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## FERRARI AND THE PREGNANT LEMONS OF PIETRASANTA

Giovanni Battista Ferrari lived and worked for most of his life in Rome and had an extraordinary career there. Born in Siena, he came to Rome in 1604 to become a Jesuit. After a successful education at the Collegio Romano, he was made professor of Hebrew in the College. But almost immediately after the accession of Urban VIII to the Papacy in 1623, he changed directions in an almost totally unexpected way. He became horticultural adviser to the Barberini.<sup>1</sup> He told them how to plant their new gardens on the Quirinal,<sup>2</sup> and seems to have been the first to grow a number of new species in Rome. He claims the honour, for example, of having been the first successfully to cultivate the *Hibiscus mutabilis*, or what he called the Chinese Rose, in Italy.<sup>3</sup>

He told the Barberini how to plant their parterres, and he advised them on the planting of a large number of new species from America, Asia, and Africa. In 1633 he published the *De Florum Cultura*, notable not only for its wide horticultural knowledge, but also for its extraordinary combination of allegorical and botanical illustration. The illustrations of the *Hibiscus mutabilis* come from it.<sup>4</sup> So does Reni's illustration of the Indies handing seeds to Neptune to be transported to the Barberini gardens in Rome;<sup>5</sup> while in the background of Cortona's complex design illustrating Ferrari's story of the nymph Melissa, or that of the Dance of Vertumnus, also by Cortona, one may discern the newly built Palazzo Barberini.<sup>6</sup>

<sup>1</sup> On Ferrari, see D. FREEDBERG, "From Hebrew and gardens to oranges and lemons. Giovanni Battista Ferrari and Cassiano dal Pozzo", in F. SOLINAS, ed., *Cassiano dal Pozzo, Atti del Seminario Internazionale di Studi*, Rome, De Luca, 1989, pp. 37-72, as well as the other studies cited in the following notes.

<sup>2</sup> Cf. *Aedes Barberinae ad Quirinalem, a Comite Hieronymo Tetio Perusino Descriptae*, Rome, Mascardi, 1642, especially p. 38.

<sup>3</sup> G.B. FERRARI, *De Florum Cultura*, Rome, Paulino, 1633, pp. 479 and 468-501 *passim*.

<sup>4</sup> FERRARI, *De Florum Cultura*, 1633, pp. 485, 489, 491, 491, 493, 497 and 499 all illustrate the tree and various blooms and parts of Ferrari's *Rosa sinensis*.

<sup>5</sup> *Ivi*, p. 377.

<sup>6</sup> *Ivi*, pp. 517 and 477 respectively.

But of course it was the botanical plates by Cornelis Bloemaert that were of most importance in the present context. A good and typical example is provided by the *Flos indicus e violaceo fuscus radice tuberosa*, named in Ferrari's typically cumbersome manner,<sup>7</sup> and which Linnaeus in turn renamed the *Ferraria undulata* after him. Just as representative of Bloemaert's fine and attentive illustrations are the seeds and the sections of the seed-pod of the *Rosa sinensis*, the very first botanical plates ever made with the aid of a microscope.<sup>8</sup> While Ferrari's botanical knowledge was often defective (he thought the *Ferraria undulata* came from the Indies when in fact it came from the Southwestern Cape of Southern Africa), he was absolutely up to date in his knowledge of new horticultural and scientific developments and possibilities.

But what about citrus fruit, since this is the subject of the present volume? Almost immediately Ferrari finished writing the *De Florum Cultura*, which was an immensely successful book, with a lovely translation by Ludovico Aureli appearing in 1638,<sup>9</sup> he turned to his next project. It was a project, the largest yet conceived on this subject, about oranges, lemons, and citrons. But the importance of the *Hesperides sive de Malorum Aureorum cultura* which finally appeared, after years of long labour, in 1646,<sup>10</sup> goes far beyond the chiefly Roman focus of the book on flowers. Certainly, as in the case of the *De Florum cultura*, the book is remarkable enough for the intimate knowledge Ferrari displayed of Roman gardens, gardeners, and of the plants they grew. He knew them all. He could describe the gardens of all the great families of Rome, as well as now lesser-known figures like Giovanni Battista Martelletti, Fabrizio Sbardoni and the tantalizingly mysterious figure of Tranquillo Romauli; he illustrated the *orangeries* and the *agrumeti* of people like the Aldobrandini and Marcello Cardinal Lante; and he knew the species of fruit cultivated by the Barberini, the Pii and the Mattei, amongst many others. But at the same time he had a vast knowledge of gardens and orangeries all over the rest of Italy as well – including Pietrasanta, as we shall shortly see. But how?

<sup>7</sup> *Ivi*, p. 175. For notes on the significance of colour terms in pre-Linnaean classification, see D. FREEDBERG, "The Failure of Colour", in *Sight and Insight. Essays on Art and Culture in honour of E.H. Gombrich*, J. Onians ed., London, Phaidon, 1994, pp. 245-262. For more on Ferrari's approach to nomenclature and taxonomy, see the article by me cited in note 13 below.

<sup>8</sup> FERRARI, *De Florum Cultura*, 1633, pp. 497 and 499. On these see also L. TONGIORGI TOMASI, A. FERRARI, "Botanica Barocca", in *Gazzetta del bibliofilo* ["semestrale fuori commercio riservato agli abbonati a FMR"], V, 17, Winter/Autumn 1986, pp. 2-15, as well as my forthcoming "Naming the Visible: Galileo, Foucault, and the History of Natural History".

