

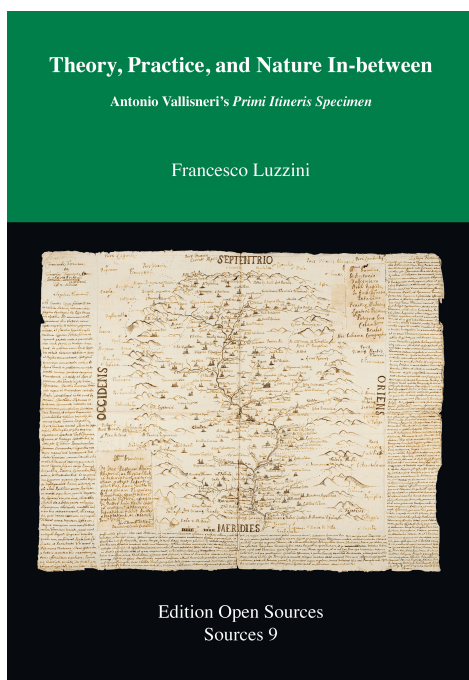
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Francesco Luzzini:

Main Manuscript: Translation

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In: Francesco Luzzini: *Theory, Practice, and Nature In-between* : Antonio Vallisneri's *Primi Itineris Specimen*

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Chapter 6

Main Manuscript: Translation

Mountain journey

“I should never have dared to send it to you, if I had not revised it with leisure and care.” So [wrote] Cicero to Atticum about a certain small book of his.¹ **I.r] I.v]**

Garfagnana p. 31. **II.r] II.v] III.r] III.v]**

Physico-Medical Example of a First Journey through the Mountains.

By Antonio Vallisneri of the Nobles of Vallisneria, Public Primary Professor of Theoretical [Medicine] at the Arch-Lyceum of Padua, and Member of the Royal Society of England, dedicated to the Most Wise, and Most Famous Fellows, of that same Society:
translated from the Italian language into Latin by L.V.²

Most Wise, and Most Famous Fellows, renowned all over the world.

Who would have thought, O Most Distinguished Fellows, that the strength and the excellence of talents would do harm to studies? Who [would have thought] that reason, that most divine trait, would deafen us, and would make us almost unable to understand truth? It is surprising, nearly incredible to say, yet very easy to happen; for the inquisitive subtlety of mind shapes and gives birth to such beautiful conjectures, and lies in such beautiful and eloquent ways, that most of men, bewitched with colored speeches, and—so to speak—trapped with snares, confuse errors with wisdom, and prefer to fall asleep over what they once agreed upon, than be liberated. In our age the Academies, among which yours excels, tried to shake off from us this numbness, in order to encourage experiments; let me, too, lay at your feet a rough **IV.r]** booklet, which deals with no different issues; for its content was verified by sight, not by imagination. It is ugly indeed, and inelegant: but be merciful to one born in the Alps. During the summer vacations, a desire arose to wander in the mountains near me; nor did my hands wield spears to pierce wild beasts,

¹This is a passage from Marcus Tullius Cicero’s *Epistulae ad Atticum* (Cicero 2018b, II, 1, <http://data.perseus.org/citations/urn:cts:latinLit:phi0474.phi057.perseus-lat1:2.1.1>).

²These anonymous initials seem to indicate that the manuscript was translated into Latin from a previous Italian version, and not by Vallisneri himself. However, there are important hints that this may be a pretense. The handwriting in the main manuscript is unmistakably Vallisneri’s: since the document was draft (and a significantly reworked one, too), it is unlikely that he copied again the entire Latin text from another document, which in turn was a translation from an Italian text he had already edited. Furthermore, several studies prove that Vallisneri often used false names, or the names of his pupils, as a strategy to conceal and protect himself against potential criticisms—which in this case may have been addressed to the prose style of the document or to terminological misunderstandings. On this topic, see Generali 2004, 155–156, 176–177; 2007a, 383–412; Luzzini 2013a, 91; 2014a, 209. It is worth noting that the same initials (and, arguably, the same anonymous translator, whether real or not) appear—with an additional “S” in the end—

but styluses and writing tablets, so as to pursue truth. My main goal was the benefit of my students, as on my return I would show them hidden springs and new medical properties of the waters.

Climb down a little from that knowledge, O Most Severe Men, by the side where you look to the seas, lands, and sky as advisors to the Republic of Letters. Take heed to my weak attempts; and since I am still fearful, foster [me] to greater efforts by the magnitude of your favours: a somehow unusual guilt of indulgence.

Padua, 1705

Most Dedicated, and Most Obsequious, Servant and Fellow
Antonio Vallisneri **IV.v]**

To the Academy of Reggio. Etc.³

Perhaps, O Most Revered Academics, you shall despise a philosophy that climbs up the steepest crags, and walks through inhospitable mountains, seeking answers—so to speak—in order to understand the dark genius of nature, and discover its laws from those silent horrors; whereas such rugged and desert places, abandoned by nature itself, seem to have nothing in common with the learned and mild temper of philosophers, and especially with yours, which is devoted only to the most gentle muses, and to the most pleasant studies. “Are we so short of the wealth of truth,” you may reproach me, “that we shall leave flourishing cities, where the fine arts and the sciences are so fervently fostered, and move where only a few footprints of wild animals guide us, in order to acquire knowledge? What do high cliffs, water shattering on awful rocks, and horrible caverns bring other than a sort of confusion, and darkness to our eyes, and horror to our minds?” I imagine you speaking like that; nor do I know how to reply, other than hoping that my alpine observations, once carried on by you, will drop much of their original roughness; while truth, though discovered by means of mountains and chasms, and once tamed by the gentle presence of such a noble assembly, shall easily change its appearance, and look more bright and fair, just like we see the misshapen clouds become beautiful and pleasant, as they draw near the sun.

Following the example of those beyond the mountains (who, to tell the truth, tirelessly strive to describe nature, and reproach us, accusing us of a miserable and unworthy laziness),⁴ in mid-August I headed to the mountains; not just to relax my mind, which was burdened with the most severe studies, but also to discover our medical and natural treasures, which abound in those places, though with nobody’s envy. Besides, Gentlemen, it seems to be not devoid of pleasure to descend deep valleys, and to step on

in Vallisneri 1717c.

³Accademia dei Muti (“Academy of the Mute Ones”) of Reggio. Founded in 1673, it was mainly devoted to poetry and literature. It ceased to exist in 1751, after decades of senescence and—it seems—not particularly brilliant activity. On this topic, see Maylender 1929, 65–67. Vallisneri became a member of the Academy in 1711, after he was appointed the Chair of Theoretical Medicine at the University of Padua. See Porcia (di) 1733, LXXVII. See also the critical edition of this work: Porcia (di) 1986, 219–220, 220n.

⁴Here, the author alludes to the French scholars. As a proud advocate of Italian science, language, and culture, Vallisneri was frequently involved in fierce debates with the “oltramontani” (literally, “those beyond the mountains”). On this topic, see Duchesneau 2009, CXII, CXXI, CXLV; Generali 1985; 2006; 2007a, 384–386; 2007b, 253–255; 2011b; Luzzini 2007, 74; 2013a, 217–226; Monti 2009, XLVIII, LII, LXVIII, LXXI, LXXVIII; Penso 1973, 194–201; Rappaport 1991 (now reprinted in 2011); 1997, 218–219. See also

the highest peaks of the mountains, putting my head into the clouds and looking around, seeing nothing but harshness of terrain and sky, whereas, surrounded only by wild beasts and horror, something arises that is great, and worthy of so many difficulties; and whereas, therefore, a philosopher placed above peoples and above the towers of cities, as if he were greater than himself, **V.r]** free from duties, and superior to fate, without the noise of the rowdy schools, and filled with nature, with nature quarrels alone and silently. **V.v]**

The first thing I was shown^a was the precious sulphur mine that is one mile from Scandiano, placed on the slopes of the so-called Mount Gesso,⁵ behind a small stream which joins its waters with the nearby Tresinaro Creek.⁶ It was this [stream] that discovered the mine, since by eroding now on one side, now on the other, along with rocks, and sands, and gravels, it dragged pieces of pure sulphur which, having been noticed since the ancient times, allowed to locate the place where they had grown;^b though once found, I don't know by which foolishness, it was soon left to oblivion. Under the Most Serene Prince Luigi d'Este,⁷ around the end of the past century, as the stream continued carrying enough sulphur to be picked up by poor people to continuously produce and sell matches, someone thought about searching again for this mine, which was easily found, and is so fruitful, that it alone is enough to satisfy the needs of all the nearby cities. So far there are two artificial galleries which are interconnected for the necessary air flow, and are capable of hosting two men working upright with their tools in order to bring out the extracted mineral.⁸ **VI.r]** **VI.v]** **VII.r]** **VII.v]**

Most Illustrious, and Most Esteemed, Sir etc.⁹

You shall deservedly despise, O best friend, a philosophy that limps among inaccessible rocks, seeking answers from the summits of the mountains. In fact, what do such horrid places, abandoned by nature itself, have in common with your most learned

Vallisneri 1991, 519–520.

⁵Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is a mineral usually found in evaporitic deposits in association with sedimentary rocks. The gypsum layers of Mount Gesso are part of the gypsum-sulphur formation of the northern Apennines, whose thick evaporitic strata resulted from the Messinian salinity crisis which occurred in the late Miocene epoch (between 5.95 and 5.33 million years ago). During this epoch, a temporary closure of the Strait of Gibraltar made the Mediterranean Sea desiccate almost completely. This event originated the evaporitic rocks which are now visible along the northern borders of the Apennines, from Reggio Emilia to the Marche region. On this topic, see Bosellini 2005, 66–67; Luzzini 2011a, 105–107; 2011b; 2013a, 71–72; http://www.vallisneri.it/affioramenti_gessosi.shtml.

⁶The Tresinaro River flows in the Province of Reggio Emilia. It is a tributary of the Secchia River. It originates in Felina (Castelnovo ne' Monti, RE) and goes from southwest to northeast, eventually reaching Scandiano.

⁷Luigi d'Este *Juniore* (1648–1698), Governor of Reggio and Marquess of Scandiano. See Vallisneri 1991, 116.

⁸The sulphur (S) veins in the gypsum-sulphur formation of the northern Apennines result from the biochemical activity of bacteria. Under anaerobic conditions, sulfate reducing bacteria produce hydrogen sulfide gas (H_2S) from sulfate (SO_4) in gypsum. H_2S is then oxidized to elemental sulphur if exposed to oxygen. See Casati 1996, 518–519; Bosellini 2005, 66–67; Bosellini, Mutti, and Ricci Lucchi 1989, 133–169; Luzzini 2011b; 2011a, 106–107; 2013a, 72.

⁹The letter is addressed to Luigi dalla Fabra (1655–1723), Primary Lecturer of Medicine at the University of Ferrara until 1721. See Vallisneri 1991, 363.

^a**Margin note (left):** Wait to arrive in Scandiano etc.

^b**Margin note (right):** Sulphur mine, sulphur smoke

and mild temper? “Are we afflicted with such a lack of truth,” you may say, “that from flourishing cities, where studies abound, we shall go where only a few footprints of wild animals guide us, in order to acquire knowledge? What do steep rocks, resounding with shattering waters, bring other than darkness to the eyes, and horror to the mind?” I can hear you reproaching me with these arguments; nor do I mutter anything in reply. Still, I am confident that my mountainous observations, once your hands touch them, will drop some of their horror and of their confused roughness; and indeed truth, revealed by means of mountains and chasms, and handled and managed by such a man, shall most easily rise in beauty and splendor, just like we see the misshapen clouds become beautiful as they draw near the sun. But let us start writing.

In mid-August, I headed to the mountains; not just to relax my mind, but also to probe the medical and natural treasures with which they abound, though barely touched by our [scholars]. Thus, it was a pleasure to follow the paths of Gessner,¹⁰ of my friend Scheuchzer,¹¹ and of others beyond the Alps, now descending into abysses, now reaching the highest peaks, and rising up to the clouds. I saw **VIII.r**] harshness of terrain and sky, and the chill of being surrounded by wild beasts fostered [in me] something worthy of so many difficulties; and placed as I was above peoples and above the towers of cities, as if I were greater than myself, despising the lesser duties, and filled with nature, with nature quarreled alone and silently.

At first, it occurred to me to examine **VIII.v**] the foul-smelling sulphur cave which is one milestone from Scandiano, surrounded by low hills, and lying on the western slopes from the summit of Mount Gesso. It is an excellent sulphur mine, fruitful enough—and more than enough—to supply all the nearby and remote cities. The miners are supervised by Sir Ippolito Spallanzani:¹² a diligent investigator of natural things who, together with the Most Learned Sir Paolo Valla,¹³ Doctor of Philosophy and Theology, has also been my tireless partner in the mountain journey. Upon entering the cave vault, I noticed clustered, yellowish masses of abundant sulphur of different sizes, intersected with various sulphurous streaks and branches stretching downwards, **3**] like an upside-down tree, stuck into a subcinereous, somewhat hard, scaly and bright clay^c or marl, which miners call *cretone*. Figure 1.¹⁴

Both the streaks and the masses are made of purest sulphur, and some of them are occasionally found in such a large quantity that they weigh more than four hundred pounds. So, there is a cave tunnel extending for two hundred paces, on either side of which, both on the left and on the right, larger and smaller piles abound. However, sulphur is not always found in that clay, or marl. Sometimes it is deeply fixed in very hard, tartareous stones, and is called *sulphur caninum*; because, as they say, they have to work like dogs to dig it. By cutting through the clay, the sulphur streaks divide transversely its lamellae, which are

¹⁰Conrad Gessner (1516–1565), Swiss naturalist and bibliographer.

¹¹Johann Jakob Scheuchzer (1672–1733), Swiss physician and naturalist, friend and correspondent of Vallisneri. For comprehensive studies on the collaboration between Vallisneri and Scheuchzer, see Generali 2007a, 106, 118, 121, 124, 136, 294, 352–354, 356, 358, 360, 364–366, 384, 387, 389; Luzzini 2011d, 114–122; 2013a, 59–64, 69, 81–84, 118, 162, 165–170, 173, 175, 193, 208.

¹²Ippolito Spallanzani, from Scandiano, superintendent of the mines of Mount Gesso, friend and collaborator of Vallisneri. He wrote a letter on the changes that occurred in the mines between 1705 and 1714. This was published in Vallisneri 1718, 228–284 (269–278). See Vallisneri 1991, 163, 165–166; Generali 2004, 144.

¹³Paolo Valla, a canon from Reggio, correspondent of Vallisneri. See Vallisneri 1991, 408–409.

¹⁴The related image is missing. Still nowadays, the Italian term “cretone” refers to a thick clay layer which can be found inside or outside caves and mines.

^cMargin note (left): See first figure

arranged in pieces, and are polished everywhere by a sort of shiny, almost oily, moistness. Another bright, colorful, transparent sulphur, resembling amber, and called *vivum*, or virgin,¹⁵ is frequently found sticking to tartareous veins, but never to marl. Even though the entire mountain is made of gypsum, and the mine grows through its gaping fissures, or through the interstices of the layers, yet sometimes sulphur is found in the bowels of the gypsum, or sticking to its bare surface. On the contrary, where fragments of transparent stone, spar, and gypsum were found,¹⁶ there was almost no sulphur. A thin trickle of water fell down from above, pouring through the clay and through a few stones, which were thus smoothed, as if, so to speak, they once had been shaken by waves. With the passing of time, it stained everything it touched with a sort of ferruginous, thin layer; and nitrous salts,¹⁷ cross-shaped for the most part, grew here and there. At the bottom of the mine there is a tree-like piece of sulphur, called *filone*, from which a number 4] of branch-like shapes spread everywhere, and with sparsely attached fruits suck nourishment, and ripen. At present, it stretches six feet in width and one hundred in length. It lies hidden amongst some chalky rocks, which at times separate it from the gypseous, tartareous, and earthy strata. As the miners (commonly known as *canopi*) reported, it is different from the Roman one, since down there the lode within the layer, and the layer itself spread out horizontally, and they have to dig pits to exploit it; while the one in Scandiano, by stretching obliquely westward both in a horizontal and vertical direction, follows the sequences of the strata, or crusts of the mountain, which are now straight, now crooked. Hence that [in Rome] is dug out through pits; this, more easily, and with less expense, through tunnels. Nor are such great blocks of pure sulphur found in the Roman mines; for only after grueling work they extract a more impure one which, once [exposed to] fire, proves to be imbued with a somewhat green, pale yellowness. Instead, ours inclines to a full citrine yellow color, and the virgin one turns to golden. Undoubtedly, that [in Rome] abounds with acid, vitriolic smelling particles,¹⁸ whereas this contains a more rich, inflammable substance. Thus, when tested,¹⁹ ours gives a smaller quantity of sulphur oil. Whence it follows, that our sulphur miners usually are not affected by those diseases of which the Most Famous Ramazzini wrote in his excellent work, *De Morbis Artificum*, in Chapter X.²⁰ They all constantly live healthy, to the no small relief of the working people. In fact, though the sulphurous air is so sharp that it stings and damages the delicate fibers of our body with hostile, tiny knives, nonetheless it is blunted, having been enveloped by many flexible branches; and the very forces unleashed in other circumstances are [here] tamed. Therefore, among the medicines that can be prepared, and that are especially good for the chest, I consider the sulphur of Scandiano as more efficient than the others. **IX.r] IX.v]**

This cave draws fresh air from artificial side tunnels, but the Roman one [draws it] from above. Still, in the hottest part of the summer it is necessary to refrain from

¹⁵Mineral sulphur (S).

¹⁶Selenite ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), a crystalline mineral variety of gypsum. In most cases, and depending on the degree of purity, it is transparent and colorless, or variously whitish. A further, detailed description of this mineral can be found in Vallisneri 1733, 435–436. See also the critical edition of this work (Vallisneri 2012, 258–260).

¹⁷Potassium nitrate (KNO_3).

¹⁸The term “vitriolum” (“vitriol”) refers to various kinds of metallic sulfates, including sulphuric acid (H_2SO_4).

¹⁹“Enchirism”: this is a latinization of the Ancient Greek word ἐγγείρησις (literally, “undertaking,” “operation,” or “task”).

²⁰Ramazzini 1700, Cap. X, *De morbis quibus temari solent sulphurarii*. Page references are to the second edition, Ramazzini 1703, 57–60. For a study of the bibliographical sources used by Ramazzini in this treatise, see Di Pietro 1981.

work: for the bursts of smoke are so dense, and the air flow at both openings remains so unclean, that lanterns and men alike would be extinguished. No thermal springs boil here, and the fields are not scorched by any fire, as volcanoes do in certain countries; either because there are no ignivomous and harmful masses of salts, from which fire grows, or because the obstructed vents of the mountain prevent the free passage of air, which is the essential nourishment for flames. **X.r] X.v]** [The miners] obtain wherever they please up to a thousand pounds of sulphur per year, and the new mine enriches many workmen.

