec l'histoire... Paris, Chez Brunet. doi:10.5962/bhl.title.123684
- Venel G.F. 1753. CIRON. In: Diderot D. & D'Alembert (eds). Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers T. 3. Paris, chez Briasson, David, Le Breton & Durand.
- Vicq d'Azyr F. 1792. Encyclopédie méthodique. Système anatomique. Quadrupèdes. [. . .] Tome second. Paris, chez Panckoucke.
- Vidius V. 1586. De curatione generatim. Partis Secundae Sectio Secunda. Venetiis, apud Franciscum de Franciscis.
- Vigo G. da 1534. pera domini Ioannis de Vigo in chyrurgia. Additur chyrurgia Mariani sancti Barolitani Johannis de Vigo discipuli. Lugduni (Lyon). Jean Moylin.
- Waite A.E. 1894. The hermetic and alchemical writings of Hohenheim, called Paracelsus the great. Vol. 2. London, James Elliott and Co.