<sup>9</sup> G.B. FERRARI, *Flora ovvero cultura di fiori*, Rome, Facciotti, 1638.

<sup>10</sup> I.B. FERRARIUS, *Hesperides sive de Malorum Aureorum Cultura et Usu Libri Quatuor*, Rome, Herman Scheus, 1646.

First let us briefly look at the book itself. Apart from several plates illustrating the archaeology of citrus fruit, it basically follows the same plan as the *De Florum Cultura*. In addition to the title-page by Cortona, there are seven allegorical plates, all by the chief young Roman artists of the time, illustrating stories made up by Ferrari himself. The illustrations after Albani, Poussin, Lanfranco and Reni show the arrival of the various forms of the apples of the Hesperides in Rome, Lake Garda, Naples, and Genoa respectively; while those after Sacchi, Romanelli, and Domenichino depict Ferrari's complicated and long-winded tales apparently "explaining" the origins of a group of teratological specimens of citrons, lemons, and oranges. Sacchi's design illustrates the transformation of the youth Harmonillus – who had been transported to Apollo's singing school, or *Ephebeum* – into a citron tree bearing multiform digitated fruits; Romanelli's shows the way in which Harmonillus's mother Tirsenia was changed into a lemon tree bearing the kinds of "pregnant" fruits that, as will be demonstrated below, grew around Pietrasanta; while Domenichino's depicts the transformation of Harmonillus's sister Leonilla into an *Aurantium distortum*.<sup>11</sup> These stories, as Ferrari himself explicitly stated, offered alternative poetic explanations to the more complex scientific ones – or, as Ferrari would have called them, the philosophical ones.<sup>12</sup> The latter, indeed, are rather rudimentary in the *Hesperides*. But we shall return to all this shortly.

Once again, the botanical plates are chiefly by Cornelis Bloemaert (though a few are apparently by Dominique Barrière).<sup>13</sup> While there were two or three woodcuts of citrus fruit in Clusius and Matthioli, for example, there is nothing in the history of botanical illustration to prepare us for the concentration on one genus that we see here. There were only twenty botanical plates in the *De Florum Cultura*, but eighty in the *Hesperides*; and they are of an unprecedented precision and attentiveness to detail. Most plates show both the whole fruit and the half; some include flowers as well. Never had the insides of citrus fruit been depicted with such care, never had the surfaces of their peel been

<sup>11</sup> See D. FREEDBERG, "Ferrari on the Classification of Oranges and Lemons", in *Documentary Culture. Florence and Rome from Grand-Duke Ferdinand I to Pope Alexander VII*. Papers from a Colloquium held at the Villa Spelman, Florence, 1990 (Villa Spelman Colloquia, 3), E. Cropper, G. Perini, F. Solinas edd., Bologna, 1992, pp. 287-306, for a fuller outline and discussion of these tales and the illustrations accompanying them.

<sup>12</sup> FERRARI, *Hesperides*, 1646, pp. 67 and 264, as well as my discussion in the article cited in the previous note.

<sup>13</sup> For a discussion of the botanical plates in the *Hesperides*, as well as the engravers of the architectural and antiquarian plates (Camillo Cungi, Filippo Gagliardi and Francesco Ubaldini) see D. FREEDBERG, E. BALDINI (with the assistance of G. Continella and E. Tribulato), *The Paper Museum of Cassiano dal Pozzo. A Catalogue Raisonné. Series B. Natural History. I. Citrus Fruits*, London, Harvey Miller, 1997.

shown with such obsessive attention to every kind of texture, rugosity, lump, and protuberance. The quantity alone of these illustrations is sufficient to indicate the scale of Ferrari's contribution to the classification of citrus fruit, and his insistent taxonomic drive is borne out even further by his text. This is accompanied by an extraordinary concern with nomenclatural precision, as Ferrari attempts time and time again to determine the best scientific name for the many vernacular names of particular fruit. His own chief contribution, it seems to me, was to take the fundamental step of dividing the whole of the family into three genera – citrons, oranges, and lemons. And he made sure that all species, however complex, could be made to fit into these groups. He was not deflected by the problem of varieties, teratological specimens, and hybrids, as he sought to include every possible kind of citrus fruit into his vast compendium.<sup>14</sup>

One of the great glories of the *Hesperides* is the sheer concentration on direct observation: on every page the descriptive intensity shines through, with Ferrari making it clear, over and over again, that what he describes he has seen first-hand, or that the information has come to him from someone who has himself seen the material under discussion. As we should expect from someone working in the direct orbit of Galileo's friends in the Accademia dei Lincei, direct visual observation replaces the old reliance on traditional authority, and this, of course, is accompanied by the magnificent illustrations which allow this kind of information to be communicated directly to readers of the work.

*Everything* is in this book, from methods of planting, manuring, irrigation, shelter, and transportation, to the making of sweetmeats, medical remedies and even lemon sherbert. If you wanted to know a remedy for piles, you would find it here; so too for menstrual pains, cholera, apoplexy, gallstones, hair-loss, impetigo, dysentery, headaches, intestinal worms, excessive menstrual bleeding, and – of course – bad breath. Citrus fruit, one might have thought, could do almost anything. Certainly, Ferrari knew about the orangeries of Rome, but he also knew about those of the Farnese in Parma, the Doria in Genoa, and the Spanish aristocracy of Naples.

All in all, then, the book was a splendid combination of the *dulcis* and the *utilis*. Its stories and its style made the superabundance of information go down very easily, just as Ferrari explicitly intended. But where did he get all his information from, and how could an ordinary Jesuit father at the Collegio Romano have afforded to publish such a sumptuous book, one of the landmarks of Baroque book illustration?