Nor should we leave out the ubiquitous benefits that [sulphur] provides for an unstable health condition. Besides, I have been the first to send those afflicted with the filthiest French scabies²¹ into that sulphurous laboratory, as if it were a panacea,²² for when sulphur catches fire and percolates, clothes, linens, hands, shirts, and the whole body are permeated and saturated with smoke; hence, after a few days, they most successfully recovered. **5]** Indeed, in the first days the pustules worsen and swell, undoubtedly because the blood is cleansed from dregs and from rough impurities; but little by little, as the dry scabs fall off like a discarded, squamous envelope, the skin flourishes. In fact, once the minuscule worms—which, by gnawing and piercing, are the main cause of scabies—are killed, and the blood is lightened, and (given that opportunity) is purified through gaping burrows from any impurity it was nurturing in its bosom, [the patients] get rid of that pleasant Pliny's torment,²³ and of the hideous itch as well. The same [result] can be obtained if they wash themselves frequently with the water that precedes the sulphur when this is to be smelted, and <...> is about to pour into molds. For, before the sulphurous vein (or even the entire mine, crumbled bit by bit) melts inside incandescent pots, and, swelling because of the fire, sinks through a tubular rostrum into contiguous vessels, as if flowing, then the aqueous part, imbued with many kinds of salts, and with sulphurous spirit, is raised, and by dripping through a low reed, as if from a rough alembic, turns into a bitter-sour and harsh drinking fluid. A few days ago a peasant with hemoptysis, foolishly thinking himself wise, drank from this container without any medical advice. In fact, he believed that, since the affected parts of the chest heal with sulphur smoke alone, even more so if he would have flooded himself with those therapeutic waters, imbued by the mine. But something opposite happened. Indeed, he almost vomited his purple soul,²⁴ the vessels of the deep and tender viscera having been further lacerated by those sharp salts.

Hence, it can be concluded—as the above praised Ramazzini noted—how entangled in error are those who prescribe spirit of sulphur for chest diseases, **XI.r]** asserting that the acid of sulphur is evenly and equally formed, and a part has the same properties as the whole, which is a sign of the greatest superficiality. For sulphur is considered by the public as a balm for the lungs, when it is stripped of its acid (in which it abounds), as

²¹Syphilis, a sexually transmitted infection caused by the bacterium *Treponema pallidum*. Also known as “morbus gallicus,” “mal francese,” or—in English—“French disease” or “French scabies,” since one of the first epidemics occurred when the French troops invaded Italy in the last decade of the XV century, at the very beginning of the Italian Wars. See Gelmetti 2015.

²²In early modern medicine, the term “anchora sacra” (literally, “sacred anchor”) referred to what was considered to be the most effective medication for a particular disease. On this topic, see Vallisneri 2006, 61, note 172.

²³The reference is to a passage from Pliny the Younger's Letters (Plinius (Minor) 2018, VIII, 16), where the Roman author reflects on the strange contradictory relationship between grief and pleasure: “Est enim quaedam etiam dolendi voluptas, praesertim si in amici sinu defleas, apud quem lacrimis tuis vel laus sit parata vel venia” (<http://data.perseus.org/citations/urn:cts:latinLit:phi1318.phi001.perseus-lat1:8.16.5>).

²⁴This is a passage from Virgil's *Aeneid* (Vergilius 2018a, IX, 349, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi003.perseus-lat1:9.314-9.366>).

Jüngken attests in his *Chymia Experimentalis*, in the chapter on sulphur,²⁵ and [as does] Ettmüller in his *Mineralogia*, where he says: “Sulphur is deservedly called a balm for the lungs, once its oiliness has been separated from the acid, corrosive part.”²⁶ Therefore, one has to wonder how, in his *Mineralogia*, Schroeder could recommend “vitriolated flowers of sulphur”²⁷ to “those with affected lungs, or coughing,” and others of the like; since it is so inappropriate, that indeed we should draw the vitriol from inside, rather than adding more, if we wish a balm for the lungs, and preservation from phthisis. Nor does the above mentioned water eliminate scabies alone; but also the filthy, gangrenous ulcers, impetigo, and even herpes. When mixed with the sulphurous marl of the mine, it also gets rid of hardened tumors, heals lichens, reduces itches. Furthermore, many who were panting with a terrible cough, and viscous phlegm, swiftly regained health thanks to a plaster made of the above said marl dissolved in water with a stick and applied to the chest. The same water from the sulphurous mine, once boiled, and then filtered, is particularly effective against erysipelas and face redness when applied tepid; in fact, sulphur, either mixed with cold water or boiled, is included in cosmetics, or among those [substances] which increase the brightness of the skin. **XII.r]**

We also observed a playful friend who, by placing virgin sulphur on a normal coin, and then burning it with the small flame of a candle, eventually removed an intact crust from the hot coin, with the same image and marks still curiously printed. What for impostors is an advice to cheat, is a subject of learning to philosophers. **XI.v]**

Nor does the external skin alone feel the benefits of the sulphur burnt under the open sky. We often see asthmatics and consumptives certainly and unequivocally healed when they absorb and tolerate those balsamic and cleansing vapors long enough. Such is the importance of knowing the different quality of mixtures, and—at a given time—encouraging nature, not disease. **XII.v]** Besides, our ancestors did not ignore the wholesomeness of therapeutic air when the sulphur mine was dug. The foundations of a pilgrim hospital, built (with truly farseeing wisdom) on a hillock next to the mine, during a certain pestilential period, are still visible. Taught by the laws, and certainly by the example of Hippocrates,²⁸ who contained the spreading plague with fire and sulphurous medicines, they tamed the violence of the disease with just the exhalations of fire and sulphur, both absorbed in a most healthy air. **6]** Lots of flowers made of earthy resin, or sulphur,²⁹ which stick to the outer surface of the working vessels, fall into a small basin on the ground, where they are picked up; the layers of soot hanging from the beams and from the dark ceiling, more than

²⁵Ramazzini 1703, 59: “Nec quis obtrudat, quod sulphur pulmonum balsamum vulgo audiat; nam id verum est quando sulphur acido suo, quo abundat, spoliatum fuerit.” Like Ramazzini, Vallisneri refers to Jüngken 1681, Sectio IV, *De mineralibus*, Cap. VI, *Anatomia sulphuris*, 258: “In vitiis pulmonum, phthisi, peste, febribus malignis, &c. insigne praeservativum & curativum.”

²⁶The same quote is in Ramazzini 1703, 59. The (altered) passage is taken from Ettmüller 1688, Tomus II, Pars I, *Schröderi dilucidati Mineralogia, Sive Regnum Minerale*, Cap. 9, *De metallis*, 283: “Caeterum observatur, quod tunc temporis verum balsamum pulmonum mereatur vocari, quando pinguedo balsamica separata est a parte acida corrosiva.”

²⁷Ettmüller 1688, 284–285. The Latin term “flores” (“flowers”), in early modern medicine, refers to a preparation obtained by sublimation or crystallization of a substance which assumes “a flocculent or pulverulent form” (G. M. Gould 1904, see *Flores*). “Flores sulphuris” were particularly renowned and used as a remedy against various kinds of illnesses (especially against skin, bronchial, and lung diseases). On this topic, see Crosland 2006, 71; Vallisneri 2011, 72, notes 214 and 215.

²⁸Vallisneri recalls the famous episode of the Plague of Athens (429–430 BC), when Hippocrates recommended the use of fumigation by burning aromatic substances (including sulphur, regarded as a powerful antidote against this disease) to treat and contain the epidemic. See Morens and Littman 1992; Blancou 1995.

²⁹Here, the term “flores” seems to indicate small, naturally formed crystals, and not the previously described artificial preparations.

others, overflow with sulphur splinters. In fact, when set on fire, they produce a sudden blue flame, and smell like sulphur; you too, who so diligently commit yourself to medical practice, may understand how many new and effective cures could be prepared from them.

The [sulphur] abounds with such active and penetrating particles that, while melting in the first pots inside [the mine], the more volatile part breaks out through small pores, and forms a sort of film which takes on different colors, having been lit by constant flames.

But now, in order to describe in short to you all the parts of this mine (which until now have been passed over in a humble and lurking silence), produced either by nature or art, let me enumerate a list of the [samples] I just shared with the Museum of the Most Illustrious Sir, Count Luigi Ferdinando Marsili,³⁰ where my great friend, the Most Learned Sir Vittorio Stancari,³¹ is curator. Indeed, all the exotic and precious things that Mother Nature dispersed around the world—either with a certain negligence, or by a providential will of fate—are assembled there, and collected with wonderful order in summaries, as if by law, and by rank of native dignity, the horror of rude confusion having been banished; and should you be looking for the best part of the sea, or earth, or of any element, but [want to] defy the endless pains of travels, in Marsili's treasure room you shall be astounded at the miracle of this collection.

So, I gladly dedicated these trifles (that is, the collection from our sulphur mine) as a tribute to that Greatest Man.

First: A purest mass of pure sulphur, removed from within the marl. Weight: VII pounds.

2° A piece of gypsum, VI pounds in weight, with a few branches (so to speak) of native sulphur stuck to it.

3° Scissile marl, or wet, scaly, dense clay, from the sulphur cave. III pounds and III ounces.³²

4° Other smaller sulphur masses, resembling resinous, earthy tubers, still fixed in marl. V pounds and VI ounces.

5° Streaks of vivum, or virgin sulphur,³³ almost as transparent as amber, sticking to a piece of gypsum; 7] and, in the same cut, other streaks of common, pale sulphur, painted on marl. IIII pounds.

6° A piece of thick soil, imbued with a mysterious sulphur, which could be said to lack sulphurous lumps, or veins; however, it is softened by fire and, raging with acidity, melts into a resinous liquid, similar (so to speak) to vitriol.³⁴ VI pounds.

7° Whitish clay with tartareous veins and virgin sulphur. IIII pounds and X ounces.

8° A fine round mass of purest sulphur, resembling the form of a pale rock. II pounds and X ounces.

9° Three fragments of virgin sulphur³⁵ attached to their matrix, and very similar in color and transparency to amber. VIII ounces.

³⁰Luigi Ferdinando Marsili (1658–1730), naturalist and former Holy Roman Empire officer. Correspondent and collaborator of Vallisneri, who considered him an authority on the Earth sciences (and greatly admired his museum of *natural curiosities*). On this topic, see Generali 2007a, 351–360; Luzzini 2013a, 88–90; 2014a, 207–208; Sarti 2003; Stoye 1994; Vaccari 2003; 2008.

³¹Vittorio Francesco Stancari, from Bologna (1678–1709), astronomer, mathematician, physicist, and naturalist. In 1708, he was appointed the first Chair of Mathematical Analysis ever established in Italy, at the University of Bologna. See Vallisneri 1991, 301.

³²Arguably, a piece of marl. The noun “cretam” (“clay”) and the adjective “uliginosam” (“wet,” or “damp”) suggest that the specimen is more argillaceous than calcareous.

³³Mineral sulphur (S).

³⁴The term “chalchantum” is a synonym for vitriol. See Fabri 1671, 192–193.

³⁵Mineral sulphur (S).

- 10° Another small piece of virgin sulphur³⁶ implanted in a whitish, stony (or, as they say, tartareous-like) earth. X ounces.
- 11° A whitish, dense, and somehow buttery earth,³⁷ which the miners think to be the germinal elements of sulphur. IX ounces.
- 12° Evanescent, friable, dusty sulphur, which could be described as putrefied, and impressed in marl; it is perhaps too old, or its particles are not well ripened, or lacks some other part, whatever some authors may imagine. <I> pound.
- 13° Tartareous streaks elegantly sprinkled with small, sulphurous flowers. I pound.
- 14° Caput mortuum,³⁸ or porous, almost tuffaceous earth, from which sulphur has been removed, and which remains in the bottom of the pots; while being taken out, if still abundant, it is kindled, and keeps shining with the finest colors for a long time, dyeing the faces of the workers with a cadaverous tone. V pounds.
- 15° Loose pebbles of various sizes, perhaps once shaken by waves, and which can now be found in various spots in the mine, as if placed by hand. III in number, II pounds.
- 16° Soot of the sulphur furnaces. V pounds.
- 17° Flowers of sulphur,³⁹ scraped from the outer surface of the working vessels. VIII ounces.
- 18° A mass of sulphur, tested with fire and then filtered. IIII pounds. 8]

A great quantity of strange pyrites, like small stones sprinkled with a copper color,⁴⁰ and viscous, barren, multicolored marls, can be seen on the left slope of the mountain (the one facing southeast); they are, by all means, not obscure clues to the mine^d that lies beneath. There are two kinds of pyrite: one is dissolved into pieces by moisture, and grows easily with aerial niter;⁴¹ the other is imperishable and unalterable.⁴² The ridge of this mountain is crossed from different directions by several creeks, all merging into a single

³⁶Mineral sulphur (S).

³⁷Arguably, a sort of calcareous clay, as is suggested by the adjective “subalbam” (“whitish”).

³⁸“Caput mortuum” (in English, “dead head”), also known as “nigredo”: alchemical terms referring to the residual substance produced from such operations as sublimation, distillation, or filtration (see Crosland 2006, 81). Here, Vallisneri uses this term in a broader sense, alluding to the residual earth from which sulphur has been extracted.

³⁹See note 29.

⁴⁰Pyrite, an iron sulfide mineral (FeS₂) with a cubic crystallographic structure. However, the words “incertae figurae” (“with a strange form”) suggest that the author refers also to marcasite, another iron sulfide (known as “white iron pyrite”). This mineral has an orthorhombic crystal structure, is lighter and more friable than pyrite, and is frequently associated with marl, gypsum, and clay, as typically happens in the gypsum-sulphur formation of the northern Apennines. See Luzzini 2013a, 94; 2014a, 210–211; Vallisneri 2012, 209–211, 277.

⁴¹According to the Hermetic alchemist, philosopher, and physician Paracelsus (Philippus Aureolus Theophrastus Bombastus von Hohenheim, 1493–1541), “life was sustained [...] through the presence of a life spirit essential for both the organic and inorganic worlds. By the final decade of the sixteenth century this spirit was identified as an aerial niter” (Debus 2001, 12); and, by the early years of the seventeenth century, “the aerial niter had become associated with a life force requisite for man” that would be examined and debated by a great number of physicians and natural philosophers throughout the early modern period (Debus 1977, 108–109). In the XVII century, the chemist and physician John Mayow (1641–1679) further developed the research on the role played by aerial niter in combustion and respiration, paving the way for the identification of this substance with oxygen (see also Debus 1964). By acknowledging the existence of an aerial niter and the influence of this substance on mineral genesis and growth, Vallisneri is presumably referring to the Paracelsian tradition.

⁴²Here, Vallisneri makes a distinction between marcasite (“frustillatim dissolvitur”) and the far more stable pyrite (“aeternum est, ac immutabile”).

^d**Margin note (right):** Turn one page

stream known as Riazzone,⁴³ whose banks hold countless treasures from the sea: grooved, smooth, rough antales;⁴⁴ tube worms;⁴⁵ pectens;⁴⁶ oysters; buccinula; turbines;⁴⁷ glossopetrae, or shark's teeth (which someone wrongly claim as arrows, others as petrified tongues of snakes);⁴⁸ sea navels;⁴⁹ snail shells of different forms; and sea urchins,⁵⁰ although rare. These [objects] are found in a sandy, ash-colored, and brackish bed which, though horrible, is greatly appreciated as food by pigeons, sheep, goats, and by all the beasts of burden. This entire region, up to the Secchia River,⁵¹ where [the land] is covered with the same kind of soil, abounds with remains from the sea. The petrified ones are never found mixed with salt layers; for, as they appear on the surface, after this has been scraped of earth and sand by the falling rain, and if scorched long enough by sun and cold, they become friable at first, and eventually dissolve into thin dust, just like chalk. Hence, some not ill-advised apothecaries—with my approval, and with a not unfortunate outcome, indeed—prescribe them to rural plebeians as sudorific, and as edulcorant for malignant fevers, and for those other diseases in which acid prevails. Also, the sand that is found in the surrounding area, once mixed with sheet-like, golden plates and leaves, and after having been sifted and cleansed, is useful for dusty hourglasses, and for polishing glass. Stone-coal and fossil wood, either petrified or still intact, are dug here and there⁵² or

⁴³Rio Riazzone, a small tributary of the Tresinaro River. The two streams merge a few kilometers north from the city of Scandiano. Along its course, the Riazzone crosses clays, clay-schists, and arenaceous and calcareous shales. These rocks date back to the Late Cretaceous period (100–65 Ma) and contain a large quantity of marine fossils. Proceeding further, the Riazzone meets fossiliferous, blue-grey shale beds which date back to the Late Pliocene epoch (3.6–2.5 Ma). Cartographic source: *Carta geologica d'Italia, Foglio 86 (Modena)* 1963. See Luzzini 2013a, 95, note 95.

⁴⁴Tusk shells, or scaphopods (Phylum Mollusca, Class Scaphopoda), once known as “antales” and “dentales.” On this topic, see *Encyclopaedia Perthensis; or Universal Dictionary of the Arts, Sciences, Literature, etc., intended to supersede the use of other books of reference* 1816, 574. See also Vallisneri 2012, 130–131.

⁴⁵From Buonanni 1681, 143: “Cannelletti di varie specie, detti tubuli vermiculares, poiché in tutti vivono alcuni vermi. Sogliono nascere sopra i sassi, o sopra gusci di altri testacei, e d'altri vegetabili del mare. Tutti si piegano, come i serpenti, ma senza regola di linea spirale, onde non si possono dire turbinati.” See also Vallisneri 2012, 76–77. According to the images in Buonanni's treatise (Tab. 20), the “tubuli vermiformes” could be identified as both tube worms of the Family Serpulidae (Phylum Anellida, Class Polychaeta: sessile anellids which secrete calcareous tubes) and worm snails of the Family Vermetidae (Phylum Mollusca, Class Gastropoda: sessile molluscs with irregular, tubular shells).

⁴⁶Genus *Pecten* (Phylum Mollusca, Class Bivalvia). See also Vallisneri 2012, 251.

⁴⁷Gastropod shells (Phylum Mollusca, Class Gastropoda). See Vallisneri 2012, 63, 373.

⁴⁸Shark teeth. The popular folklore, along with not a few voices from the early modern medical tradition, endowed these objects with therapeutic and thaumaturgic properties. A legend claimed them as the petrified tongues of snakes (hence the term “glossopetrae”) that had been cursed by a particularly vengeful Saint Paul when one of these animals dared to bite the Apostle in Malta.

The recognition of the organic origin of these findings involved such authors as Nicolas Steno (1638–1686), Agostino Scilla (1639–1700), Fabio Colonna (1567–1650), and many more, and played a major role in the early modern debate on the age of the Earth. See Colonna 1616a, 31–39; Scilla 1670; Stensen 1667; 1669. For comprehensive studies on this topic, see Carpita 2006; Cutler 2009; Hsu 2009; Luzzini 2013a, 1–4, 10–12, 17–18, 24–32; Morello 1979a; 1979b; Oldroyd 1996, 66–67; Rudwick 1972, 50–53; Ziggelaar 2009. See also Vallisneri 2012, 168–169.

⁴⁹According to the terminology of early modern natural philosophy, the term “umbilicus maris” (“sea navel,” also known as “Venus navel” or “sea eye”), refers to the calcareous operculum of various species of gastropods. See Gimma 1730, Book V, 248; Rolfe 2013, 149. See also Vallisneri 2012, 394.

⁵⁰Sea urchin skeletons (Phylum Echinodermata, Class Echinoidea). See also Vallisneri 2012, 140–141, 306–307.

⁵¹Secchia River, a main tributary of the Po River. For a terminological history of this name, see Tiraboschi 1825, 333–335.

⁵²Fossil coal. It is the result of the build-up and sedimentation of organic matter (usually from plants) in an

are discovered in collapsing ground fissures, so that everywhere **9]** these mountain shores show up as apparent memorials of the once-split sea. In fact, they are not different in disposition and structure from the hillocks and hills that rise not far from the Adriatic Sea (where the Adige River⁵³ carries its load), and which I recently observed.

The ridges of the above said mountains and hills, from the Tresinaro River up to the Secchia, are [full of] bitter, salty, sulphurous, and fresh water springs. When performing the evaporation of the liquid, in the first case they will produce a gypseous sediment; in the second, a salty-nitrous one; in the third, earthy-sulphurous; and, finally, one with a bright white color, just like virgin earth.⁵⁴ Sometimes, and not without praise from the poor people, we prescribe the first [kind of] water for bloody fluxes, diarrhea, vomiting, and for similar disorders; the second and third, to treat asthmatics, consumptives, hypochondriacs, and verminous diseases; and the last, generally, when the blood is too warm. Such is the way Mother Nature works everywhere, providing exceptional medicines at no cost for the sick people. The grapes, which grow sweet in the gypseous hills, emit a subtle scent of gypsum; and little by little, their wines lead to a nephritic affection. Thus, if some of the waters of these hills are drunk for a long time, they can cause stomach aches, anxiety, obstructions, paleness in young women, and other ailments and troubles to organs.

On the right flank of Mount Gesso, the one facing west, and not far from a plateau spreading out on the top of the slope which is called *Armorum Pratum* (because of the Spanish soldiers who were once about to attack the stronghold on the mountain, and who **10]** camped there),⁵⁵ rise some cone-shaped hills made of a reddish, mineral marl in which several very large marcasites can be found, along with black, extremely hard stones sprinkled with various colors. I also found some ash-colored stones;⁵⁶ a somehow unknown and still unseen kind of pyrite, covered with a rough and cracked surface which, if dashed against steel, produces many sparks.⁵⁷ But, what is really uncommon, is that in the same place, upon rusty, striated, friable rocks which were produced by a certain particular, stony juice, I observed [something] like stony hooves, sticking tight now singly, now in couples, now in groups of four; an unusual sight indeed. I am still uncertain about what they are, or

anoxic environment. The increasing thickness of organic layers leads to a gradual increase in temperature and pressure. Hence the ejection of volatile matter and water, along with the increase in carbon percentage. This is a gradual process, which starts from the lower sedimentary strata and passes through different phases. Depending on the increasing carbon percentage, the resulting matter is called peat, lignite, sub-bituminous coal, bituminous coal, and anthracite. Typically, coal seams form in lagoons, either coastal or in a river delta. The Po Plain was originally a lagoon that evolved into a wetland; however, since this zone is still geologically young, exploitable coal reserves have not formed yet. The “*carbo petrae*” and the “*ligna fossilia*” found by Vallisneri, therefore, were probably a sort of lignite or low-carbon coal. See Luzzini 2011b, 345–349; 2013a, 77–78.

⁵³Adige River, in northeastern Italy. It flows into the Adriatic Sea. For a historical study on the regulation of this river during the XVIII century, see Luzzini 2016c.

⁵⁴The terminology in this passage is clearly rooted in the alchemical tradition, as it recalls different stages of the sublimation process. The “*terra virgo*” (“virgin earth”), in particular, is what remains of the earth after it has been purified by sublimation. On this topic, see Newman 1982.

⁵⁵Vallisneri is probably referring to an episode in the Italian Wars (1494–1559). In the region surrounding Mount Gesso, the only place with the word “*prato*” (from the Latin “*pratum*”) in its name is Prato Mandeto, the origin of the latter term being unknown. Significantly, this place is located west of Mount Gesso. Cartographic sources: *Carta topografica d’Italia, Serie 25V, 086 – IV – NE (Scandiano)* n.d.; *Carta topografica d’Italia, Serie 25V, 086 – IV – SE (Viano)* n.d. See also <http://www.pcn.minambiente.it/viewer/>.

⁵⁶Arguably, flint rocks with dark (“*subcineritios*”) impurities.

⁵⁷Pyrite, marcasite, and flints were widely used as fire starters.

have been. See Figure 2.^{58e} They are no more than half a finger long⁵⁹ in the extremity, ending with a blunt edge, which is previously surrounded by a whitish band. [Similarly], all the lines, or longitudinal streaks [departing] from the above said band, and which cover much of the surface, finish with a dull end. They have a small, deeply printed, oval hollow at the base. If carefully examined, they appear wrinkled, as if gnawed inside and on the surface by grubs. The point resembles the substance and the shape of a dog's fang, as if made from a faulty mold. If cut in half, where the lines were visible lamellae appear which are mutually joined with a light tartar, and hardened and divided by an earthly cement; they are filled with that substance, which is irregularly arranged inside them. The rock to which [the fossils] are attached is very friable; and, here and there, is filled with various hard, pale, tartareous veins of different shapes. It can also be seen a mixture of red and ash-gray earth, overlapping golden layers, tartar, and salts. Recently, I sought counsel from Scheuchzer, a natural philosopher and most worthy Fellow of the English Academy,⁶⁰ 11] and I sent him two small hooves, along with all the other rarities, in order to know from such a great judge what they were. Yet, he himself doubtfully replied with philosophical candor, and confessed that he had never seen anything similar before, nor had he met them in books. As for me, however, I suspect that they may be related to the "goat's hooves," and to the "fossils" [described by] Colonna in *De aquatilibus, aliisque nonnullis animalibus* at p. 48,⁶¹ or to the "ichthyodontes cuspidati plectronarii" or "plectronites," which a certain [author] illustrates in his *Lithophylacii Britannici Ichnographia* in Table 16, and describes at pp. 63 and 66.⁶²

Sometimes, little horns are discovered not far from there in the stream; and, as that Most Famous Man himself agrees, they are the same [fossils] that Robert Plot refers to as "fungites" in *The Natural History of Oxford-shire*, Chapter 5, p. 189, and depicts in Table XII, n° 3, 4,⁶³ of which he [Scheuchzer] asserts to have acquired similar ones from the countryside of Bologna, and to have met them somewhere with the name "caryophylli marini," though he can't remember the passage.^{64f} Nor does he doubt that these, too,

⁵⁸The related image is missing.

⁵⁹A "digitus" ("finger") was an ancient Roman unit of length, approximately equivalent to 1.85 cm (0.728 in). Therefore, a "semidigitus" ("half a finger") is about 0.925 cm (0.364 in).

⁶⁰Johann Jakob Scheuchzer became a Fellow of the Royal Society in 1703. Given the lack of images, and despite the rather detailed description, it is difficult to ascertain the identity of the "ungulas lapidefactas" ("stony hooves," or "stony claws").

⁶¹Colonna 1616b, 48: "Habemus et non paucas alias res lapideas, veluti caprarum et suum unguulas [...]." Colonna's treatise does not provide an image of these fossils. However, according to their name they could be ascribed to the bivalve species *Congerina unguilacaprae*, also known as "goat's hooves." See Fözy and Szente 2014, 350–351.

⁶²Lhwyd 1699, 63–68, Tab. 16. The images in the treatise allow one to identify Lhwyd's "plectronites" as teeth from different fish species (see Parkinson 1811, 254; 1822, 275. However, according to paleontologists Arthur Smith Woodward and Charles Davies Sherborn, plectronites n. 1318 ("Plectronites maximus corticeus, seu Rostrago maxima, quod rostrum quoddam avis simulare videatur, sic dicta," Lhwyd 1699, 66) is an exception: this tooth does not belong to a fish, but to the pliosaur *Polyptychodon interruptus*. See Smith Woodward and Sherborn 1890, 298.

⁶³Actually, the correct book is not Plot 1677 but Plot 1686, 189, Tab. XII, Figs. 3, 4. Vallisneri could not read English: most likely, he obtained this information from Scheuchzer. Not by chance, the same data appear in Scheuchzer 1708, 33–34. This essay was published well after Vallisneri wrote his manuscript; arguably, Scheuchzer gave him this information in a previous letter.

⁶⁴A "Caryophyllus marinus fossilis prope Bononiam inventus" is mentioned in Scheuchzer 1708, 33, and in Scheuchzer 1723, 75: "Caryophyllus marinus fossilis. Ex Agro Bononiensi." Probably, the specimen

^eMargin note (left): Figure 2

^fMargin note (left): Figure 3

should be ascribed to the sea (Figure 3).⁶⁵ Recently, I also found illustrations of them in a book written by Agostino Scilla, a native of Messina, entitled *La vana speculazione disingannata dal senso*.⁶⁶

As I have mentioned, the surroundings of this first hill abound with gypsum spar, with a beautiful specular stone (commonly known as *scaiola*), with lapis arabis (which is very similar to ivory), with chalky, caementarius, siliceous, sandy, tuffaceous, vivum, marble-like [gypsum], and one with waves (that is, most elegantly decorated with gold and many other colors), a good number of which occupy a not unimportant place in the Series of Stones and Marbles of my Museum.⁶⁷

The specular stone (or alum) from Scandiano, which others call selenite or talc,⁶⁸ can be generally described as a trapezoidal shape, defined by irregular quadrilaterals or flat trapezoids. The above mentioned Scheuchzer sent me **12]** a somewhat obscurely transparent specular stone, or rhomboidal selenite, from Mount Kamor in the Appenzell Alps,⁶⁹ which he recalls in *Specimen Lithographiae Helveticae Curiosae* at p. 49;⁷⁰ for my part, I promptly sent him not only the corresponding payment, but also another [specimen] from the territory of Vicenza, which is far smaller, yet brighter, and almost shaped as a parallelepiped defined by six rhomboidal parallelograms. I also sent some small crystals of the same quality from Riano,⁷¹ reddish, cubic, and with irregular angles, which he received with great pleasure; for they were very rare, nor had he seen them before. Recently, he wrote about this stone in his *C. Plinii Secundi et Claudii Salmasii Dialogus*,⁷² where he points out that this is the same “andromadas” of Pliny, who in Book XXXVII, Chapter 10, asserts: “Andromadas has the shining color of silver, like diamond; it is always square, and similar to small cubes. Magicians suppose that it was thus named, because it is said to subdue anger and violence in men.”⁷³ Having been fostered by Minerva, as he himself stated, he dedicated this work—an unusual descendant of him—to the Illustrious Accademia degli Inquieti of Bologna,⁷⁴ so that they could have a taste of his foreign talent.

But let’s climb higher, my friend, and let’s bid farewell to the unpleasant land that is left behind. About five miles from Scandiano, past the ruins of the mountains, a rough

came from Scheuchzer’s collection. This could explain why Vallisneri was aware of its existence before the *Piscium querelae et vindiciae* was published.

⁶⁵The related image is missing.

⁶⁶Scilla 1670. The reference is probably to the figures in Tabs. XIV and XVII, described at p. 166. As the images in Scilla’s and Plot’s treatises clearly show, the terms “corniculum” (“little horn”), “fungites,” and “caryophyllus marinus fossilis” are all names to describe fossil madreporae (Order Scleractinia): a group of stony corals (Phylum Cnidaria, Class Anthozoa). See Luzzini 2013a, 184–185, note 142; Vallisneri 2012, 207–208.

⁶⁷All of these terms refer to selenite crystals with various degrees of purity. On Vallisneri’s vast and renowned museum, see Dal Prete 2011; Generali 2007a, 351–382; Luzzini 2011a, 108; 2013a, 82–84, 90, 159–165. See also Vallisneri 2012, 258–260, 315–316.

⁶⁸See the previous note. Here, it must be pointed out that the term “talcum” (“talc”) does not exactly correspond to its modern meaning (i.e., the magnesium silicate with the chemical formula $Mg_3Si_4O_{10}(OH)_2$). At least up to the second half of the XVIII century, this word was used to describe a vast array of minerals with a sheet-like structure, such as micas (phyllosilicates), actual talc, or selenite.

⁶⁹Mount Kamor (1,751 m/5,745 ft above sea level), in the Appenzell Alps (northeastern Switzerland).

⁷⁰Scheuchzer 1702, 49.

⁷¹Riano (Province of Rome).

⁷²Scheuchzer’s *Dialogus* was eventually published four years later, in Scheuchzer 1709.

⁷³This is a passage from Pliny the Elder’s *Naturalis Historia* (Plinius (Maior) 2018, XXXVII, 50, <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat1:37.50>). The identity of these specimens is uncertain. Besides, as Scheuchzer’s *Dialogus* remarks, the legendary “andromadas” mentioned by Pliny had been identified by various authors with many different minerals (Scheuchzer 1709, 204–208).

⁷⁴Accademia degli Inquieti (“Academy of the Restless Ones”) of Bologna. It was founded in 1690 by the

and barren landscape frightens some and delights others with an unexpected horror. The mountaineers call it Inferno: a not inappropriate name for the nature of the place. With a tortuous and inaccessible path, the steep convolutions of the hills end in precipitous abysses, barely roamed without fear by the mere eyes. Not a shrub, nor a moss covers those rough and inhospitable grounds, devoted to barrenness alone. Small, sloping ridges stand everywhere; and the clay is so viscous, compressed, and **13]** thick that only once in years are they ploughed with some furrows by the falling rain. The rude variety of the colors enhances this grim sight, confusedly wrapping and adorning all the slopes with black, reddish, ferruginous, sallow, [and] white [hues], like different and alternate zones, arranged now in grooves, now in spirals, now in waves.⁷⁵ Black, hard stones appear here and there which, if broken, often reveal golden crumbs in their inner part.⁷⁶ Hence, some believe (not without reason) that nature has hidden a gold mine under that inhospitable desolation, just like a treasure.

On the other side of the Tresinaro Torrent, the one facing north, there is a further not unsightly source of pleasure for the eyes of philosophers. The ground boils, turns pale, rumbles, smokes, and is constantly fluid. The inhabitants of Querciola call it *salsa*, from the salty mud which that pot, perpetual and incombustible by nature (so to speak), cooks and spits out.⁷⁷ You could have said that a lit fire constantly lurked [there] when, as it raged (especially by night), along with stones and fluid mud, it emitted flames. It covers about three hundred [square] feet on the mountain, though the hot spots don't swell out everywhere, and change place frequently.⁷⁸ We threw some stones [in it] which—without a deep noise—sank into the pit. Occasionally, it sucked in small animals, and even

mathematician and astronomer Eustachio Manfredi (1674–1739). Reflecting the interests of its founder, the academy was devoted to the study of mathematical and scientific issues. Following the guidance of Luigi Ferdinando Marsili, in 1712 the institution moved to Palazzo Poggi, and in 1714 became the still existing Accademia delle Scienze dell'Istituto di Bologna (“Academy of Sciences of the Institute of Bologna”). On this topic, see Cavazza 1990; Cremante and Tega 1984; De Zan 1990; Sarti 2003; <http://www.accademiascienzebologna.it/en/academy-of-sciences-of-bologna-institute>.

⁷⁵The barren, sterile landscape described by Vallisneri is easily recognizable as *calanchi* (“badlands”), heavily eroded clay soils that are particularly common in the hills between Scandiano and Carpineti. The spectacular display of colors (“*rudis colorum varietas*”) in the layers reveals the presence of different minerals and rocks. See Regione Emilia-Romagna 2006, 77; Senna and Martinello 2000, 77, 86.

⁷⁶Most likely, iron-rich sedimentary rocks containing pyrite grains. Not by chance, pyrite is also known as “fool’s gold” (in Italian, “oro degli stolti”).

⁷⁷Querciola, in the territory of Regnano (this place is now part of Viano, in the Province of Reggio Emilia). A *salsa* is a peculiar phenomenon of secondary volcanism. It is a cold, muddy mixture composed of water, clay, carbon dioxide and hydrocarbons (usually methane and oil) leaking out from the ground. Once the mud reaches the surface, it dries near the crater and accumulates, forming little mud volcanoes a few meters tall. The gas leak from the surface is caused by slow and constant movements of the Earth’s crust: these trigger the underground sacks in which the mixture is enclosed to open or to compress. The volcanoes grow in height if the mud leak is faster than water erosion; oppositely, they tend to decline. The term “*salsa*” means “salty,” as the mixture contains NaCl. Its salinity is equivalent to 1/2–1/3 of sea water. The *salse* are also described in Vallisneri 1711, 352–353; 1728, 65–70. On this topic, see Luzzini 2011b, 341–343; 2013a, 74–77; 2014a, 211; 2014b; <http://www.comune.viano.re.it>.

⁷⁸During the XVIII century, the *salse* of Regnano were much more active than now. The last two considerable emissions happened in 1915 and in 1932, the former going on for 15 days. The—often—violent eruptions involved size enlargements of craters and the formation of vertical fissures in the ground. In one of the most significant episodes, described in 1796 by the physician Domenico Gentili (1744–1825), the mud mass collapsed and caused a landslide in the fields beneath (Gentili 1833). In the last few decades, the mud volcanoes have entered a phase of relative dormancy: the portion of land covered with mud, therefore, has gradually decreased. In 2007, during an excursion in Querciola performed together with Dario Generali, Stefano Meloni and Oscar Poli, only some small gas leaks were noticed in the main craters (http://www.vallisneri.it/salse_bituminose.shtml).

heedless cattle which, after being cooked, consumed, and almost deboned, were vomited out. When it rumbles more than usual, it is a sure prediction of coming rain; and the sound, rivaling the roar of cannons, spreads to the nearby lands, towns, and (now and then) even up to Reggio. Sometimes, **14]** the shaken earth trembles for miles around, and we [also] observed a house with great cracks, half demolished by the hidden impact. Let's make it short: you could have laughed, and called it a small Etna, if it is allowed to compare small things with great. For this, too, in its own way, rumbles, strikes, and threatens destruction. And

Now huge crags of itself,
out of the bowels of the mountain torn,
its maw disgorges, while the molten rock
rolls screaming skyward; from the nether deep
the fathomless abyss makes ebb and flow.⁷⁹

Its water, which gushes out in small streams, is not unhealthy, being drunk with great pleasure by cattle, and is a remedy for many diseases proceeding from viscous humours, especially from the cold ones.⁸⁰ Its salty clay excellently dispels old tumors, erases scabies, effectively dries up stagnant fluid, is beneficial for nerves (when they are contracted by a too crude lymph, or thick synovia),⁸¹ and relieves edematous legs which are unresponsive to other treatments. Furthermore, peasants with erysipelas use it, not without benefit; and finally, that bibulous earth removes stains from all surfaces, especially the oily ones, etc.⁸² Not far from there, some petroleum drips from the base of the mountain; but it disperses in the soil, ignored.

Many pale stones with forests, tree branches, sinuous lines, and other brownish shapes depicted on them can be found in the nearby stream, called Faggiano;⁸³ they may be related to arborescent stones, to dendrites, or also to the “phycites” once [described by] Pliny in Book XLVII, Chapter 10,⁸⁴ that my beloved Scheuchzer discussed more widely in *Dissertatio epistolica Acarnanis de Dendritis*, published in the Appendix to

⁷⁹This is a passage from Virgil's *Aeneid* (Vergilius 2018a, III, 575–577, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi003.perseus-lat1:3.570-3.587>). Here and below, the English translation follows Vergilius 1910.