<sup>14</sup> On all this, see D. FREEDBERG, "Ferrari on the Classification of Oranges of Lemons", as cited in note 11 above.

After all, it was not only that the artists who supplied the allegorical illustrations – Pietro da Cortona, Albani, Sacchi, Poussin, Romanelli, Lanfranco, and Domenichino – who would have had to be paid; it was also the cost of the engraving of the other plates, to say nothing of the drawings on which they were based.

It was precisely the rediscovery of the preparatory drawings in the Royal Library at Windsor Castle that opened the way to an understanding of the broader context of Ferrari's citrological investigations. At the same time it became evident that his work could be inserted into the most remarkable network of scientific and artistic patronage of seventeenth century Rome.<sup>15</sup> The drawings for the citrus plates in the *Hesperides* turned out not to be in black chalk alone, as one might perhaps have expected, but in watercolour (cf. figs. 4 and 6). They testify to the deep interest in colouristic issues that emerges from the pages of Ferrari's book, as well as in so much other botanical and zoological works of the time. The best ones were made by the otherwise forgotten Vincenzo Leonardi, whom Ferrari praises to the skies on p. 67 of his book. All the drawings turned out to come from the collection of the great scholar, correspondent, and patron of art, Cassiano dal Pozzo, who lived in Rome from 1622 until his death in 1657.<sup>16</sup> And it was Cassiano who seems to have played a crucial role not only in the funding of the *Hesperides*, but also in the gathering of the information for it. Amongst the volumes of his correspondence now happily gathered together in the Accademia dei Lincei in Rome, there is also a manuscript entitled *Notizie Diverse del Signor Abate Cavaliere Cassiano dal Pozzo, Originale spettante a Agrumi et Historia d'essi; stampata in Roma del P. Gio. Battista Ferrari della Compagnia di Giesù sotto il titolo d'Hesperides con il disegno della Veduta della Riviera di Salò*.<sup>17</sup> In fact, this is not a single manuscript, but rather a large compilation of letters, drafts, plans, a couple of drawings, and documents – all related in one way or another to Ferrari's *Hesperides*. The very first document, for example, is the contract with the publisher, Herman Scheus, and it is signed by both Ferrari and Cassiano. The contract makes it clear that Cassiano was responsible for supplying the artist's plates for the allegorical illustrations, as well as for arranging the financing of the book as a whole.

<sup>15</sup> See D. FREEDBERG, "Cassiano dal Pozzo's Drawings of Citrus Fruits", in *Il Museo Cartaceo di Cassiano dal Pozzo. Cassiano Naturalista, Quaderni Puteani*, I, 1989, pp. 10-36 and IDEM, "Cassiano and the Art of Natural History", in [Cat. Exhib.], *The Paper Museum of Cassiano dal Pozzo*, The British Museum, London, 1993, pp. 141-54.

<sup>16</sup> On the provenance of the drawings, see H. MCBURNEY, "The 'fortuna' of Cassiano dal Pozzo's Paper Museum", in [Cat. Exhib.], *The Paper Museum of Cassiano dal Pozzo*, London, The British Museum, 1993, pp. 261-66.

<sup>17</sup> Rome, Biblioteca dell'Accademia Nazionale dei Lincei, *Archivio dal Pozzo*, ms 39.

But Cassiano's role went much further than this, for much of the rest of the manuscript contains letters from people all over Italy, replying to his requests, made on behalf of Ferrari, for information about the local citrus fruit. Thus, in response to the list of questions drawn up jointly by him and Ferrari, there are letters from people like Alessandro Gaetano, Duke of Sermoneta, who provided information about the agrumi of Sicily, from Silvestro Morosini about those around Treviso, from Scipione Barone in Tropea, from Alfonso Bonnini in Toscanello, from the Capuchin fathers in Naples about the oranges of Sorrento, and from a host of now wholly forgotten figures, including the loquaciously informative Cattaneo about San Remo and Nervi. Indeed, tucked in at the very end of the manuscript is a magnificent drawing of the Riviera di Nervi by the Flemish artist Cornelis de Wael, which Cattaneo sent to Cassiano to accompany his account of the lemons which grow on the lush coastal hillsides there. There are reports from Reggio in Calabria, from the Riccardi Gardens in Via Valfonda in Florence, from Amalfi, Lake Garda and San Remo. And of course Cassiano could always rely for information of the most detailed kind about the citrus fruit of Provence sent to him by his dear friend, the famous erudito Nicolas Claude Fabri de Peiresc.<sup>18</sup>

It is clear from all of this that the material was intended for Cassiano as much as for Ferrari. There are even some indications within the manuscript, (as also in Ferrari's correspondence with Cassiano), that where there were taxonomic problems, or where he was unable to see a specimen himself, Ferrari relied on Cassiano's descriptions of the fruit. If Cassiano was no great analyst of scientific information, he was one of the great observers and describers, as we see above all from his short ornithological treatises,<sup>19</sup> and the many notes he prepared on birds, which he collected for Gian Pietro Olina's *Uccelliera* of 1622,<sup>20</sup> and for which Vincenzo Leonardi now turns out also to have done the preparatory illustrations.<sup>21</sup>

<sup>18</sup> All this discussed at much greater length and with further references in my forthcoming "Cassiano, Ferrari, and their Drawings of Citrus Fruit", in FREEDBERG, BALDINI *et al.*, *The Paper Museum of Cassiano dal Pozzo... I. Citrus Fruits* (as in note 13 above).

<sup>19</sup> On these see H. McBURNEY, "Cassiano dal Pozzo as Ornithologist", in *Cassiano dal Pozzo's Paper Museum*, II (*Quaderni Puteani* 3), Milan, Olivetti, 1992, pp. 3-22; and EADEM, "Cassiano dal Pozzo as Scientific Commentator", in *Documentary Culture in Florence and Rome Grand-Duke Ferdinand to Pope Alexander VII* (Villa Spelman Colloquia, 3), E. Cropper, G. Perini, F. Solinas eds., Bologna, Nuova Alfa, 1992, especially pp. 355-58.

<sup>20</sup> G.P. OLINA, *Uccelliera, ovvero discorso della natura, e proprietà di diversi uccelli, e in particolare di que' che cantano, con il modo di prendergli, conoscerli, allevargli, et mantenergli. E con le figure cavate dal vero, e diligentemente intagliate in rame dal Tempesta, e dal Villamena*, Rome, Andrea Fei, 1622.

<sup>21</sup> OLINA, *Uccelliera*, *Avviso a chi legge*, on sig. A4v. ("Ma havendo doppo fatto rifare tutte le sudette figure a bulino, cavate da disegno fatto assai diligentemente da Vincenzo



So much for the background. To the botanist, perhaps one of the most striking things about the *Hesperides* is its extraordinary concentration on hybrid and teratological specimens.<sup>22</sup> In fact, some of the most beautiful drawings by Leonardi illustrate digitated or pregnant fruits (e.g. figs. 4 and 6). Of the 101 surviving drawings, 27 are of hybrids and at least 26 of teratological specimens.<sup>23</sup> One of Ferrari's main struggles in his book was to find ways of accounting for such specimens or ways of classifying a huge variety of hybrids. For the digitated fruits he failed completely, not realizing that the phenomenon was chiefly attributable to infestation by the *Aceria sheldoni*.<sup>24</sup> But where scientific – or, as he put it, philosophical – explanation failed (which it often rather obviously did), he turned to poetry, or to the rhetorical mode, at which, as Professor of Rhetoric at the Collegio Romano, he excelled. Thus, when it comes to the *Malum citreum digitatum multifforme* (fig. 1), he offers a weak two-line explanation of how it acquired its digitated form, and then five pages of poetical narrative in which he tells a charming and sentimental tale of the sad transformation of the young Harmonillus. Persecuted by his friends in Apollo's Ephebeum and by the old crones who looked after them, the mellifluous singer cried so much that he watered himself and turned into a tree bearing digitated citrus fruit.<sup>25</sup>

This is the story which Sacchi illustrated.<sup>26</sup> He showed the beginning of Harmonillus's transformation into just such a tree. Already rooted to the ground, the young man's hands, reaching out to his old tutor Cleomedes, begin to turn into exactly the fruit which Ferrari began by discussing, the *Malum citreum digitatum multifforme*, as well, it so happens, another fruit as well. This is the *Limon a rivo seu rio*, which grew chiefly on the Ligurian riviera, and which produced both normal and teratological digitated specimens. Ferrari concludes his tale with a typical rhetorical flourish, noting that this most profuse of trees, once plucked by human hands, turns its own fruit into hands as well.

But what about Pietrasanta? Ferrari did not neglect it either. Indeed, the specimens which he discusses from the region offer us

Leonardi..."); the only plate in which his name appears is the one facing p. 63, but it has also now been revealed on the verso of a drawing in the Royal Library, Windsor Castle, of a female Italian sparrow for the Uccelliera (Windsor, RL 27628, *Natural History of Birds*, fol. 30. Signed on the verso, top edge of the sheet, *Vin Leonardi F. 1629*).

<sup>22</sup> See especially the essay by E. Baldini in FREEDBERG, BALDINI *et al.*, *The Paper Museum of Cassiano dal Pozzo... I. Citrus Fruits* (as in note 13 above).

<sup>23</sup> See *ibidem*.

<sup>24</sup> E. BALDINI, "Polimorfismo e Teratologia dei Frutti nel Genere Citrus: Riscontri Storici e Attualità Biologiche", *Atti della Accademia delle Scienze dell'Istituto di Bologna, Classe di Scienze Fisiche, Rendiconti*, serie XIV, tomo VI, 1989, pp. 1-35.

<sup>25</sup> FERRARI, *Hesperides*, 1646, pp. 81-88.

<sup>26</sup> *Ivi*, p. 88.

further insight into the central problems of his book, and of the study of botany in the important and still much too neglected context of the natural historical researches of Federico Cesi and the first Accademia dei Lincei. As I have just noted, one of Ferrari's main concerns in the *Hesperides* was to arrive at a comprehensible classification of all citrus fruits; and the chief obstacles to an adequate taxonomy were presented by hybrid and teratological forms. And so, after listing the varieties of fruit which could straightforwardly be classified as lemons, he arrives at the difficult problem of the citrated lemons, the sub-species he called *Limon citratus* and which now go under the name of *Citrus limonimeditica* (Lush.). The very first of these which Ferrari discusses is the *Limon citratus primae notae laevior* (fig. 2).<sup>27</sup> And where does this curious long-nipped form come from? From around Florence, but chiefly from Pietrasanta, where, as Ferrari notes with his usual nomenclatural appetite, they are called *cedrini*.<sup>28</sup>

But what is most remarkable about the important citrated lemons from Pietrasanta is that they often appear in pregnant forms, that is, where one fruit actually includes another, as may be seen particularly in the remarkable double lemon which, as Ferrari notes, grew in a field just outside town (figs. 3 and 4).<sup>29</sup> The whole passage about the citrated lemons of Pietrasanta is of such interest that it is worth reproducing here (fig. 9, with Italian translation in Appendix) That Cassiano too was especially taken with the phenomenon of the pregnant fruit that came from Pietrasanta emerges from the manuscript in the Accademia dei Lincei, in the course of a long discussion headed "Cedrato doppio venuto da Pietrasanta".