⁸⁰According to Hippocratic and Galenic medical tradition (which, still in the early XVIII century, had a strong influence on early modern medicine and on medical terminology), health depended on a balance between four basic fluids in the body, called humours: blood, yellow bile, black bile, and phlegm. Humours were the metabolic counterparts of the four basic elements (air, fire, earth, water), and were also related to a combination of four essential qualities: hot, cold, wet, and dry. Blood was thought to be hot and wet; black bile, cold and dry; phlegm, cold and wet; yellow bile was hot and dry. All diseases, as well as the existence of four main human temperaments (sanguine, choleric, melancholic, phlegmatic), were explained by the predominance of one humour over the others. For an introductory essay on this subject, see French 2003.

⁸¹Synovia, or synovial fluid: a viscous fluid which is found in the cavities of synovial joints (knees, elbows, hips, etc.) of mammals. By acting as a lubricant, it aids in the mechanical function of joints. Typically, synovial pathologies include rheumatic fever, osteoarthritis, gout, rheumatoid arthritis, tumors, and several other diseases.

⁸²Vallisneri started studying the *salse* in 1694, when he was serving as general practitioner in Scandiano. As a physician, he also focused on the clinical effects of the oily mud pouring out from the volcanoes. This resulted to be “very effective to desiccate tumours, mainly those on the legs,” as he scribbled down in one of his early field books, the *Quaderni di Osservazioni* (“Quella terra, che vomita fuori è bonissima per esiccare i tumori particolarmente delle gambe,” Vallisneri 1694, Biblioteca Estense di Modena, Raccolta Campori, 701–707, γ. D. 6, 36–42; 2004, 41).

⁸³Rio Faggiano, a small tributary of the Tresinaro River. The two streams meet in Rondinara, a village southwest of Scandiano.

⁸⁴The book from the *Naturalis Historia* mentioned in the manuscript is incorrect (and, moreover, does not

the *Ephemeridum naturae curiosorum*, Years 1697 and 1698.⁸⁵ We also observed a large number of oval stones, commonly known as *aquiloni*, that are, for the most part, marcasites of various quality.

Nor shall the stony globules which I found not far [from there] be passed over in inglorious silence. These, too, troubled (and still trouble) the learned pens of scholars. They are shining white, and cemented together with a more recent substance. And they are, undoubtedly, the “stalagmites” described by B. De Boodt in Book II, Chapter 238, and the “pisolite” which he recalls in the following Chapter (239).⁸⁶ Likewise, Gessner in *De rerum fossilium, lapidum et gemmarum figuris & similitudinibus*, pp. 71, 118–121,⁸⁷ and Ferrante Imperato in *Historia Naturale*, pp. 588, 55, 99,⁸⁸ can be consulted about this stone. Even **15]** those “peas that are to be found in Bethlehem,” of which Monconys [wrote] in the *Journal des voyages*, Tome I, p. 313,⁸⁹ can be related here. According to the rumors about the origin of these pea-shaped concretions, many people think, though erroneously, that they are glued and petrified masses of fish eggs; others [believe that they are] drops of purest lapidescent juice which have accumulated and have then been merged together by a new tartareous fluid, like that kind of stone in the Bohemian thermal springs of Carlsbad⁹⁰ which—people say—hardens from drops.⁹¹

exist). The exact reference is Plinius (Maior) 2018, XXXVII, 49: “dendrachates, quae velut arbusculis insignis est” (<http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat1:37.49>).

⁸⁵Scheuchzer 1700. Dendrites (from the Ancient Greek word δένδρον, “tree”) are tree-like crystal structures, typically iron and/or manganese oxi-hydroxides that form on the surface of rocks or between sedimentary layers. They are quite common in limestone and sandstone beds. On this topic, see Rudolph 2014, 30–32. See also Vallisneri 2012, 129–130.

⁸⁶De Boodt 1609, Liber II, *De Lapidibus et Gemmis in specie*, Cap. CCXXXVIII, *De Stalagmite*, 207: “Stalagmites e guttis rotundis in lapidem gypseae substantiae conversis, totus coagmentatur in terra arenosa, qui pro terrae et aquae fluentis qualitate, modo fulcus, candidus, aut griseus fabarum, pisorum, vel coriandri refert magnitudinem. Reperiuntur in una massa plurimi quasi favis inclusi. Copiose isti in Thermis Carolinis”); Cap. CCXXXIX, *De Hammite seu ammonite*, 207–209: “Ammites vel ammonites ex arenis ita componitur, ut ovis piscium similis videatur, nucis iuglandis est magnitudine, aliquando maior [...]. Huius generis reperiuntur qui ex lapillis pisi aut orobi magnitudine constant, quos ammites maiores aut pisolithos recte vocare possis.”

⁸⁷Gessner 1565, *De rerum fossilium, lapidum et gemmarum maxime, figuris & similitudinibus Liber*, Cap. IV, *De lapidibus et metallis, quae denominantur a rebus terrestribus inanimatis*, 71: “Hammites ovis piscium similis est, et alia velut nitro composita, praedura alioquin [...]. Ammonites [...] ex arenis ita componitur, ut ovis piscium quod ad figuram attinet, similis videatur esse: nitro interdum, quod ad substantiam et colorem”; Cap. VII, *De lithophytis, et rebus fossilibus illis, quae plantas imitantur*, 118–121: “Leguminum specie lapidem quidam inveniuntur, pisis [...] aut lentibus similes [...].”

⁸⁸Imperato 1672, 588: “È anco un'altra differenza di pietra, o terra composta di piccole forme ritonde simili a pisi, de' quali ciascuno sino all'ultimo disfacimento si scioglie in cruste bianche, e sottili, che l'una abbraccia l'altra. Dunque ciascun grano è composto di più tuniche, e la pietra tutta composta di molti grani accozzati insieme [...].”

⁸⁹De Monconys 1665, 313: “[...] vis à vis à main gauche est un champ où l'on dit que la Vierge passant par là, trouva des païsans qui semoient des pois, elle les pria de luy en donner, ils luy dirent que c'estoient des pierres; à quoy elle repartit qu'ils en recueilliroient, et depuis il n'y peut rien croistre que des pierres lesquelles ont la figure des pois [...].”

⁹⁰Karlovy Vary (Carlsbad), a spa town in the western Czech Republic renowned for its thermal springs.

⁹¹The reference is to De Boodt 1609, 207; Gessner 1565, *De rerum fossilium, lapidum et gemmarum maxime, figuris & similitudinibus Liber*, Cap. IV, 71; Cap. VII, 118–121. As the images and descriptions in De Boodt's, Gessner's, and Imperato's treatises show, the terms “globuli lapidei,” “stalagmites e guttis rotundis in lapidem gypseae substantiae conversis,” “pisiiformes concretiones,” “lapides pisis aut lentibus similes,” “piccole forme ritonde simili a pisi,” etc. describe pisolite: a sedimentary rock made of concretionary, calcareous grains that looks like a conglomeration of small pea-shaped spheres from 2–3 mm (0.08–0.1 in) up to a few cm in diameter. However, such descriptions as “ova piscium in massas conglutinata, et petrificata,” “ammites vel ammonites [...] ovis piscium similes,” etc., refer to oolites, sedimentary rocks composed of

The next morning we reached Balista (Valestra),⁹² still famous for the Virgilian verses that are carved on the edge of the rocky mountain, and which, almost eroded by the injury of time, can be barely read:

Beneath this cairn Balista's corpse is laid:
by day or night pass, traveller, unafraid.⁹³

He was a school master, but also a very famous robber, who gave his name to his birthplace; and to which Virgil, according to tradition, gave the epitaph.⁹⁴

The mountain is almost entirely made of stone, with nearly perpendicular strata; thus, it is dry, and devoid of springs. The huge rocks clump together to form high towers, and threatening crags and, on the southern side, a few caves.⁹⁵ The inhabitants firmly believe that a treasure is hidden there, and many of them often mutter, swearing that they will find it. They also tell a not unfunny anecdote, which to me is just a pretty fable, while those rural minstrels [regard it] as a memorable story. Let me, my dearest friend, disregard for a while the weight of physical studies, softening the severity of nature with an amusing break. A farmer, they say, was ploughing the earth in the nearby mountains **16]** when two strangers on black horses asked him where the "Mountain of Balista" was; and though he showed them, pointing at it with his finger, they wanted him to come along. After he arrived at a cliff where a cave with no visible doors stood, he stopped, not being able to see beyond the entrance; and they, so as to open it, calmly pulled out keys from a thorn bush close by. Having drawn hidden bolts, and past a first door, another iron gate appeared which, once equally opened, led them into an ugly, soot-blackened gallery, and thence into a rough-vaulted, large room, full of protruding and hanging tuff rocks, and with just a dim, gloomy light in it. There stood a golden statue, and idols of pagan gods shining with gold and jewels, among which (to the astonishment of the farmer) stood out glass and marble urns with burnt human bones inside, made ghastly by ashes, and with various, unknown carved marks on them. A leaden box lay at the feet of the largest statue, and inside it were separate receptacles which, in turn, contained vials and small caskets filled with various fluids and mysterious powders. There was also a three-lipped lamp hanging from the ceiling; it was still lit, but [made] much more smoke than light, so that it would have doubled the fear in the troubled hearts [of other witnesses]. Nor were coins, golden jewels, and a wealth of precious stones absent in the other chests. "Take," the strangers said, "take as much gold as you need to satisfy your hunger"; and, leading the way, they filled the small bags to be put on the horses' backs. Anxiously following their example, he loaded himself as much as he could by stuffing coins everywhere, and

very small, spheroidal grains of no more than 2 mm (0.08 in) in diameter. Hence their name, as they typically look like fish eggs. Arguably, the specimens ("globuli lapidei") described by Vallisneri are pisolites, these rocks being rather common in the in the gypsum-sulphur formation of the northern Apennines. See De Waele, Forti, and A. Rossi 2011, 46. See also Vallisneri 2012, 277–278.

⁹²Mount Valestra (951 m/3,120 ft above sea level), in the territory of Carpineti (Province of Reggio Emilia).

⁹³Virgil (attributed). English translation: Rose 1996, 258.

⁹⁴The epitaph on Balista is conventionally ascribed to Virgil, and is considered as one of his earliest works. According to Augusto Rostagni (Rostagni 1961, 40–43), Balista was Virgil's schoolmaster, who actually was not a robber; nor was he stoned to death for his deeds (as both the stanza and the legend claim). More probably, a young Virgil just made fun of him for his severity.

⁹⁵Mount Valestra is mainly composed of arenaceous rocks dating back to the Miocene epoch (23–5.3 Ma). It is the northern extremity of a ridge stretching from northeast to southwest in the Carpineti territory, and whose tectonic origin is also the cause of the many caves in the area. Vallisneri explored one of these grottos, the Buca del Diavolo ("Devil's Pit"). This experience is not reported in the manuscript, but in Vallisneri 1722b, 282–283. On this topic, see Luzzini 2013a, 95–96; 2014a, 211.

secretly 17] planned to return the following night with a cart, and to plunder that wealth of the underworld, and that royal treasure, to be remembered in the annals of the country. In the meantime, the strangers left; and again, having closed the entrance, they hid the keys in the nearby thorn bush. Thus, the greedy farmer, with great care and with a mind full of expectation, when no one was observing, and in the great silence of the night, came back to the prickly hiding place of the keys; and, heedless of the thorns, sought the keys, which had been abandoned there, with his calloused hand. But, scarcely had he thought that they were in his hand when he grabbed a nest of twisting and fiercely hissing vipers: and, as nothingness deceived his expectations,

Cold doubt and horror through [his] bosom ran.⁹⁶

Wonder turned into dread, and dread became wonder again, and he could not resolve whether he was more astonished by fear, or more afraid of astonishment. The descendants of that farmer still live [there], and are among the wealthier inhabitants of Balista; and since fortune smiled on their enterprise, and they are prominent for their talent and industry, their wealth is believed to be the product of the necromancy of some strangers. But let's not wander from the subject,⁹⁷ and let us return to the road from our digression.⁹⁸

Like Ancients going to the bath house, on the following day we moved to the thermal springs of Quara:[§] a place once renowned all over Europe for its healing waters, now barely known to the inhabitants themselves.⁹⁹ Jacob Wecker mentions them in his *Antidotarium*,¹⁰⁰ 18] and Sir Fulvio Azzari, in *Compendio dell'istorie della Città di Reggio*, writes that many considered them like Roman doctors; for, in that time, they arranged to bring them to Rome, in order to heal the desperate patients.¹⁰¹ Now they are becoming dirty, obscure, and unknown even to our physicians. As if the thermal springs, too, had their own constellations, and could suffer the wrath of adverse fate. Thus, also, so many other [springs] honored in the previous centuries are now covered with mud, and others, formerly obscure, are now greatly respected. Nor were the properties of the thermal waters of Quara—which Gabriele Falloppio described with the name of “Balneum

⁹⁶This is a passage from Virgil's *Aeneid* (Vergilius 2018a, II, 120–121, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi003.perseus-lat1:2.105-2.144>).

⁹⁷From the Latin saying “Ne extra oleas” (“don't [wander] from the olive trees”), which in turn derives from Aristophanes's comedy *The Frogs* (Aristophanes/Ἀριστοφάνης 2018, line 995: “ἐκτὸς οἴσει τῶν ἐλαῶν,” <http://data.perseus.org/citations/urn:cts:greekLit:tlg0019.tlg009.perseus-grc1:992-1003>). See Miller 1914.

⁹⁸“E diverticulo in viam,” a Latin saying of uncertain origin.

⁹⁹Quara, an ancient spa in the territory of Toano (Province of Reggio Emilia), whose mineral springs had been utilized since the Roman age. This water, rich in sodium (NaHCO₃) and potassium (KHCO₃) bicarbonates, was considered to be particularly effective for the treatment of skin diseases and digestive problems. In the XV century the springs were still widely utilized; however, when Vallisneri visited the spa it was abandoned and in ruins. See Luzzini 2013a, 96; 2014a, 212; <http://www.appenninoreggiano.it>; <http://www.comune.toano.re.it/turismo/storia.htm>. The mineral springs of Quara are also described in Vallisneri 1711, 353–354; 1728, 112–117.

¹⁰⁰Wecker 1577, 14: “Apud Aquarium terra est a Regio Longobardo 25 miliaribus distans, balneum de Aquario nuncupatum: alumine participat. Viribus simile est balneo della Porretta. Idem.” In the previous edition of Wecker's *Antidotarium Speciale* (Wecker 1574), Quara is not mentioned.

¹⁰¹Azzari 1623, voice *Quara*: “[...] quivi si trova il famoso bagno, tanto stimato da' medici Romani; l'acque del quale di continuo mandano a pigliar, per servirsene in diverse infirmità; il qual bagno vien preconizato da Giacomo Vaccaro nel suo Antidotario; è ne' monti.” Azzari mentions Wecker's *Antidotarium*. Most likely, Vallisneri borrowed this reference from him.

[§]**Margin note (left):** See Letter 2, p.

Aquarianum”¹⁰²—consumed by old age, although they have dried up.^h Just as the Old Fathers described them, so I have found them. Endowed with a truly pleasant saltiness, and being a bit cold, they have a smell of volatile sulphur (which someone erroneously associated with camphor), and a very bright color. Hence, I consider them particularly effective at flushing out the obstructed bowels, at scraping the dregs and the rough sands of liquids off the body, and at destroying the worms in the intestines. And, therefore, [they] certainly cure weak stomach, shortness of breath, flatulence, hypochondria, painful colics, sterility (when caused by a too viscous lymph), dizziness, the pain proceeding from slow, especially polypous blood, glutinous phlegm, and all the other diseases which proceed, as schools assert, from a cold cause.¹⁰³ As I hinted before, Falloppio, a citizen of Modena, was not silent about them, though he made a mistake about the location of the springs.¹⁰⁴ He wrote that they were on the banks of the Dragone Creek;¹⁰⁵ when, in fact, they gush from the right bank of the Dolo.¹⁰⁶ This is a nearby stream, and is equally wild and steep, but originates from different, hidden places. What attracted even the pens of foreign admirers, **19**] eventually became unknown to our people. [The springs], breaking out from fissures in the rocks of the mountain, were diverted northward through invisible pipes into a basin, and then into a marble vase, which still survives the injury of time. Anciently, they were scrupulously protected by a solid cover with leaden joints, and strengthened with bolts; thence, they poured from the lower opening into the stream below. A staircase in stone, carved to ease the descent to the place, can still be seen. As to the rest, the water does not flow into the ancient vase anymore, nor is it collected and brought to foreign countries by strangers. The receptacle is full of stones, mud, and sand; [the water] roams everywhere, and now is drunk with great pleasure only by cattle, sheep, and goats.

Having crossed the torrent, we reached Rubbiano,¹⁰⁷ where stands a most ancient and not unknown church that—according to the inhabitants—was built by the famous Matilde.¹⁰⁸ Here, very cold and clear springs from one side, and foul-smelling, sulphurous, steaming, and warm ones from another, flow without a name, nor any use. Other ones, which have a not unpleasant saltiness, can be seen not far [from there]; but they are

¹⁰²Falloppio 1606, Tractatus Septimus, *De Thermalibus Aquis*, Cap. XXV, *De balneo Aquariano in agro Regiensi*, 324–325.

¹⁰³See note 80.

¹⁰⁴Falloppio 1606, Tractatus Septimus, *De Thermalibus Aquis*, Cap. XXV, *De balneo Aquariano in agro Regiensi*, 324: “Scire namque debetis, quod fluvius Draco appellatus, dividit Mutinensem agrum a Regiensi, in huius fluminis parte illa quae occidentem respicit solem, est hospitium quoddam non procul admodum ab Aquario pago.”

¹⁰⁵Torrente Dragone (“Dragone Creek”), in the Province of Modena. It merges into the Dolo a few kilometers north from Montefiorino.

¹⁰⁶Torrente Dolo (“Dolo Creek”), a tributary of the Secchia. It forms a natural boundary between the Provinces of Reggio Emilia (on the west) and Modena (on the eastern side).

¹⁰⁷Pieve di Rubbiano, an important Romanesque church in the northern Apennines. Now part of the municipality of Montefiorino (Province of Modena). Despite what the farmers told Vallisneri, the church was not built by Matilde di Canossa (see the following note), its origins dating back at least to the IX century. See Bucciardi 1930; B. M. Grazia and M. Grazia 1999; Montorsi 1987, 130–144.

¹⁰⁸Matilde di Canossa, also known as Matilda of Tuscany (1046–1115). A powerful feudal lady, and one of the most powerful women in medieval Europe, she was a steady supporter of Pope Gregory VII (1020/1025–1085) during the Investiture Controversy: a conflict that opposed the Papacy and the Empire between the XI and XII centuries. At the height of her power, the “Grancontessa” (“Grand Countess”) ruled over a vast part of current Lombardy, Emilia-Romagna, and Tuscany. In 1111, she was crowned Vicar and Vice-Queen of Italy by the Holy Roman Emperor Henry V (1081–1125). On this topic, see V. Fumagalli 1996; Golinelli 1997; 1999.