"Non si può tra tutti gl'agrumi vedere frutto più degno d'ammirazione di questo del quale me vennero diverse volte inviate da un tale Campana gentiluomo Lucchese parente del S. Antonio Minutolo, Segretario di memoriali [?] del Eminentissimo Signore Cardinale Francesco Barberini".<sup>30</sup>

Four specimens had been sent to him in a box from Pietrasanta to be planted in the Cardinal's garden in the course of 1637-38. "Scorgersi dentro nel mezo di questo cedrato un altro cedrato con la scorza perfettamente quella il quale tagliato per mezo mostra il suo agro".<sup>31</sup>

<sup>27</sup> *Ivi*, p. 265; Leonardi's drawing survives in the Royal Library, Windsor Castle, Inv. No. R.L. 19364.

<sup>28</sup> FERRARI, *Hesperides*, 1646, pp. 263-64.

<sup>29</sup> *Ibidem*, illustrated on p. 269 and drawn by Vincenzo Leonardi, Windsor, Royal Library, Inv. No. R.L. 19363.

<sup>30</sup> Rome, Biblioteca dell'Accademia Nazionale dei Lincei, Archivio dal Pozzo, ms 39, fol. 66.

<sup>31</sup> *Ivi*, fols. 66-66v.



Cassiano is clearly referring to the fruit illustrated here. And in his own account, Ferrari gives careful instructions on how to cut such pregnant fruits, so that the much sweeter and more tender inner fruits may be revealed<sup>32</sup> – just as shown in our illustrations. Here one can see, through a kind of triangular “window” of this globose fruit, another fruit completely inside it.

But how does Ferrari account for the phenomenon of pregnancy? He does so in the course of his next chapter, on an even more spectacularly pregnant or, as he put it, superfetated fruit (figs. 5 and 6).<sup>33</sup> The poetical explanation is charming enough, as we may deduce from the illustration of the next stage in his *Harmonillus* narrative, illustrated by Romanelli (fig. 7).<sup>34</sup> Here we see how Tirsenia received the news of her son *Harmonillus*'s death (by transformation into a tree that carried digitated specimens). She is shown receiving one of the fruits that had recently grown on the transformed *Harmonillus* and brought to her by the swift messenger, *Ergastus*. And it is precisely the second kind of citrated lemon from Pietrasanta that Tirsenia (herself now changing into a citrated lemon tree) clasps, in such a way that her fingers fit quite precisely into the first layer of opened segments, around the fruit included inside it. It is a moving reminder of how Tirsenia herself once carried her son in her womb, says Ferrari in a striking allusion to the problem of pregnancy in fruit. Although the *next* design in the *Hesperides*, by Domenichino, was made to accompany a much later point in the extended poetic narrative that forms the poetic leitmotif of the book as a whole, it too shows the same fruit, lying across the bow at the bottom of the scene (fig. 8).<sup>35</sup> And this, Ferrari notes at the end of his tale about the transformation of Tirsenia, is the very fruit that came from Pietrasanta, from which it was first carried off to Florence and from there to grace other *pomaria* and *agrumeti*.<sup>36</sup> The drawings of this fruit are perhaps the most beautiful in all the corpus of surviving works by Vincenzo Leonardi, and they show specimens that originally came from Pietrasanta. No wonder Cassiano said of them “Non si può tra tutti gl'agrumi vedere frutto più degno d'ammirazione di questo”.

It would have been pleasant to end here; but before doing so it may be worth adding something very briefly about Ferrari's own scientific or “philosophical” explanation, and about the significance of all this for the

<sup>32</sup> FERRARI, *Hesperides*, 1646, p. 264.

<sup>33</sup> *Ivi*, p. 271 (also discussed by Ferrari on pp. 263-64); I do not know the present location of the drawing by Leonardi illustrated here; it was sold at the Boone sale, Sotheby's (New York) sale on 16 and 17 September 1988, lot 147.

<sup>34</sup> FERRARI, *Hesperides*, 1646, p. 276.

<sup>35</sup> *Ivi*, p. 418.

<sup>36</sup> *Ivi*, p. 275.

history of natural history. Ferrari claims that these examples of one lemon within another are the result of very fertile soil, which cause the seeds to divide into parts, and produce a variety of foetuses, which a lascivious nature brings together in various forms.<sup>37</sup> In the case of the pregnant lemons from Pietrasanta it also has to do, he says, with the relatively colder temperatures that result from the winds blowing off the nearby sea.<sup>38</sup> All this may be rather too rudimentary and inadequate and way off the scientific mark; but in his unprecedented focus on the problem of hybridization and teratology, Ferrari's work may usefully be allied with some of the fundamental natural historical researches of Federico Cesi and his closest friends.

If we turn to Cesi's vast attempt to classify all of the plant world, the *Tabulae Phytosophicae*, or to his even more ambitious to put all of nature in order, the great outline plan entitled the *Speculum Rationis* in Naples, we find one overriding concern. This is the problem of how to deal with species that were of a middle nature, as Cesi put it, intermediate between one species and another, or apparently on the borderline between two species, or partaking of the character of two or more species. The problem of anomaly was evidently closely allied to this; and so in the *Tabulae Phytosophicae* we find a whole section on plants that were of a *mezza* or *mezzana natura*, and in the *Speculum Rationis*, a main division headed *De mediis naturis in universo*. Here would be included species of a doubtful or ambiguous nature, *de ancipiti natura, seu de ancipiti specie, seu ambiguis*. And the next division, of course, was that entitled *De Plantis imperfectis*, "Quo in genere toto plantarum insigni aliquo defectu vel nota peculiari monstruosa mirabiliaque existunt..."<sup>39</sup> It is only in the light of such preoccupations that one can understand Ferrari's own

<sup>37</sup> "...uni facile pomo alia ingeneratur, prout partes easdem vario lusu lascivens natura digesserit" (Ferrari, *Hesperides*, 1646, p. 265). With this compare the modern view that such cases of one fruit included within another, or "superfetation", as Baldini calls it, are caused by "an ontogenetic deviation occurring during the course of floral organogenesis" (E. BALDINI, M.C. TAGLIAFERRI, "Matrici Inedite dell'Iconografia dendrologica di Ulisse Aldrovandi", *Accademia delle Scienze dell'Istituto di Bologna. Classe di Scienze Fisiche. Memoria presentata il 22 maggio 1990*, p. 25).

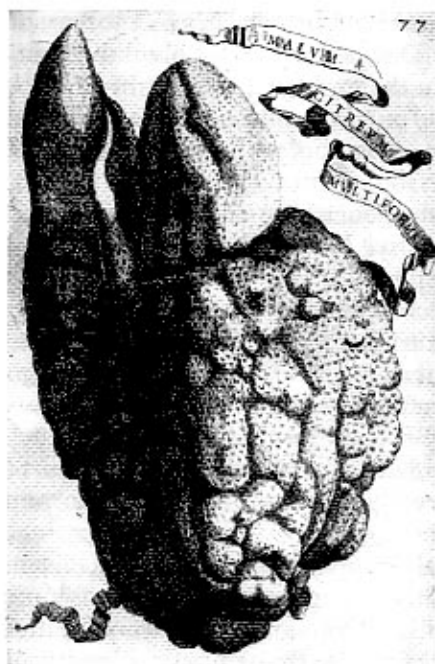
<sup>38</sup> "Sed in extrema Hetruria Petrae sanctae oppido adiacens ager, proximi maris e gelido halitu mire fertilis citratos limones limonibus alijs gravidos frequenter parit..." (FERRARI, *Hesperides*, 1646, p. 263).

<sup>39</sup> For the text of Naples, Biblioteca Nazionale, ms XII.E.4, see G. GARRIELI, "L'Orizzonte Intellettuale e Morale di Federico Zeri Illustrato da un suo Zibaldone Inedito", in *Contributi alla Storia dell'Accademia dei Lincei*, Rome, Accademia Nazionale dei Lincei, 1989, pp. 27-78. The fundamental and wide-ranging issues of classification that emerge from this manuscript and the *Tabulae Phytosophicae* (of which only a portion was published in the great "Tesoro Messicano" of the Lincei, the *Rerum Medicarum Novae Hispaniae Thesaurus* of 1628-51) are ones which I discuss at much greater length in the history I am preparing of the first Accademia dei Lincei.

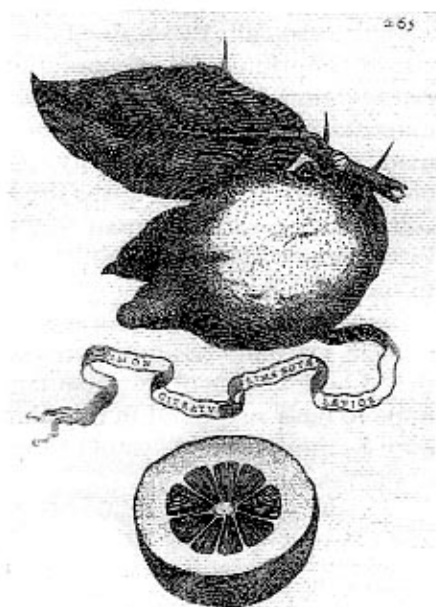
concern with fruit that seemed to be neither one species or another, or combinations of two, or even three. One of Cesi's great breakthroughs was his clear-headed realization that the problem of the ambiguous or borderline or intermediate case would only be resolved by close attention to the reproductive systems of plants. In this respect he was one of Linnaeus's most important predecessors.

But Ferrari's explanations of the generation of both normal and abnormal and hybrid fruits were, as we have seen, very much more rudimentary than Cesi's heart-stoppingly persistent attempts in this domain. He simply did not grasp as clearly as Cesi did that the secret to classification lay in the examination of both the principles and the organs of reproduction. He noted them, but he did not know how to go beyond surface description and careful counting of seeds (though this in itself was no mean step, as Michel Foucault pointed out with reference to the classical age of science in general). With the old means of investigation, straightforward observation and careful description, one could go so far and no further.