^h**Margin note (left):** *De Thermalibus Aquis*, Chapter 25, p. 324 of my [book]

known only to farmers, and sheep, etc. There lives a rather famous family of surgeons that is called Raspona, renowned for healing those poisoned (especially) by viper bites. In fact, they carefully suck the inflicted venom as the Psylli¹⁰⁹ (from which they claim to descend) used to do, and wash the fatal wounds with their own saliva; they will completely restore the health of those who have been bitten, if they run to them immediately. A snake-like mark **20]** can be seen on the shoulders of all those belonging to this lineage and, especially in springtime (when it has a brighter color), it portrays the rough image of a nest of vipers. Having uncovered the shoulders of one of them, I examined it with curious eyes and hands, and I still doubt whether it is a natural image or an artificial one.

Once we had climbed the slope of the mountain, we admired to the south the dyeing springs of Vitriola, provided by nature with gratuitous coloring properties. Hence, and not by chance, the wise Ancients gave this place the name of “Vitriola”: because of the vitriolic, or blackening, waters in which it abounds.¹¹⁰ You shall be amazed, my friend, if I assert that these springs rival the ones in Boeotia.¹¹¹ They are unknown, since no author, so far, has deigned to consider the wonders of our mountains. Like black sheep approaching certain prodigious waters, and leaving with a white color, here—with an opposite outcome, but with an equally miraculous result—the white clothes are immersed, and look black when extracted. With not despicable kindness, the Great Mother [Nature] looked after the needs of that rustic people, bestowing durable colors at no cost, and compensates the harshness of those places with the preciousness of the goods. [The waters] emerge from the bottom of the field which faces the Dragone and, by passing the border of the spring through the sloping ground, flow into the bed of the said brook. The water of these [springs] is clear, with no taste; yet, it colors the soil and the aquatic weeds it touches with a yellowish, ferruginous dye. A light matter, reproducing the colors of the rainbow, spreads itself like a finest web; once it has been dried, it produces a golden powder. The soil is very dark at the bottom, and is most suitable for the dyeing process. The people of the countryside blacken linen clothes **21]** and wool in these dyed springs, but not without some previous preparation, so as to imbue them even further. Thus, at first they boil and soften the clothes that are to be colored in pure water, along with chestnut catkins, or with their inner barks, or liber; after [the clothes] have been prepared with this simple method, they are immersed in the springs for 24 hours and covered with mud, which is repeated twice or thrice, so that nothing will look more black. Nor is it to be omitted, that the so-dyed garments last longer than the untreated ones, that is quite the opposite of what happens to those ones which are colored by our dyers with the usual method. For the fierce vitriol, once poured in, erodes the threads of the fabrics with a hidden sharpness;

¹⁰⁹Psylli, an ancient people who lived in Marmarica, a part of Northern Africa between eastern Lybia and Egypt. During the Roman age, they were renowned for being immune to snake venom and for their ability in the treatment of snake bites. See Bates 1914, 179–180; Ogden 2013, 6, 64, 209–214, 231–243, 296–297.

¹¹⁰Vitriola, a hamlet in the municipality of Montefiorino. It is located in an area delimited by the mountain ridge on which Montefiorino rests (on the west) and by the Dragone Creek (on the east). Arenaceous and calcareous rocks—typically turbidites—dating back to the Campanian, Maastrichtian, and Danian ages (Late Cretaceous–Early Paleocene, 83.5–61.6 Ma) dominate the lithology of this area. Most likely, the coloring properties of the springs described by Vallisneri result from high concentrations of iron oxides in the water. Cartographic source: *Carta geologica d’Italia, Foglio 235 (Pievelago)* 2002. The springs of Vitriola are also described in Vallisneri 1711, 355; 1717b; 1728, 121–123. On this topic, see also Rampoldi 1833, 81; Ricci 1788, 257; Zuccagni-Orlandini 1845, 45.

¹¹¹The reference is to the Greek myth of Trophonius’ Cave, in Boeotia, where an oracle resided (Μαντεῖο του Τροφωνίου). According to the legend, those wishing to consult the oracle had to drink from two springs, bearing the names of the rivers of Hades: Lethe (Λήθη, “Forgetfulness”) and Mnemosyne (Μνημοσύνη, “Memory”). On this topic, see Edmonds 2004, 52, 107; Ustinova 2009, 91–92; Vandenberg 2007, 236–242.

and, with the passing of time, gradually cuts off even the ones that have been placed in chests. But, for what reason only the poured [vitriol] works in this way, and the one which can be found in the water (whether it originated there, or was secretly dissolved) does not, I leave you to ponder. If they wish to have a jujube color, they previously boil the clothes along with the roots of black mulberry,¹¹² or dwarf willow,¹¹³ or of other willows that grow in the rivers; then, they dip them in the said manner. They obtain also other colors; and would obtain [even more], if any meticulous investigator of the natural secrets carefully performed a greater number of experiments. [These springs] have not yet been used for medical purposes, but I have no doubt that they are not appropriate for all those ailments for which the other vitriolic waters are prescribed; as, being weaker, they would not be more effective than the latter ones. In fact, they contain in themselves a rather mild and harmless vitriol [that is] not sharp, nor fixed, nor severe, nor erosive; hence, I doubt not that they could, [however], help to cure kidneys, stomach, hot liver, feverish blood, relaxed uterus, and other languishing parts of the body. Should I finally make my way back to my homeland, I shall be eager to test them; in the meantime, I shall exhort so insistently the most eminent physicians among my fellow-citizens, that they will not disdain to repeat the experiments, claiming glory for themselves, health for the sick, and profit for the country. **XIII.r] XIII.v]**

We then came upon the nearby Dragone: that is, a stream which is renowned for being dangerous and rough, full as it is of huge rocks, and in which every year an adverse fate sacrifices someone. The different colors of its stones—reddish, green, black, golden, white—arranged like a mosaic in its gravelly bed, copies with precision the speckled back of a dragon. Hence, perhaps, the name, as well as from [its] serpentine course, and from the [fact that it seems] to be crawling upwards, and that it always flows obliquely.

Not a mile from there, we approached Medola,¹¹⁴ whose borders are touched by the said stream with its waves. **22]** It was formerly a stronghold: impregnable to enemies, placed as it was on the top of a dreadful cliff, on a livid, reddish crag, and ruling over all the neighboring [lands].

And Medola ruled Montefiorino.¹¹⁵ⁱ

Now the mere foundations, made irreparable by threatening cracks, are what remains of the ancient glory. Immense mountains are on both sides, and their right slope, sprinkled with a sort of dark redness, is barren, made of sharp stones, and parched by mineral exhalations. We found many silvery and bronze-colored pyrites, and many stones sprinkled with a green color,¹¹⁶ on the sides of which adhered a certain yellowish substance, similar to amber. Hard rocks roughened and filled the ground everywhere with tartar and small spherical pebbles, emitting the [typical] smell of mines. [And indeed] the entrance of a mine stood

¹¹²Black mulberry, in Italian “gelso nero” (*Morus nigra* L.), Family Moraceae.

¹¹³From Tournefort (de) 1700, 591: “*Salix Alpina*, *Alni rotundo folio*.” Dwarf willow, in Italian “salice erbaceo” (*Salix herbacea* L.), Family Salicaceae. It is a tiny, woody, creeping plant, adapted to cold mountain, arctic and subarctic environments. Once rather common in the northern Apennines, it is now very rare and is regarded as a relict species as a consequence of the climate changes which have occurred in the past three centuries. On the identification of this species in the Italian mountains, see Parlatore 1867, 277–279.

¹¹⁴Medola, an ancient citadel (now part of Montefiorino) located in a crucial strategic point on the left shore of the Dragone Creek. Once a powerful stronghold (especially during the XII and XIII centuries), by the time of Vallisneri’s visit it was in ruins. See Tiraboschi 1825, 39–40.

¹¹⁵Tassoni 1624, Canto III, 67.

¹¹⁶Arguably, copper-rich rocks. Many cupric salts have a typical blue-greenish hue.

ⁱMargin note (left): Tassoni

open under a steep rock, where (as they say) some believed that a gold or silver vein could be exploited, but which I had found to contain just rough, unprofitable copper. The flank of the mountain on the left slope, not hardened by immense stones, and torn apart by the underground waters, which eroded it, had once collapsed precipitously, burying the church of Medola¹¹⁷ and the houses located on the lower plain. Frequent ruins of this kind can be seen everywhere, and from the broken ribs (so to speak) of the mountain, and from the destroyed cliffs, peaks shrink, and lowlands rise; and, having the face of the landscape been changed, [each rock] seeks to know which is the one pressing on it, and if [this] has its same ancient origin; nor can it understand. The unsteady foundations of the Earth are certainly so weakened and eroded by the waters and by the melting snows (which from the highest peaks of the nearby Apennines sink through cracks in the rock layers), that at length they are loosened by the enormous pressure upon them. The inhabitants call these [phenomena] *salacte*, or *lavine*;¹¹⁸ and in all cases we noticed that they are more common where springs gush out, and where there are no stony layers beneath. **23]**

After arduous efforts and a rough journey, we finally climbed to the highest point of the Apennine Mountains—which the Ancients called Letum, and some now call Alp of Saint Peregrine¹¹⁹—and we venerated the still incorrupt body of the Saint.¹²⁰ How many inaccessible waterfalls did we observe? How many secret places, in valleys hidden to the mountains themselves? How many abrupt edges of cliffs, steep tracks, impervious paths? Besides, it was the scorching month of August, which in our countries is torrid; and yet, in many places the cruel winter [still] raged with snow and cold. In fact, the snows (which generally accumulate for many years) melt only when, sometimes, Sirius burns more vigorously, or the south wind blows. [Here], the old beech tree is rarely profaned by the axe, the thickets stiffen constantly, and huge shadows abound everywhere. Hence the eternal cold, the perpetual winds, the unknown warmth of the air. It was then that I reconsidered the origin of springs and rivers from a higher [perspective], and I silently told myself: “Here the unseen hearts (so to speak) of the perennial fountains, here the first breasts of the rivers hide.” Everything is always covered with just wetness; the dripping waters have no end; and the cavernous bowels of the Alps continually suck, and preserve that everlasting liquid, equaling the function of *hydrophylacia*.¹²¹ There is no lack of reservoirs here: perennial cisterns, and endless reservatories, are swollen with water.

¹¹⁷Church and fortified house of Medola, not to be confused with the homonymous fortress. It was located in the Modena Plain, and was destroyed in 1318. See Tiraboschi 1825, 39.

¹¹⁸Archaic Italian terms for “frana” (“landslide”). More specifically, the word “salatta” was used among the populations of the northern Apennines. See De Stefani 1875, 6.

¹¹⁹Alpe di San Pellegrino (“Alp of Saint Peregrine”), 1,701 m/5,581 ft above sea level. It overlooks the homonymous Pass, where is located San Pellegrino in Alpe (1,525 m/5,003 ft): the highest village in the Apennines. The pass links the Province of Modena (Emilia-Romagna) with Garfagnana (Province of Lucca, Tuscany). See Luzzini 2013a, 94, 96–97, 102, Tabs. X–XII; 2014a, 209, 212–213.

¹²⁰The body of San Pellegrino delle Alpi (“Saint Peregrine of the Alps,” ?–643), still preserved in the local shrine together with the body of San Bianco (“Saint Blancus”), his only companion. According to the legend, Pellegrino was a pious Irish prince who travelled to the Holy Land. On his way back, he settled in a hermitage on the Apennines. On this topic, see Angelini 1996.

¹²¹By using this term, Vallisneri alludes—with evident, intentional irony—to the Jesuit scholar Athanasius Kircher (1602–1680) and to his theory of “hydrophylacia.” In Kircher, Neoplatonic and Hermetic beliefs coexisted with field research and experimental practice, leading to intriguing results. In his *Mundus subterraneus* (Kircher 1664), the whole Earth is studied as a living organism, in which each part is interconnected with the others. Like in the human body, different vital fluids flow through the planet. Natural phenomena are the result of the interaction between these circulatory systems, called “fire networks” (“pyrophylacia”), “air networks” (“aerophylacia”), and “water networks” (“hydrophylacia”). Kircher acknowledges evaporation as a means to replenish springs and rivers. But the “hydrophylacia” are the main causes of this pro-

No place this for ingenuity: be you the judge, and your eyes will triumph.¹²²

“We pondered greater things,” as Cyrus said in the presence of Xenophon, “while observing the lesser ones.”¹²³ For then my mind ventured to seek more in depth, and to follow the immense mass of water that was absorbed by underground streams through the darkness of [those] paths. In fact, not the Panaro,¹²⁴ nor the Secchia River, nor the other less known torrents, nor the scarcity **24]** of the perennial springs coming down from the Apennines, correspond with such a great quantity of snows and waters. In the hidden part of their abysses, [the streams form] a river that—by running past the roots of the smaller mountains, having travelled a dark journey, and having finally opened the gates—discloses its presence by spilling out here and there through different, lesser breaches; while the main stream, by flowing secretly through a sandy and gravelly bed, provides the “origin of the admirable fountains of Modena” that the Most Famous, and Always Honorable, Ramazzini (who was once my colleague) discussed so learnedly and ingeniously, though supporting a different theory.^{125j} Besides, the more I consider all the perpetual springs that flow more copiously on the farthest side of the Alps of Fornovolasco,¹²⁶ the more I become convinced of this [model]. In fact, snows are less frequent there, owing to the warmth of the nearby sea; and indeed, when getting even closer to the western slope, where the sea is, snow is almost always absent. But since in that place there are plenty of mines—of which I will [speak] later—and since the layers of the mountains are, for the most part, arranged horizontally, and are almost entirely made of hard rock, thence it follows that the melted snows and the flowing waters can barely stay in their innards; and by returning from those interposed basins, they either provide nourishment to the mines, or weep from small cracks as fountains, and form all the perpetual and inexhaustible springs. In fact, owing to the dense structure and to the position of strata and mines, such [waters] are not allowed to descend to the last, invisible roots of the mountains, **25]** as happens with the Alp of Saint Peregrine. There, the nature and the disposition of the layers are different. The abundant earth, the bibulous sand, and the looser structure absorb the falling waters and the flowing snow, and carry them down to the deepest roots of the Alps, forming an invisible river. Hence the dreadful slidings of the mountains themselves, here and

cess—they connect the sea to the mountains, allowing the water to rise. On this topic, see Findlen 2004; Fletcher 1968; Parcell 2009.

¹²²This passage is from the *Appendix Vergiliana* (Vergilius 2018b, 549, attributed, <http://www.thelatinlibrary.com/appvergecomp.html>). English translation: J. W. Duff and A. M. Duff 1934.

¹²³Arguably, this is an adapted quote from Cicero’s *Cato Maior de senectute* (Cicero 2018a, LXXIX): “Apud Xenophontem autem moriens Cyrus maior haec dicit: ‘Nolite arbitrari, O mihi carissimi filii, me, cum a vobis discessero, nusquam aut nullum fore. Nec enim, dum eram vobiscum, animum meum videbatis, sed eum esse in hoc corpore ex eis rebus quas gerebam intellegebatis. Eundem igitur esse creditote, etiamsi nullum videbitis’ ” (<http://data.perseus.org/citations/urn:cts:latinLit:phi0474.phi051.perseus-lat1:79>).

¹²⁴Panaro River (also known as Scoltenna), a main—and the last right-hand—tributary of the Po River.

¹²⁵Differently from Vallisneri, Ramazzini supported a compound origin of fresh water in which precipitation was complemented by both condensation of vapor into caverns and desalination of sea water by filtration through rock strata (Ramazzini 1691, 56, 62). On this topic, see Luzzini 2011b; 2013a, 73–74, 98–99, 109, 114, 140, 142, 146, 151, 198–199.

¹²⁶Fornovolasco, a village in the Apuan Alps (Tuscan Apennines), in the western end of Garfagnana. This place, now in the municipality of Fabbriche di Vergemoli, was once renowned for its iron mines. Still, in the XVIII century the mines were intensely exploited on behalf of the Dukes of Este, who used the iron for military purposes. See Bonini and Biagioni 2007; Luzzini 2010; 2011a, 107–108; 2013a, 100–102, 124, Tabs. XV–XVII; 2014a, 213–214; Rocchi 2010.

^j**Margin note (left):** *De Fontium Mutinensium Admiranda Scaturigine Tractatus Physico-Hydrostaticus*, Modena, 1691

there, and the collapses proceeding from their flanks, which sometimes can be seen from many miles away, [causing] the very feet to tremble. From whence the mind is inclined to guess, why the waters hide themselves here and appear there; why the perennial springs are uncommon here and the course of rivers is more infrequent, while the both of them flow more abundantly in that [other place]. For this, I thought, is the only circulation of waters (in the bosom of these lands of ours, at least): from the sky to the earth, from the earth to the sea: and, in turn, from the sea to the sky, from the sky to the earth. That is to say, the cavernous mountains and the thirsty land absorb the waters pouring from the sky; [and these waters], flowing for the most part, and absorbed along the way, sink back to the sea through obscure paths. From there, they rise back to the clouds, which make them thin; and from the clouds they descend once more, in a perpetual circulation of the liquid element, whose operation never fails.¹²⁷

But I can see you laughing, my dearest friend; since from a small journey, and from trivial observations, I shall ponder such immense issues. For I shall not embrace Descartes' common theory¹²⁸ (which especially suits the Italian tastes) about the origin of perennial springs and rivers, and about their circulation, which even your beloved Lanzoni discussed.^{129k} For indeed, this [theory] **26** and those [authors] derive the rise [of water] from the sea, rather than from transitory rains and melted snows. Still, by questioning such great [issues], and only with respect to our regions, I don't expect to insult the value and the authority of great men: I mean not to dispute, but to strengthen. "It is a long standing and commonly held opinion," Plato's *Sophist* says, "that if great subjects are to be properly achieved, one should examine them in the lesser and easier cases, before proceeding to the greatest."¹³⁰ When we seek truth, we must consider how much [a theory] is agreeable and original, and not who, or how many, asserted it. And indeed, I don't extend my opinion to the whole world. I limit my irrelevant observations to our springs, short rivers, and torrents. Perhaps

... one thing after other will grow clear...
Thus things for things shall kindle torches new.^{131l}

I am eager to know, O most learned man, what you, whose intellect is so strong, think about these subjects. I beg you, rub a wound that is not healed yet, and either make me wiser or command me to remain silent in the future. For you are not one of those who

¹²⁷This seems to be a reference to a biblical passage from the book of Ecclesiastes, Chapter 1, verse 7: "All the rivers run into the sea, yet the sea is not full; unto the place from which the rivers come, thither they return again."

¹²⁸Here, the author refers to the influential Cartesian theory of "alembics," according to which hidden channels existed connecting the oceans to the earth, allowing sea water to rise up the mountains by effect of subterranean heat, and to lose its salt by condensation of vapor inside secret caves. In Descartes' opinion, these condensation phenomena gave a crucial contribution to the water cycle (Descartes 1644, 228–231). Vallisneri firmly opposed the "alembics" theory, persuaded as he was that all fresh water came from rain or from the melting of glaciers in the mountains. See Luzzini 2011b; 2013a, 97–98, 109–111, 116–131, 141–153; 2014a, 208, 213.

¹²⁹Lanzoni 1688, *Animadversio LXXXVI, De Aquae circulatione*, 335–336.

¹³⁰This is a passage from the *Sophist* (Plato/Πλάτων 2018d, III, 218, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg007.perseus-grc1:218c>). The same quote is in Vallisneri 2009, 15.