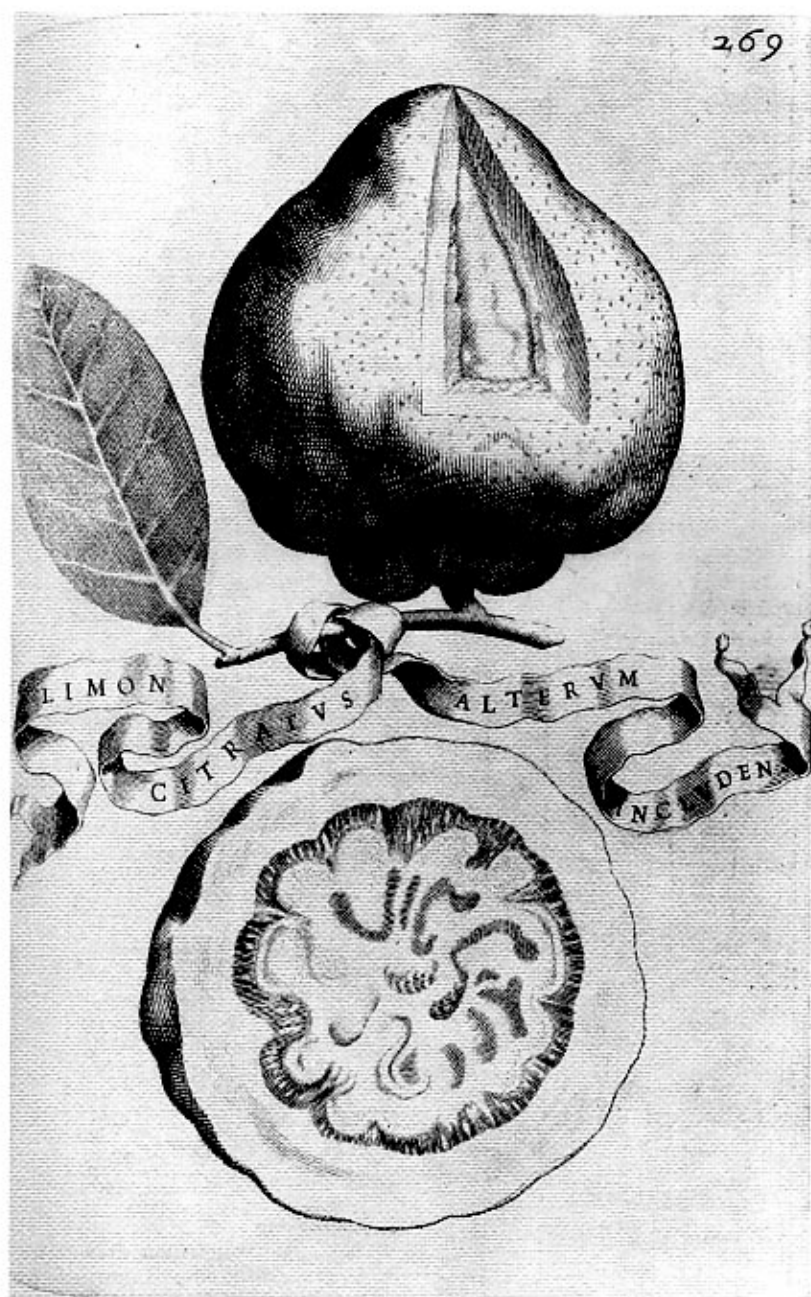
But with the involvement of Galileo in the circle of the Lincci, one new instrument came to the fore. This, of course, was the microscope. Cesi and his friends Francesco Stelluti and Johannes Faber were the first to use this instrument, and Ferrari was the first to have a botanical illustration made with its aid. But Ferrari lacked the tenacity and insight to pursue his investigations anything like as far as did Cesi and Stelluti in their heroically determined examination of the parts of a bee – the very first printed microscopic image – and in their extraordinary examinations of the reproductive systems of ferns and fungi in the manuscripts still preserved in the Institut de France. It was they who made the real and still not fully appreciated contribution to the history of the life sciences. But it was the Jesuit father from Siena, working in collaboration with the great Roman patron and *erudito* Cassiano dal Pozzo, who managed to publish the largest botanical work yet devoted to the examination of a single genus of plants. It was a book of great taxonomic and nomenclatural interest, and, above all, a book in which science, art, and literature were combined with such skill and a charm that it became one of the great landmarks of botanical literature. As I hope to have suggested in this contribution, it is still worth reading – even by those who still want to know more about the forgotten *agrumi* of Pietrasanta.



1. *Malum citreum multifforme*, from G.B. FERRARI, *Hesperides*, 1646, p. 77



2. *Limon citratus primae notae*, from G.B. FERRARI, *Hesperides*, 1646, p. 265



3. *Limon citratus alterum includens*, from G.B. FERRARI, *Hesperides*, 1646, p. 269