¹³¹This is a passage from *De rerum natura* (Lucretius 2018, I, 1115–1117, <http://data.perseus.org/citations/urn:cts:latinLit:phi0550.phi001.perseus-lat1:1.1083>). English translation: Lucretius 1916. In an interesting comment on these passages, Ken Taylor remarked how Vallisneri's thought here "represents an attitude that

^k**Margin note (left):** Observation 86

^l**Margin note (left):** Lucretius

conform truth to their will, and dismiss as a lie whatever does not suit their taste. Error lies in men, in nature, and even in the narrator of Creation who, possessed by vanity, mocks everyone else; believing that he alone, with just a hidden and smoky lamp, can understand the affairs of Heaven and Earth. I confess my ignorance on everything, but especially on these matters. Also, I beg you **27]** to let me know your opinion on the fresh water spring that, to the wonder of people, spilled out in Venice during the excavation of the Cannaregio (as I assured you in a letter),¹³² and what about the waters—fresh, as well—which gushed out from the sea floor, as the Neapolitan Simone Porzio observed, when, during the famous conflagration in Pozzuoli, [the sea] retired about two hundred paces?¹³³ The waters, I suppose, flowed down from the mainland through hidden channels in the same manner as, according to the slope of the ground, they run into the sea through the open ones. Since obscure rivers, and invisible rills, [descend] from the heights of the mountains by sloping ridges of clay and rocks, and not only through outside paths, but by dark and narrow ones, too, all the way down to the inmost chambers of the sea; and, sooner or later, they emerge. How, in fact, could the sea take back in itself those altered vessels (so to speak), as if in a miracle? By what necessity does it deprive itself of the brackish water when, in turn, it absorbs the fresh one in no time? This [fact] does not elude you, too: the way by which sea water is filtered, and becomes fresh, is doubtful and deceptive, according to our experiments. For it cannot lose its salt by percolating through any sand or marble, nor through any vase which has been tempered with the fire of a furnace. Either the bond between the salt and the water particles is so strong that they can be separated only by gentle evaporation, or both the shape and the mass are such that the draining pores would absorb the salts along with the water. Even in the last, most arid summer, we observed that the garden wells of our Chioggia and of Leghorn **28]** (which are close to the sea) dried up, although the surface of the sea bed is far higher than the lowest depth of those shafts. It is certainly a sure evidence that the mentioned wells receive the waters from the land, and not from the sea. In addition to what Sir Perrault,¹³⁴ Caspar Bartholin,¹³⁵ and other Transalpines have explained, I am slowly pondering other things,

is fundamental to the novel scientific viewpoint this author exemplifies. Like so many of his contemporaries, Vallisneri can hardly escape the impulse (Renaissance-humanistic in its basic character) toward rehearsal of the observations and opinions of respected authorities of the past. But he also declares that in the end, determination of what is true must depend not on authority but rather on facts and upon the capacity of a theoretical idea to account satisfactorily for those facts. A peculiar and interesting feature of Vallisneri's writing is that, while holding to this modern criterion of conformability of a theory to observed facts, he maintains a somewhat traditional attachment to exposition that appeals constantly to one's awareness of what both ancient and more recent authorities said" (my sincere thanks to Ken for this note).

¹³²Unfortunately, the letters Vallisneri refers to are missing. This event occurred in 1680, during the excavation of the Cannaregio, one of Venice's main canals: suddenly, and unexpectedly, fresh water sprang from the ground. The same episode is mentioned in Vallisneri 1715, 69: "Narrommi un dottissimo nobile uomo di Venezia, che nello scavare certe altissime fondamenta nel loro Canal Regio trovarono una larga vena d'acqua dolce, la quale scorrente sotto le lagune salse colà sboccava, dove poteva farsi, con raro miracolo, una nobilissima fontana." See also Vacani di Forteolivo 1867, 168; Zandrini 1811, 177.

¹³³Porzio 1551, 3: "[...] mare passibus fere CC recessit, quo quidem loco et ingentem piscium multitudinem accolae capere, et aquae dulces prosilire visae fuerunt." The passage is also quoted in Vallisneri 1715, 69.

¹³⁴Perrault 1674. Pierre Perrault (1611–1680), a French hydrologist, in his treatise invoked the existence of a perpetual motion of water, according to which rivers refilled both oceans and fountains. But he denied the Cartesian concept of subterranean heat as a means to explain the rise of water, as it had no acceptable causal explanation. Hence the need for another process, as the "horror vacui," in obedience to which water could return—against gravity—from rivers to springs (Perrault 1674, 148–150). See Luzzini 2013a, 113–114; Rappaport 1997, 187.

¹³⁵Bartholin 1689. Caspar Bartholin (the Younger, 1655–1738), a Danish physician, refuted both rock filtration and distillation as natural means of producing fresh water. And just like Vallisneri, he pointed out that

which I will later [describe], so that your most fertile intellect may further consider or erase them.

However, in order to keep the promise, and to [finish] the journey we started, I will make sure that you see, once again, everything I witnessed with my curious eyes. Often, while I was enjoying fine weather, I observed the rains falling on the lands below, and the sky being covered with a humid and dense mist. At that time, it seemed to me that my head was not just among, but somewhat above, the clouds, and that I could hear the thunders under my feet, as a humble Jupiter (so to speak) who threw lightnings. Likewise, I saw entire regions immersed in the very clouds, and something like a vast, misty plain disposed horizontally, with great precision, where—in various places—now a vortex, now, suddenly, a confused whirl opened up. Then, an indistinct roaring echoed in the sky, and a grave sound thundered in our ears. From which, and as if with my truthful eyes, I deduced the origin of the violent thunderbolt, and of the confused rumble. And indeed, in that place there was no fabled antiperistasis¹³⁶ opposing the extreme cold with fire; but, according to the law of motion, everything originated from the opposite action of [two] bodies on one another; and it was the same with the persistent winds. **29]**

Crystals and crystal-like [minerals] can often be found in these mountains, some of them having a blackish color, and an exceptional beauty. For there is no one who would believe that these [crystals] are not made by the craft of [men], encircled as they are by a finest band in the middle, which is formed by six rectangular parallelograms, and is limited on both sides by three equicrural, or isosceles, triangles: and whose figure I have also recently observed, though not so perfect, in some jacinths from Bohemia.¹³⁷ The crystal-like [minerals] consist of a nearly constant [number] of parts: some of which have a parallelepipedic shape, while others seem to have a more prismatic one, and others, again, tend to be tetrahedral, or octahedral. I also found several geodes, that do not differ too much from the ones in the Euganean Hills,¹³⁸ and some others which have already been described by Ferrante Imperato:¹³⁹ all of them proving [the existence] of a geometric design in nature, and of a somewhat indistinct vegetative power in these [objects], [caused] by an exhalation from the ground. In fact, the lowest parts of the minerals are planted in it,

no springs existed on the very top of mountains. This phenomenon was simply impossible since—Bartholin asserted—it would have contradicted the laws of hydrostatics and equilibrium and, therefore, it would have been against nature itself (Bartholin 1689, 34).

¹³⁶A latinization of the Ancient Greek word ἀντιπερίστασις, literally, “against what stands around.” In early modern medicine and natural philosophy, this term was used to describe the mutual resistance, and the resulting mutual reinforcement, of two opposite qualities (as, for instance, the increase of body temperature as a consequence of cold). On this topic, see Hesse 1961, 55–58, 64, 67–68, 84–86, 101; Pagel 1976, 74–76; Varvoglis 2014, 14, 17, 19, 25.

¹³⁷Jacinth, a reddish variety of zircon (ZrSiO₄). Arguably, the crystals described by Vallisneri were a dark brown or grey variety of this mineral.

¹³⁸Geodes: hollow, spheroidal rocks with crystals in the inside wall. They usually occur in igneous, quartz (SiO₂) rich rocks. This is the case of the geodes from the Euganean Hills (“ab Euganeis”): low, volcanic hills located a few kilometers southwest of Padua. On this topic, see Astolfi and Colombara 1990; Bosellini 2005, 98.

The term “uteri crystallini,” used to describe geodes, comes from Mercati 1717, 259–265. Vallisneri wrote profusely (and anonymously) about this treatise in the “Giornale de’ Letterati d’Italia.” More specifically, see Vallisneri 1719, 173–174: “Se destramente rompiamo le lenti minori petrose descritte, e le maggiori dette numismi, troveremo, che quelle hanno per lo più nel centro certi minutissimi cristalletti, e per lo più nelle cavità degli angoli de’ loro strati, onde si veggono tutte generate nella maniera presso a poco degli uteri cristallini, coperti anch’essi di più strati di lapidosa materia, nella cavità de’ quali sono i cristalli appiattati, e alle pareti interne attaccati”).

¹³⁹Imperato 1672, 572–574.

and look like transparent, little roots which once absorbed the nourishment.¹⁴⁰ Not long ago, the so often mentioned Scheuchzer sent [me] something similar, so as to enrich my small Museum: he sent a hexagonal crystal of remarkable size, sprinkled with a wonderful, green chrysocolla,¹⁴¹ which is from the Uri Alps;¹⁴² another one, hexagonal as well, with a full grass color;¹⁴³ another transparent one from Switzerland; a chalky, marble-like sulphur from Brugg, in Aargau,¹⁴⁴ with crystals fixed in it; a shining white, crystal-like selenite from Mount Pilatus, in Lucerne;¹⁴⁵ and, finally, a cluster of trigonal crystals, as white as sugar, from^{m n o} **30]** the stone quarries of Öhningen,¹⁴⁶ of which [he wrote] in *Specimen Lithographiae Helveticae Curiosae* at p. 24.¹⁴⁷ I also possess a golden-colored, singularly transparent crystal¹⁴⁸ from the Rhaetian Alps,¹⁴⁹ along with various clusters of crystals, sprinkled—as if drop by drop—over a rough chalcedony with a somewhat dark, ruddy color, brought from the Euganean [Hills], and different jokes of nature made from chalcedony,¹⁵⁰ and mixed with crystals, and herbs with the crystals themselves, like flies enclosed in amber. But there are many others.

Once the highest summit of the Apennines is passed, brooks and torrents [follow] an opposite course, as if the empire of the waters was divided; and descend to the Tyrrhenian Sea.^{p q} Thereupon the Province of Garfagnana comes into sight, with its populous towns

¹⁴⁰Vallisneri's thought about mineral genesis and growth was not exempt from ambiguities and fluctuations. As the assertions in the manuscript suggest, he supposed and, somehow, admitted the existence in minerals of such biological features as seeds (or "matrices") and nourishment. However, this theory (which was also a result of the strong influence that the Leibnizian doctrines of *scala naturae* and of the recognition of divine providence in creation exerted on him) was hardly compatible with empirical data and with his experimental beliefs. Moreover, one of his most important and influential scientific correspondents—the French philosopher, naturalist, and mathematician Louis Bourguet (1678–1742)—firmly opposed the idea that minerals would need a sort of nourishment. Not by chance, in the last part of his life Vallisneri did not seem to persist in supporting the view of a vegetative power in minerals. On this topic, see Luzzini 2011a, 109–110; 2013a, 132–137.

¹⁴¹Chrysocolla, a blue-green hydrous copper silicate ((Cu,Al)₂H₂Si₂O₅(OH)₄ · n(H₂O)). However, this name may also refer to malachite, a green copper carbonate (Cu₂CO₃(OH)₂). On this terminological confusion, see Colombo 1995, 91; Ward 2008, 506.

¹⁴²Uri Alps, in central Switzerland.

¹⁴³An unspecified mineral from the hexagonal crystal system. According to the green ("herbaceous") color, it could be beryl (Be₃Al₂Si₆O₁₈), apatite (Ca₅(PO₄)₃(F, Cl, OH)), or even another kind of mineral.

¹⁴⁴Brugg (a municipality in the Canton of Aargau, Switzerland).

¹⁴⁵Mount Pilatus (2,128 m/6,982 ft above sea level). It overlooks Lucerne, in central Switzerland.

¹⁴⁶The stone quarries of Öhningen, whose carbonate rocks date back to the Miocene epoch (23–5.3 Ma) and contain a large quantity of fossils. Here, in 1725, Scheuchzer found and described his famous *Homo diluvii testis* ("Man who witnessed the Deluge"): a fossil that he believed to be the remains of a man drowned in the biblical Deluge. Only in 1787 did the anatomist Petrus Camper (1722–1789) recognize the error, and in 1825 Georges Cuvier (1769–1832) identified in the *Homo Diluvii testis* the fossil remains of a giant salamander, which—in honor of Scheuchzer—was named *Andrias scheuchzeri*. On this topic, see Jahn 1969; Luzzini 2013a, 61–63; <https://vimeo.com/46769954>.

¹⁴⁷Scheuchzer 1702, 29 (and not 24, as is written in the manuscript): "Fluor crystallinus trigonus, striis lateribus pyramidis cuiusque parallelis pulchre notatus. Fig. 41." According to the image in Scheuchzer's essay, this is probably a cluster of calcite crystals (CaCO₃). Calcite crystallizes in the trigonal system.

¹⁴⁸Probably a yellow variety of quartz (SiO₂), also known as citrine quartz.

¹⁴⁹Rhaetian Alps, a vast mountain range in the Central Eastern Alps.

¹⁵⁰Chalcedony, a micro-cryptocrystalline form of quartz. It can occur in many different colors.

^m**Margin note (right):** Turn to p. 31, past seven sheets

ⁿ**Margin note (left):** Turn 7 sheets, etc.

^o**Margin note (right):** Turn to p. 31

^p**Margin note (left):** Thereupon

^q**Margin note (right):** *Thereupon etc. (turn back seven pages)

and villages, enjoying a friendlier climate, and as happy as can be with the greatest fertility of its land. For the high ridges of the Apennines ward off the icy northern winds by receiving and breaking against them the furious rage of the air currents. Castelnuovo,¹⁵¹ the capital of the province, can be seen in the deepest part of the valley: it is enveloped in fog, especially at dawn and dusk. “In fact, when the mountains link to each other through winding depressions, and so do the hills, then mephitic exhalations often afflict the cities. Hence, seven-hilled Rome is even more frequently feverish,”^r said Celsus.¹⁵²

Our mellifluous Testi described the above mentioned place, which is most suitable for a peaceful rest and for studies, with these elegant [words]:^s

Here, where the silver trail
of the Turrine arrives,
and where it meets the loving Serchio, pale,
and when the midday sun
warms Old Apennine’s bones,
the tangled beech disclosing secrets, stunned;
it’s not my merit, but my Master’s grace,¹⁵³
that leaves me here to rest, far from all pain:
for, by His blessed will, He gave me reign.
I live in joy, and as my plectrum sounds
an echo lingers with obsequious tone
of songs whose pleasant titles still rebound:
no sorrow afflicts my heart,
and from these blessed heights,
and from this sky, harsh winter drifts apart. **XIV.r]**
No foreign swords are drawn,
nor are they feared: to bay
downstream the torrents bring their shining gray.
No horn, no piercing blast
wakes up the humble peasant, nor does it call
for battle, nor did it in the past:
except for woolly herds, when that great tyrant, love
commands the trembling rams to clash
in meadows far above,
until the shepherd’s staff
suspends the horned fight,
and calls the fighters back into its sight.
And all the precious blood
that spills from wounded chests,
and which in Arab lands runs like a flood,
is not so valued, where
no mortal eye could see
human blood flowing out of human’s heir;

¹⁵¹ Castelnuovo di Garfagnana (Province of Lucca).

¹⁵² The references in the margin note are incorrect. This is an adapted quote from Dieterich 1661, 1412.

¹⁵³ Francesco I d’Este (1610–1658), Duke of Modena and Reggio from 1629 until his death. In 1640, he appointed the poet Fulvio Testi (1593–1646) Governor of Garfagnana.

^r **Margin note (left):** See Book 2, Chapter 1, pp. 42, 43

^s **Margin note (left):** Ode to Sir Ascanio Pio di Savoia, etc.

except for those rash hands
 succumbing to the rage
 of chestnuts in their sharp and thorny cage.
 And mountains, far and wide,
 by stretching to the sky
 with humble clothes, admonish human pride.
 Oh, willingly would I
 conceal all my vain hopes
 in that shade-giving, peaceful, silent dye,
 for, though my soul rejoices,
 free as it is of ties
 leaves all its glories to the wind, and flies.¹⁵⁴ **XIV.v] XV.r] XV.v]**

Certainly, much [of what is said here] about this region is true, and much has been embellished with invention and adulation, as poets do. I, too, shall describe it with a less elegant, yet much more sincere pen, for I have collected some [information] in [the following] unpolished digression that also tells about the history of people; which, although going beyond my scope, still I consider to be perhaps not useless, nor unnecessary, having found out (not without indignation) that ancient geographers and historians barely touched upon it, while the more recent ones either just mentioned or neglected it with indifference, as if it was an insignificant, lesser land.

It is commonly called Garfagnana, from the Latin Caferoniana: whose name, in turn, is borrowed from Oppidum Caferonianum, established close to the Tyrrhenian outposts, and in the territories of Lucca and of the destroyed Luna.¹⁵⁵ It was so called after Feronia, goddess of pastures, freedmen, fertility, and joy, who was identified with Juno, as Giraldis wrote in *De Deis Gentium*, Book 1.¹⁵⁶ The origin of the inhabitants of Garfagnana is rooted in those Etruscans, Greeks, and Romans who were dispersed and banished everywhere by fate, and not without the contribution of the people, who always (and still) foster cruelty. It was then that it all began: when the world was under the Roman rule—that is, when the conversion of humankind made it tremble from the inside out, and when the whole body of the empire was shaken by every sort of crisis, and by civil, land, and naval wars, as Lucius Florus attests in his *Epitome Rerum Romanorum*. [Those people] were fleeing from the fiercest proscriptions [imposed] by Marius, Sulla, and by the Triumvirs Lepidus, Marcus Antonius, and Octavianus,¹⁵⁷ **XVI.r]** which provides a strong explanation for the many foundations and ruins of citadels still standing out on the highest summits of hills and crags, and where gold, silver, and other precious Roman coins are unearthed here and there. Even now, the ancient names of Sillano, Sillico, Sillicagnana, Sillicano, Trassilico, Roggio, Camporgiano, Cassiano, Cassinello, Ceserana, Brucciano, Petrognano, Nicciano, and many others are still in use; for these castles and strongholds, according to the inhabitants, had been once founded by Sulla and his followers, by Roscius, Cassius, Caesar, Brutus, Petronius, Nicia, and by the other most noble Romans who, from time to time, were struck by fate.

¹⁵⁴Testi 1666, 213–216, *Al Signor D. Ascanio Pio di Savoia* (First edition: Testi 1636).

¹⁵⁵Ancient city of Luna, or Luni (Province of La Spezia), located in the historical territory of Lunigiana. It was close to the shore of the Tyrrhenian Sea and, therefore, was an important Roman harbour. On this topic, see Sforza 1910.

¹⁵⁶Lilio Gregorio Giraldi (1479–1552), a scholar and poet from Ferrara. The reference is to Giraldi 1548, 169–170.

¹⁵⁷This is a passage from Lucius Annaeus Florus (*Epitome Rerum Romanarum*, Florus 2018, II, 9–21, <http://data.perseus.org/citations/urn:cts:latinLit:phi1242.phi001.perseus-lat1:2.9.21.1>).

Nor were the ancient authors completely silent about this province. Marcus Cato, in a fragment from the *Origines*, Chapter 7, wrote: “Lucca was renowned during the reign of Lucus, King of Etruscans”; “Lucus, and Montes Feroniani”; etc.¹⁵⁸ Caius Sempronius Tuditanus, in fragment 3 of *De Divisione & Chorographia Italiae*, called it “Liguria Apuana.”¹⁵⁹ Antoninus Pius, in *Itinerarii Antonini fragmentum*, in Annio’s Book 2, while enumerating the roads that led to Gaul (now Insubria), asserted: “[We] took the path of Cassiano, which, [by passing] through Politorium, Arcenum, Miniorem, Forum Cassii, Aruntes, Camillarius, Tuderum, Varentarum, Mons Umbrone, Sena Colmia, Phocenses, Lucca, and Garfagnana, goes on to Gaul.”¹⁶⁰ Ptolemy, in Book 3 of his [*Geographia*, Chapter] 6, Europa, and in the Table, called it “Lucus Feroniae”;¹⁶¹ whereas Pliny, describing Italy in another passage of the *Naturalis Historia*, Book 3, Chapter 5,¹⁶² addressed those [places] as “Montes Tegulatos”.¹⁶³ these—as Giraldis remarked—are the Panie, and the neighboring mountains,¹⁶⁴ among which Anselmo Micotti from Camporgiano, Doctor of Canon and Civil Law (to whose manuscript, I candidly confess, I owe a lot), supposed that [Mount] Tea of Garfagnana should be located, according to the resemblance of the name.¹⁶⁵ Strabo, in *De Situ Orbis*, XVI.v] Book 5, wrote: “Many people live in the districts of Lucca, which is near to the mountains overlooking Luna; and even Garfagnana is surrounded by them.”¹⁶⁶ Livius recalled this [province] in many passages of *Ab Urbe condita*; and especially in Book 41, where he described Petilius’ death,¹⁶⁷ [whose announcement] was ambiguously distorted with the oracle’s word “Letum.” “Being the commanders [located] in different provinces,” he said, “Petilius set his headquarters in front of the ridge of Mount Balista and Mount Letum” (now responding to the name of Alp of Saint Peregrine), “which joins the mountains with a continuous crest. There, as they say, while encouraging his troops, forgetful of the ambiguity of the word, he pre-

¹⁵⁸This is a fake quote attributed to Cato the Elder’s *Origines* (Cato maior 2018). Actually, the real author is the Dominican friar Annio da Viterbo (or Giovanni Nanni, 1437–1502). In this treatise (Nanni 1498), renamed in its many reprints as *Antiquitatum variarum*, Annio forged a great quantity of documents attributed to several ancient authors. Among them was Cato the Elder, with the supposed book *De origine gentium et urbium Italicarum*. Vallisneri, like other scholars of his time (and many other previous ones), was deceived by Annio’s work (this note refers to the 1515 edition: Nanni 1515, Liber VII, LXVIIIr). On this topic, see Baffioni and Mattiangeli 1981; E. Fumagalli 1984; Pacchi 1785, 11–14; Stephens 2004.

¹⁵⁹This is another quote from Annio da Viterbo, falsely ascribed to the Roman consul Caius Sempronius Tuditanus and to the forged book *De Divisione & Chorographia Italiae* (Nanni 1515, Liber IX, LXXXVr). See also Pacchi 1785, 11–14.

¹⁶⁰This is another quote from Annio da Viterbo, falsely ascribed to the Roman Emperor Antoninus Pius (Nanni 1515, Liber VIII, *Itinerarii Antonini fragmentum*, LXXIVv). See also Pacchi 1785, 11–14.

¹⁶¹From Ptolemy’s *Geography* (Ptolemaeus/Πτολεμαῖος 2018, III, 1, http://penelope.uchicago.edu/Thayer/E/Gazetteer/Periods/Roman/_Texts/Ptolemy/3/1*.html).

¹⁶²From Pliny the Elder’s *Naturalis Historia* (Plinius (Maior) 2018, III, 5), <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat1:3.26>.

¹⁶³Plinius (Maior) 2018, III, 25: “Tigulia intus, Segesta Tiguliorum, flumen Macra, Liguriae finis,” <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat1:3.25>.

¹⁶⁴Giraldis 1548, 169–170.

¹⁶⁵Anselmo Micotti (1630–1695), a historian from Camporgiano, who wrote a manuscript on the history of Garfagnana (Micotti 1671). See also the critical edition of this work, edited by Polimio Bacci (Micotti 1980). According to the priest and historian Domenico Pacchi (1733–1825), both Giraldis and Micotti—and, consequently, Vallisneri—are wrong: the “Tigulia” mentioned by Pliny are not the Panie Mountains, but the ones surrounding Lavagna and Sestri Levante, in the current Province of Genoa (see Pacchi 1785, 3, 19–21). Pacchi also disagrees on the etymology of Garfagnana from the deity Feronia (Roman goddess of forests, fertility, and health), considering it as a misconception caused by Annio da Viterbo.

¹⁶⁶Strabo/ Στράβων 2018, V, 1, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0099.tlg001.perseus-grc1:5.1>.

¹⁶⁷Quintus Petilius Spurinus (III century BC–176 BC), Roman consul. He died fighting against the Ligures.

dicted that on that day he would take Letum.”¹⁶⁸ Instead of Mount Letum, the fatal omen of death occurred.¹⁶⁹

Some believe that Virgil referred to this region when, in Book 7, line 800 of the *Aeneid* he chanted:

... or that Circaean range
where Jove of Anxur guards, and forests green
make fair Feronia glad.¹⁷⁰

But they are entangled in error, as even the above praised Micotti [noted]; for the goddess Feronia, in addition to the place which is now Pietrasanta¹⁷¹ (not Bientina,¹⁷² as Volaterranus holds in *Commentariorum Urbanorum Libri*, Book 5),¹⁷³ had two other sacred groves in Italy. The first one was among the Faliscans,¹⁷⁴ of which Strabo, in Book 5 of *De Situ Orbis*, [wrote]: “Below Mount Soratte¹⁷⁵ lies Feronia: it has the same name of a certain goddess, who is greatly revered by the neighboring people. Her temple is in that place, and an amazing kind of ritual is performed there: those possessed by the spirit of this deity walk on a large bed of burning coal and ashes, barefoot, **XVII.r]** and with no harm.”¹⁷⁶ The second, as the Poet¹⁷⁷ said (and according to Dionysius of Halicarnassus, in Book 2;¹⁷⁸ Sipontinus;¹⁷⁹ Servius Honoratus, in Book 7 of *Commentarii in Vergilii Aenei-*

¹⁶⁸Livius 2018, XLI, 18, <http://data.perseus.org/citations/urn:cts:latinLit:phi0914.phi00141.perseus-lat3:18>. In his treatise, Pacchi strongly disagrees with Vallisneri on the identification of the “Mons Letum” mentioned by Titus Livius with the Alp of Saint Peregrine (Pacchi 1785, 43–44). Actually, the exact identity of this mountain is still uncertain.

¹⁶⁹“Letum” means “violent death,” “ruin.”

¹⁷⁰From Vergilius 2018a, VII, 799–800, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi003.perseus-lat1:7.783-7.802>. Arguably, Vallisneri refers to the quote in Giraldi 1548, 170.

¹⁷¹Pietrasanta (Province of Lucca).

¹⁷²Bientina (Province of Pisa).

¹⁷³Raffaele Maffei (1451–1522), a humanist and historian from Volterra. Maffei 1506. This note refers to Maffei 1530, 48v: “Deinde Feronia lucus Ptolemaeo, qui nunc Bientina cum lacu forte fuerit, nonnullis vero Petrasancta.”

¹⁷⁴Faliscans: an ancient Italic tribe who lived in central Italy from the VIII century BC to 241 BC, when their main city, Falerii, was destroyed by the neighboring Romans. On this topic, see Waldman and Mason 2006, 247–249.

¹⁷⁵Mount Soratte (691 m/2,267 ft above sea level), in the Province of Rome.

¹⁷⁶Strabo/ Στράβων 2018, V, 2, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0099.tlg001.perseus-grc1:5.2>. The same quote (in Latin) is in Giraldi 1548, 170.

¹⁷⁷Virgil.

¹⁷⁸Halicarnassensis 2018, II, 49: “Delatos autem ad campos Italiae, qui Pomentini vocantur, et agrum, quo primum appulerant, Feroniam vocasse, ab ipsa maris navigatione, in qua ipsis contigerat ut huc illuc ferrentur; et deae Feroniae templum erexisse, cui vota nuncuparant: quam iam, unius literae immutatione, Faroniam vocant” (original Greek version: <http://data.perseus.org/citations/urn:cts:greekLit:tlg0081.tlg001.perseus-grc1:2.49.5>).

¹⁷⁹Niccolò Perotti (1429/30–1480), Italian humanist, philologist, and Archbishop of Siponto (hence the Latin name “Sipontinus”). The reference is to Perotti 1489. Page references are to the 1502 edition (Perotti 1502, 37): “Vir. et viridi gaudens Feronia luco. [...] et Iunonem quae Feronia vocabatur. Fontem aut fuisse in Campania iuxta Tarracinam: quae aliquando est Anxur dicta. Sed illud magis constat sub monte Soracte urbem fuisse Feroniam, et in ipso monte eiusdem nominis dea: quam finitimi mira religione venerabantur.”

dos libros;¹⁸⁰ and others), was near Terracina,¹⁸¹ in Latium; even Silius Italicus, in Book 13 of his *Punica*, honored it with a play: “By these words Hannibal was discouraged. He ordered his men to pull up the standards, and they rejoiced, being eager to depart. They marched to the spot where Feronia’s temple of surpassing wealth stands in a sacred grove, and where the sacred river Capenas waters the fields.”¹⁸²

This region is enclosed within several boundaries, which we draw thanks to a few chosen words from Fabrizio Zumali in his *Informatio XI*. “The Province of Garfagnana,” he writes, “lies between the territory of Pistoia, on the east, and the territory of Luna, on the west, and is separated from those regions by the peaks of the mountains that stand between it and them; likewise, it [is delimited] to the north (where Lombardy lies) and to the south (from the territory of Lucca) by the summits of the Apennine Mountains, and is divided into four districts: namely, Camporgiano, Castiglione, Barga, and the renowned Coreglia.”¹⁸³ In fact, having been once confined in narrower borders—so that it retained only that [last] district, other than the name—[now] it flourishes under the Most Serene Dominion of the Este.

Destiny has endowed this province with a ship-like form, with the base in the Apennines; and which sets sail towards the Panie [Mountains], as a curve of happy fertility. The Pania [della Croce]¹⁸⁴ is extremely steep, barren, naked, barely known even to wild beasts; hence, perhaps, it is thus called from Penia, goddess of poverty.¹⁸⁵ At present, [Garfagnana] hosts Barga¹⁸⁶ in its eastern part; the above said Pania on the south; Mount Tea¹⁸⁷ (which divides it from the territory of Luna) on the west; and, on the north, **XVII.v]** it controls the ridges of the Apennines. It is bathed by many perennial and clear torrents, rills, springs, and rivers, that abound with different and most excellent fishes; among which trout are renowned for enriching the tables, and for delighting the palates, of magnates and princes. The Serchio¹⁸⁸ claims the first place for itself: it is called “Boactus” by Ptolemy

¹⁸⁰Honoratus 2018, VII, 799–801, <http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.02.0053>: “‘Circaeumque iugum.’ Circa hunc tractum Campaniae colebatur puer Iuppiter, qui Anxyrus dicebatur, quasi ἄνευ ξυροῦ, id est sine novacula, quia barbam numquam rasisset, et Iuno virgo, quae Feronia dicebatur. Est autem fons in Campania iuxta Terracinam, quae aliquando Anxur est dicta. ‘Et viridi gaudens Feronia luco.’ Non vacat quod addidit ‘viridi’: nam cum aliquando huius fontis lucus fortuito arsisset incendio et vellent incolae exinde transferre simulacra deorum, subito reviruit. ‘Qua saturae iacet atra palus.’ Secundum hanc lectionem re vera Saturam paludem intellegimus; sed alii ‘Asturae’ legunt. Quod si est, paludem pro flumine posuit; nam haud longe a Terracina oppidum est Astura et cognominis fluvius.”

¹⁸¹Terracina (Province of Latina).

¹⁸²Silius Italicus 2018, XIII, 82–85, <http://data.perseus.org/citations/urn:cts:latinLit:phi1345.phi001.perseus-lat1:13>. Here and below, the English translation follows Silius Italicus 1934a; 1934b.

¹⁸³Fabrizio Zumali, a lawyer from Lodi who lived in the XVI century. He defended the Republic of Lucca against the Duchy of Ferrara, Modena and Reggio in a legal dispute over the possession of Garfagnana. On this topic, see Molossi 1776, 187; Pacchi 1785, 3, 22. The quoted passage is arguably from a part (*Informatio XI*) of an unknown, larger text.

¹⁸⁴Pania della Croce (1,858 m/6,096 ft above sea level). It is the highest peak in the mountain range known as Gruppo delle Panie (“Panie Group”), in the Apuan Alps.

¹⁸⁵Penia (Πενία), Greek mythological goddess of poverty and need.

¹⁸⁶Barga (Province of Lucca).

¹⁸⁷Mount Tondo, once known as Mount Tea (1,782 m/5,846 ft above sea level). It divides the drainage system of the Serchio (in Garfagnana) from that of the Magra River, in Lunigiana.

¹⁸⁸Serchio, the main river in the Province of Lucca (and, therefore, the main river in Garfagnana). It flows into the Tyrrhenian Sea, a few kilometers north from Pisa.

in *Geographia*, Book 3, Table 6;¹⁸⁹ “Auxer” by Pliny in *Naturalis Historia*, Book 3;¹⁹⁰ “Aesar” by Strabo in *De Situ Orbis*, Book 5.¹⁹¹ It has its origin in two springs, the former of which is thrown up from the fissured ground above Sillano,¹⁹² the latter above Soraggio;¹⁹³ then their streams merge together, and, after joining with other ones along their course, strike (not without noise) the city walls of Castelnuovo, together with the waves of the Turrite¹⁹⁴ (of which Testi [wrote]). New channels, and new torrents, merge into it; [hence] it runs into the sea, about three miles from the estuary of the Arno,¹⁹⁵ [passing] very close to Lucca; and, being far from obscure, it is swollen at times, and threatening.

Long ago, it mingled with the Arno, as the poet Rutilius Namatianus seems to hint in Book 1 of *De Reditu Suo* where, speaking of Pisa, he says:

I scan the ancient city of Alphean origin,
which the Arno and the Ausur gird with their twin waters.¹⁹⁶

Which is also asserted by Strabo, in Book 5 of *De Situ Orbis*.¹⁹⁷ But, since it brought many disasters to the City of Lucca, it was separated by Saint Fridianus,¹⁹⁸ Bishop of that city **XVIII.r]** (as is piously held) from the year 560 to 575, with just a rake, to the astonishment of the natural world. “Here,” writes Volaterranus in *Commentariorum Urbanorum Libri*, Book 5, On the events of Pisa, “Bishop Fridianus is honored above all others—for, when he was pastor among the inhabitants of Lucca, he miraculously confined the Serchio River, whose inundation was destroying the fields; and the part which is called Serchio, which can be now observed, was diverted from that [ancient course].”¹⁹⁹

Even the poet Guido Vannini, from Lucca, chanted about this [episode] in Epigrams 12 and 19, affirming that

With just a rake, he ordered the raging [river] to obey.²⁰⁰

¹⁸⁹Ptolemaeus/ Πτολεμαῖος 2018, III, http://penelope.uchicago.edu/Thayer/E/Gazetteer/Periods/Roman/_Texts/Ptolemy/3/1*.html. Arguably, the map number and the related name refer to one of the many Latin editions of Ptolemy’s treatise. I refer here to Ptolemaeus/Πτολεμαῖος 1584, *Europae Tabula VI*.

¹⁹⁰Plinius (Maior) 2018, III, 8, <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-eng1:3.8>: “[...] Pisae inter amnes Ausere[m] et Arnum.”

¹⁹¹Strabo/ Στράβων 2018, V, 2, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0099.tlg001.perseus-grc1:5.2>.

¹⁹²Sillano, the main hamlet of the municipality of Sillano Giuncognano (Province of Lucca).

¹⁹³This name could refer either to Rocca Soraggio or Villa Soraggio, both hamlets in the municipality of Sillano Giuncognano.

¹⁹⁴Turrite Secca, a western tributary of the Serchio. The two streams merge in Castelnuovo di Garfagnana.

¹⁹⁵Arno, the main river of Tuscany. It flows into the Tyrrhenian Sea, after passing through Pisa.

¹⁹⁶Rutilius Namatianus 2018, I, 565–566, https://www.hs-augsburg.de/~harsch/Chronologia/Lspost05/Namatianus/nam_red1.html. English translation: J. W. Duff and A. M. Duff 1934.

¹⁹⁷Strabo/ Στράβων 2018, V, 2, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0099.tlg001.perseus-grc1:5.2>.

¹⁹⁸Saint Fridianus (Frediano di Lucca, circa 500–588), an Irish prince who travelled to Italy and became Bishop of Lucca. According to a legend, he miraculously diverted the course of the Serchio (which often flooded the nearby city) by using a simple rake. On this topic, see Fanucchi 1870; Puccinelli 1952.

¹⁹⁹Maffei 1530, 48v.

²⁰⁰Vannini 1611, Liber Quartus, Epigramma XXIII, *De D. Fridiano, Episcopo Lucensi, rastro Aesarem flumen vertente*, 118 (the epigram numbers quoted in the manuscript are incorrect).

This stream, like many others, earned the adoration of the Ancients, as reported by a story from Strabo's *De Situ Orbis*, Book 5,²⁰¹ according to him and to Annio, and as is also confirmed by Suetonius²⁰² and Macrobius²⁰³ (on which see Annio, in fragment 16 of Cato's [*Origines*]),²⁰⁴ they worshipped it as the particular god of Etruria. Nor is the remarkable fate of Augustus, as from the biography of him written by Suetonius Tranquillus, to be passed over in silence. "During that same time," he says, "the first letter of his name in an inscription on a statue disappeared, having been struck by lightning. According to the omen, he would live only a hundred days longer, the letter C meaning that number; and in the future he would be declared a god, since 'Aesar,' which is the remaining part of the name 'Caesar,' means 'god' in the Etruscan language."²⁰⁵

This province is divided into some valleys, and rises into many hills, with steep crags, and huge rocks; and, here and there, it becomes rough, and covered with groves. It is rich in metals. Nor does it lack for wheat, wine, hemp, fruits, vegetables, and fishes. And truly it flourishes with plenty of meat, **XVIII.v]** cheese, chestnuts: so that, while it is sufficiently furnished with the former [goods], has far more than enough of the latter ones, providing them even to the nearby [regions]. Nor are hunting dogs missed; not only for leisure, but also to protect the herds. In fact, many issues with bears occurred long ago; and many with wolves, badgers, and foxes still occur today.