7. C. BLOEMAERT after F. ROMANELLI, *The Transformation of Tiresias*, from G.B. FERRARI, *Hesperides*, 1646, p. 276



8. C. BLOEMAERT after DOMENICHINO, *The Transformation of Leonilla*, from G.B. FERRARI, *Hesperides*, 1646, p. 418



## Liber Tertius.

263

*Limon citratus primæ notæ. Cap. XIX.*

**L**IMONVM, quotquot sunt, nobilissimum sua-  
uissimumque, & incitium (vt aiunt) citri filium,  
qui de citrei odore similique indole citratus dicitur,  
hetruscus Petre sanctæ ager, Liguriæ contiguus,  
cedrini vocabulo parit. Inde translaturum alit  
duplici discrimine laudatissimum laudum al-  
trix omnium Florentia. Vocat hæc alterum à mi-  
nuiore scabritia læuem: alterum verò ab eminentioribus  
tuberculis scabrosum, & vernaculo nomine à rudis asperique  
trunci effigie bronconem. Non vna priori pomo magnitudo.  
Florentino, quàm romano in solo plerunque maioris est  
incrementi, & lumina nonnunquam tumorem ac pondus  
æquat. Forma eidem sæpius oblonga, & magna ex parte  
tumens: inde paulatim gracilescens, prolixoque fastigio  
mucronata: interdum etiam papillato apice mammosa:  
vel innatis pomis alijs, vterum grauidantibus, rotunda.  
Curtis iam satis maturo aurea, tenera & perspicua,  
punctim lacunosa, verruculis plerunque scabra,  
rugisque caperata, & aromatum odorato acumine  
iucunda: mandenti etiam cum reliquo pomo non ingrata.  
Carnosa pars duum ferme digitorum gustu prætenera & suavis:  
succosa, verò denis vndenisue loculosis membranis  
comprehensa & subacidula. Semina serè vicena.  
Delicatae habitudinis arbor calores ac frigora præformidat:  
ad sena cubita excrefcit: assiduo flore ver agit æternum:  
folio vestitur satis prolixo, crasso, bene virente ac sæpe  
leuiter crispo. Eadem fructus promiscuè simplices,  
alioque alium includente multiplices præbet: qui tamen  
inuicem auelli possint. Sed in extrema Hetruria Petre  
sanctæ oppido adiacens ager, proximi maris egelido  
halitu mirè fertilibus citratos limones limonibus alijs  
gravidos frequentius parit. His forma sæpe obtusior,  
interdum quoque turbinator. Eorundem aliquo à summo  
ad imum in plura segmina summatim conciso, limon  
alter interior apparet. Et hic medius si dissecetur:  
post auream cutem, candidamque carnem albida medulla  
sefe in conspectum dabit, tertium non rarò pomum,  
pomine rudimentum circumplexa. Quinetiam extimi è  
pomi fenestrata incitura minorum nonnunquam limonum  
congesta pullities introspicitur. Interdum autem suæ  
spontis hiatu multiplici patefcens exterioris pomi  
vterus alios limones, tanquam fetus inclusos coherentesque  
fraterculos parturit, quia patefcit: nec tamen parit,  
quia non excludit. Animaduersum præterea est, id genus  
limonem cæteris odoratius vibrare, intimumque fructum  
extimo teneriorem esse ac suauio-

Vnde caras.

Vbi laudatissimum.

Nominis se  
gecit du-  
plex.Aliter alium  
sepe inclu-  
dit.

## APPENDIX

*Limone cedrato di prima qualità\**

La terra etrusca di Pietrasanta, confinante con la Liguria, genera con l'appellativo di cedrino il più prelibato e dolce dei limoni, quanti ce ne sono, nato dall'innesto (come dicono) del cedro, che per il suo profumo e per la natura simile viene chiamato cedrato. Da lì trapiantato, Firenze, nutrice di tutti i limoni, fa crescere il più degno di lodi con una duplice denominazione. Questa chiama l'uno liscio per la minore ruvidità, l'altro ruvido, in verità, per i bitorzoli più sporgenti e con il termine dialettale 'broncone' per l'aspetto di un tronco ruvido e ispido. Non c'è frutto prima di esso che abbia avuto simili proporzioni. Cresce meglio nel terreno fiorentino che in quello romano e talvolta eguaglia il gonfiore e il peso della lumia. Piuttosto spesso assume una forma allungata e in gran parte gonfia, quindi si assottiglia un poco ed è appunto nella parte superiore. Talvolta ha anche la forma di mammella per la punta a capezzolo oppure rotonda per altri frutti non ancora nati che gonfiano l'utero. La buccia già dorata per la giusta maturazione, tenera e chiara, piena di cavità in punta, per lo più ispida per i piccoli porri, aggrinzita per le rughe e dolce per la punta profumata degli aromi, è gradevole a mangiarsi anche con un altro frutto. La parte carnosa quasi di due dita è molto tenera e dolce al palato: succosa in verità la parte rivestita di dieci o undici membrane a cellette e acidula. Contiene quasi venti semi. L'albero di delicata natura teme terribilmente il caldo e il freddo: cresce fino a sei cubiti. La primavera lo agita sempre con una persistente fioritura; si riveste di una foglia abbastanza lunga e larga, spessa, di un bel colore verde e di frequente leggermente crespa. Il medesimo albero offre insieme frutti semplici e molti che racchiudono un frutto nell'altro, che tuttavia possono essere separati da ambo le parti. È pur vero che nell'estrema Etruria la campagna adiacente la città di Pietrasanta, straordinariamente fertile per il tiepido soffio del vicinissimo mare, genera limoni cedrati quasi sempre pieni di altri limoni. Questi hanno spesso la forma più smussata dei limoni e talvolta anche più conica. In qualcuno di essi, diviso da cima a fondo in superficie in più segmenti, appare un altro limone più interno e se questo di mezzo viene tagliato, dopo la buccia dorata e la polpa bianca, si presenterà un midollo bianchiccio, non di rado un terzo frutto, avvolto all'embrione. Persino dall'incisione aperta dell'ultimo frutto qualche volta si osserva una covata compatta di piccoli limoni. Talvolta invece l'utero del frutto più esterno, aprendosi spontaneamente con una spaccatura molteplice, genera altri limoni, come feti racchiusi e neonati uniti, perché si squarcia, senza partorirli dato che non li fa fuoriuscire. Inoltre è riconosciuto da tutti che questa specie di limone emana un profumo più intenso degli altri limoni e che il frutto interno è più delicato e soave dell'esterno.

\* G. B. FERRARI, *Hesperides sive de Malorum Aurcorum cultura et usu*, Roma 1646, III, cap. XIX, p. 263, free translation by Fiammetta Stefanini.