The men are generally short and—for the most part—dark, muscular, strong, always ready to fight, easily inclined to anger, vengeful, mindful of injuries; [yet, they are also] smart, clever, friendly to strangers, lovers of hospitality, loyal to their lord, inclined to literature, naturally gifted with the most beautiful Tuscan language, cheerful, lively, skilled in mechanics, and constantly engaged in commerce. Geronimo from Capugnano, in the first Part of his *Itinerarium Nobiliorum Italiae regionum, urbium, oppidorum, et locorum*, briefly touches upon this people. "This nation of Garfagnana," he says, "is bellicose, audacious, accustomed to war, untamed, and devoted to the Princes of Este",²⁰⁶ which was certainly evident at all times, and is even more now, amidst the roars of foreign armies.²⁰⁷

[The province] hosts ninety-five villages, and many country houses and farms, whose capital cities are: Castelnuovo (that is the first), Camporgiano²⁰⁸ (second), and Trassilico²⁰⁹ (third). It sustains about twenty-four thousand farmers, as it can be read in the marks, or catalogs, [written by] notaries and chancellors for the year 1626.

All Garfagnana is now divided into three parts, in order to rule more efficiently the people; these are still named with the ancient term Vicariates, as they were once governed

²⁰¹Strabo/ Στράβων 2018, V, 2, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0099.tlg001.perseus-grc1:5.2>.

²⁰²Suetonius 2018, II, *Divus Augustus*, 97 (2), <http://data.perseus.org/citations/urn:cts:latinLit:phi1348.abo012.perseus-lat1:97.2>.

²⁰³This quote is not clear. Here, Vallisneri may refer to a passage from the *Saturnalia* (Macrobius 2018, II, 4, http://penelope.uchicago.edu/Thayer/L/Roman/Texts/Macrobius/Saturnalia/2*.html), where Octavian Augustus ironically addresses his friend Gaius Maecenas as "Laser Aretinum." For a detailed comment on the relationship between the word "lasar/laser" and the name "Aesar," see Macrobius 1870, 236–237 and notes.

²⁰⁴Nanni 1515, Liber VII, *De origine gentium et urbium Italicarum*, LXXv: "Aesar fluvius dictus: quia lingua Hetrusca Aesar dicitur deus, ut Sueton. dicit in Vita Octaviani."

²⁰⁵Suetonius 2018, II, *Divus Augustus*, 97 (2), <http://data.perseus.org/citations/urn:cts:latinLit:phi1348.abo012.perseus-lat1:97.2>.

²⁰⁶F. Schott and Giovannini 1600, 146.

²⁰⁷Vallisneri is referring to the War of the Spanish Succession (1701–1714), a great conflict that scourged Europe after the death of the last Habsburg King of Spain, Carlos II (1661–1700).

²⁰⁸Camporgiano (Province of Lucca).

²⁰⁹Trassilico. Once an autonomous municipality, now a hamlet in the municipality of Galliciano (Province of

by a vicar: that is, a vice governor on behalf of the Emperor (or of another high prince), **XIX.r]** who is now called “Capitano di Ragione.”

The first [city] is the renowned Castelnuovo, where the Governor resides with eight lancers, or spearmen clothed in various uniforms, who guard him constantly. Generally, he rules over the whole province, with respect to both civil and political [issues]. The local government of each Vicariate is entrusted to the respective Capitano di Ragione.

The second is the Vicariate of Camporgiano, which was formerly the first, but now holds only the second place: either because the location of Castelnuovo and of its roads is more suitable, or because it has been humbled, and drawn to destruction by fate, and by the faults that have occurred with the passing of time. It is divided into thirty-three hamlets, called *Terre*, that sustain about 1,968 inhabitants.

The third [Vicariate] is in Trassilico, which also has many villages under its jurisdiction, with about 4,505 inhabitants.

Two strongholds, constantly secured with armed soldiers, guard and control this region, the other ones (which were erected by the Ancients) being in ruins, or undefended. The first one is called Mont’Alfonso Fortress,²¹⁰ and stands on a small hill towering over Castelnuovo: it is skillfully constructed, and carefully guarded by constant sentries and soldiers. Its name is from Alfonso II d’Este, Duke of Ferrara,²¹¹ who arranged its construction on April 22 of the year 1579, in order to suppress the hostilities of Lucca and the rebellions of the criminals. This task was appointed to the Marquess Cornelio Bentivoglio,²¹² who with great labor reached Castelnuovo with four thousand bags of wheat, various kinds of cannons, and other supplies; and, having also added thirty-four thousand gold coins from the province, he promised the loveliness of peace to the people, terror to the nearby enemies, **XIX.v]** a beloved rest to everybody, and accomplished the work happily and memorably. The other fortress is called Verrucole:²¹³ it still keeps the old name and structure, being in an inaccessible place, and impregnable, especially to the ancient artilleries and armies. It lies upon a dreadful and highest cliff, everywhere precipitous and impervious; except for a very narrow footpath, which can be easily blocked by defenders with stones and tree trunks, and which can be protected with just a few other weapons, even provided by nature itself. The name was wisely chosen by the Ancients: for “Verruca,” as Cato suggested in Aulus Gellius’ *Noctes Atticae*, Book 3, Chapter 7, means the summit of a high and steep mountain; hence the [expression] “rugged mountain,” that rises with many warts or rough and irregular ridges.²¹⁴ Thus, as physicians, we call “verruca” a certain rough kind of tumor, and name “verrucous skin” the one roughened with certain tubercles.

The coat of arms is a metallic sphere with three flames breaking, one by one, out of its top, and of both its sides; which refers to the warlike character of that people, and to

Lucca).

²¹⁰Mont’Alfonso Fortress, now part of the municipality of Castelnuovo di Garfagnana.

²¹¹Alfonso II d’Este (1533–1597), fifth Duke of Ferrara, Modena and Reggio. On this topic, see Tiraboschi 1825, 131.

²¹²Cornelio Bentivoglio, Marquess of Gualtieri (1519/20–1585). On this topic, see Tiraboschi 1825, 440.

²¹³Verrucole Fortress, now part of the municipality of San Romano in Garfagnana (Province of Lucca).

²¹⁴Here, Vallisneri refers to a passage from Gellius’ *Noctes Atticae* (Gellius 2018, III, 7 (6–8), http://penelope.uchicago.edu/Thayer/I/roman/texts/Gellius/3*.html): “ ‘Censeo,’ inquit ‘si rem servare vis, faciendum, ut quadringentos aliquos milites ad verrucam illam’—sic enim Cato locum editum asperumque appellat—‘ire iubeas, eamque uti occupent, imperes horterisque; hostes profecto ubi id viderint, fortissimus quisque et promptissimus ad occursandum pugnandumque in eos praevententur unoque illo negotio sese alligabunt, atque illi omnes quadringenti procul dubio obruncabuntur. Tunc interea occupatis in ea caede hostibus tempus exercitus ex hoc loco educendi habebis. Alia nisi haec salutis via nulla est’ .”

their fiery, easily raging pride. Because of the victory gained over Ravenna by Alfonso I d'Este, Duke of Ferrara²¹⁵ [the emblem carries] the inscription “in due time and place.”

[The region] is partly under the spiritual dominion of the Diocese of Sarzana²¹⁶ (or, according to others, Sergianum, or Luna Nova), and partly under the Diocese of the Bishop of Lucca.²¹⁷ A small creek, called Rivo del Poggio²¹⁸ and—once it passes between San Romano²¹⁹ and Sillicagnana²²⁰—di Cavezza, divides the [territory]. Until not long ago, the Province of Garfagnana suffered under various lords, whom it would be tedious to list individually, and would make me digress too much from the subject. Now, it flourishes happily under the rule of the Most Serene House of Este, all the tragedies that **XX.r** hit it everyday (and which made it rage, and struggle) having been forgotten.

An eagle, spreading its wings and with a menacing beak, can be seen engraved in marble over the gate of Castelnuovo: it leans over the back of a lion, imperiously restraining and punishing its rage. This refers to a victory of the Este over [certain] enemies which I prefer to pass over in silence.²²¹ Ludovico Ariosto smiled at [that eagle] in his *Satire* when, on February 20 of the year 1522, he began his work as governor of that very province. And, indeed, so he [speaks] in the fourth Satira, whose incipit is

To guard, as my Lord wished
the herds of Garfagnana, etc.²²²

He touches the story of the lion, and rubs the unmentionable wound again.

Know thou, that many owned these lands:
for the Panther²²³ before, and then the Lion
grasped them with clawed hands.²²⁴

Then, after the yoke of strangers had been shaken off, this region revived under the rule of the Este Eagle; and I may say, with Virgil, that

Saturn's reign is restored.²²⁵

But you scold me, my sweetest friend: as I describe the history of men, not of nature, and I am wandering too much from the subject.²²⁶ Forgive my pen, which is excited by writing things that have not yet been reported: and that, perhaps, will arouse the interest of the curious, unearth what is hidden in the darkness, and awake the sleepy minds. This beauti-

²¹⁵Alfonso I d'Este (1476–1534), third Duke of Ferrara, Modena and Reggio. On this topic, see Tiraboschi 1825, 130.

²¹⁶Now the Roman Catholic Diocese of La Spezia-Sarzana-Brugnato.

²¹⁷Now the Roman Catholic Archdiocese of Lucca.

²¹⁸Rivo del Poggio e di Cavezza (Poggio and Cavezza Creeks), now both known as Cavezza di Verrucole: a small tributary of the Serchio. The two streams merge in Piazza al Serchio (Province of Lucca).

²¹⁹San Romano in Garfagnana (Province of Lucca).

²²⁰Sillicagnana, a hamlet in the municipality of San Romano in Garfagnana.

²²¹The sculpture is an allegory of the Este's victory over the Republic of Florence (whose symbol was a lion, known as “Marzocco”) in 1521, when Alfonso I d'Este regained Garfagnana after the death of Pope Leo X (Giovanni di Lorenzo de' Medici, 1475–1521). Therefore, the lion could refer both to the emblem of Florence and to the Pope's name. On this topic, see Pacchi 1785, 82.

²²²Ariosto 1535, *A M. Sigismondo Maleguccio*.

²²³The panther was the symbol of the Republic of Lucca, which previously occupied Garfagnana.

²²⁴Ariosto 1535, *A M. Sigismondo Maleguccio*.

²²⁵This passage is from the *Bucolica* (Vergilius 2018c, IV, 6, attributed, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi001.perseus-lat1:4>).

²²⁶See note 97.

ful yet shy province was so far unknown to the literary world; and I owe to it my maternal lineage (which is not obscure), and my own birth. In fact, my mother was [a member] of the noble family of the Davini, from Garfagnana; and I was born on the fourteenth hour of Tuesday, May 3 of the year 1661, while my father, Doctor of Civil and Canon Law, was administering justice in the citadel of Trassilico; and, though reluctantly, I felt dragged by nature out of natural history. **XX.v]**

Also, allow me to revive, as an additional feature, the original splendor of several ancient, still famous names of Roman places and mountain summits, which have been distorted by the injury of time with popular terms; and which I have extracted, with great labor and desire, from the manuscripts of Timoteo Tramonti,²²⁷ Anselmo Micotti,²²⁸ Giovanni Bosio,²²⁹ Bartolomeo Morganti,²³⁰ and others. However, I wish you to know that I am not so naive to consider as true, and derived from old consuls, rulers, kings, and heroes, all the ancient names that you will read. Many seem to me ridiculous; many [seem] distorted, and more the expression of a certain fervour of imagination than spontaneously produced, mixing history (as was common custom among the writers of antiquity) with a combination of fables and truth, and fables with history. I don't want to insult my good faith, truth, and your ears. Reap what you believe to be true, and reject what is false. I shall say, along with the Most Illustrious Sir Filippo del Torre: "I am not one who is easily inclined to accept the people's descriptions, and names which are mostly invented, and drawn from murky and muddy springs" (*Inscriptio M. Aquilii*, Chapter 1).²³¹ **XXI.r] XXI.v]**

Villa di Marcione—Vicus Marcelli.

Castiglione—Castrum Lestrignonum.

Villa Calamandrina—Vicus Aemilii Mamercini.

Corfino—Vicus Valerii Corvini.

Soraggio—Vicus Sergii.

Canigiano—Vicus Canini Rebilii.

Pania di Corfino—Mons Valerii Corvini.

Silano—Castrum Iunii Silani.

Fiumicello di Soraggio—Amnis Caii Atilii Serrani.

Camporgiano—Campus Roscianus, or Calfurnianus.

Forno Volastro—Vicus Calpurnii Bestiae.

Silicano—Vicus Silii Silvani.

Rosciano—Vicus Roscii.

Cassiano—Vicus Cassii.

Cesarana—Vicus Caesaris.

Brutiano—Vicus Bruti.

Petrognano—Vicus Petronii.

Niciano—Vicus Anicii.

Alpe di San Pellegrino—Mons Leti. **XXII.r]**

Valico—Vicus Valerii Pobicolae. Vergemoli—Vicus Servilii Gemini. Termi-
none—Vicus Minutiae Thermae. Trasilico—Vicus Virginii Tricosti. Mulazzano—Vicus

²²⁷Timoteo Tramonti (circa XVI–XVII century), an antiquarian from Castiglione di Garfagnana (Province of Lucca). He wrote a manuscript on the history of Garfagnana (Tramonti n.d.). See Pacchi 1785, 179.

²²⁸See note 165.

²²⁹Giovanni Bosio (?–?). Arguably, another antiquarian from Garfagnana.

²³⁰Bartolomeo Morganti (circa XVI–XVII century), an antiquarian from Garfagnana.

²³¹Torre (del) 1700, 9. Filippo del Torre (1657–1717), Bishop of Adria, was a learned historian, archaeologist,

Cornelii Maluginei. Massa—Vicus Valerii Messalae. Magnano—Vicus Pompei Magni. Cerageto—Vicus Tergemini Curiati. Mozanella—Vicus Menenii Lanati. Pian di Cereto—Vicus Aurelii Ceretani. Chioza—Vicus Cai Acatii. Riana—Vicus Rheae Silviae. Trappignano—Vicus Lucreti Tricipitini. Albiano—Vicus Fabii Lebeonis. Tiglio—Vicus Statilii Tauri. Filecchio—Vicus Furius Phili. Oppio—Vicus Sp. Oppii. Coreglia—Vicus Aurelii Costae. Ghivizano—Vicus Cassii Viscellini. Tereglio—Vicus Elii Tuberi. Calavorno—Vicus Accilii Glabrii. Bolognano—Vicus Calfurnii Bibuli. Cardoso—Vicus Lucii Cethegi. Gallicano—Vicus Galli Canini. Verni—Vicus Plauti Venni. Fiatton, e Campi—Vicus Fonteii Capitonis. Perpoli—Vicus Papirii Masonis. Palleroso—Vicus Oratii Paluilli. Pieve Fosciana—Vicus Publii Flaccinatoris. Migliano—Vicus Marci Aemilii. Bargecchia—Vicus Aemilii Barbulae. Eglio—Vicus Elii Peto. Rontano—Vicus Aruntii Nepotis. Ceretolo—Vicus Luctatii Cereti. Gragnanella—Vicus Cornelii Dobbellae. Silico—Vicus Sillae. Antisciano—Vicus Hostilii Mancini. Careggine—Vicus Ebutii Cornicensis. Fabbriche—Vicus Caii Fabricii. Ponticosi—Vicus Publii Cossi. Sambuca—Vicus Fabii Ambusti. Cascianello—Vicus Ottacilli Crassi. Roggio—Vicus Lucii Regillensis. Puianella—Vicus Popilii Lenas. Vitoio—Vicus Ventidii Bassi. Vaii—Vicus Lucii Velleii. Corti—Vicus Curii Dentati. Corfigliano—Vicus Calfurnii Pisonis. Minucciano—Vicus Munatii Planci. Agliano—Vicus Eliani. Castagnola—Vicus Fulvii Centimali. Giuncognano—Vicus Genutii Clepsinae. Capoli—Vicus L. Capitolini. Pontaccio—Vicus Gnei Petici. Dalli—Vicus Caesi Duillii. Cogno—Vicus Gnei Genutii. Veregnano—Vicus Publi Verennii. Magliano—Vicus Lucii Emiliani. Gragnano—Vicus Geganii Mamercini. Metello—Vicus Caecilii Metelli. Borsigliano—Brutus Bubulanus. Livignano—M. Levinus. Caprignano—Vicus Cornelii Aruini. Orzaiola—Vicus Aurelii Oresti. Sala—Vicus Livii Salinatoris. Piazza—Vicus Vibii Pansae. Naggio—Vicus Nautii Rutilii. Bibbiana—Fabius Vibulanus. Pugliano—C. Petilius. Etc.

I recited this [list] just for the sake of knowledge, and not as a pretext to make use of these names: which are now obsolete, and so distorted, that they obscure the essential language and the clarity of history.

But let us return to the road from our digression. A little later, we entered Castiglione, **XXII.v]** where we were generously received by the kindness of Prior Guazzelli,²³² all sorts of curiosities—which we studied, to the great pleasure of our minds—could be seen in those surroundings. We took away silvery pyrites from an underground copper and silver mine,²³³ along with some yellowish clay balls, in the center of which a very bright, golden core was contained: and since fire melts it, and turns it into smoke, they gave it (for what reason, I don't know) the name *hierarchia*.²³⁴ They asserted that a red stone, or carbuncle of monstrous size, was in a certain cave (which was inaccessible, because of a torrent flowing past it), and it shined so much at night, that it looked like a lit lamp; still, it is also right to suspect that it was an ignis fatuus, or some decayed wood glowing in the dark, or even some fireflies, or glowworms.²³⁵

and a friend of Vallisneri. On this topic, see Vallisneri 1991, 463.

²³²The “Prior Guazzelli” could be identified as Michelangelo Guazzelli (1660–173?), a nobleman from Castiglione. He was appointed Podestà (“chief magistrate”) of Sassuolo (Province of Modena) from 1720 to 1724, and later became Podestà of San Felice sul Panaro (Province of Modena), from 1724 to—at least—1731. See Cionini 1880, 214.

²³³On the great mineralogical diversity that can be found in Garfagnana (including such mineral species as—among many others—pyrite, marcasite, copper, and silver), see Biagioni 2009; Bonini and Biagioni 2007; Luzzini 2013a, 100, note 108.

²³⁴Arguably, mineral sulphur (S). When burnt, it produces sulphur dioxide (SO₂), a toxic gas (hence, probably, the expression “exhalat”).

²³⁵Considering the location where this phenomenon was observed, Vallisneri's assumptions seem plausible.

Not far from there, in the lower plain on this side of the Serchio River, the thermal waters known as [Bagno] della Pieve (because they fall under **31**] the jurisdiction of Terrae Plebis) flow abundantly.²³⁶ Among so many, healthy ones that gush out in our mountains, these alone are now in use, and won over the others. In fact, as experience attests, it is not possible to find better remedies in that place: if taken in time, they get rid of the growing, evil shoot of many diseases from the beginning, and just in a few days. Nor do [the patients] relapse so easily, once [their] bodies have been properly cleansed with these healthy waters.

In early September of the year 1609, Jacopo Lavelli revealed the virtues of these [springs] to the literary world.²³⁷ Their source is about half a mile from Castelnuovo. They are clear, more than lukewarm, with a somewhat salty, bitter taste and a bituminous smell. Moreover, they maintain their qualities even far from the source. They are taken in the same manner as are the waters of Tettuccio:²³⁸ that is, after a mild purging and cleansing of the intestines. The [administration] can be repeated up to twelve times a day, or even more if needed, according to the gravity and to the duration of the disease. A dose of ten or twelve pounds, [administered] early in the morning in proportion to the need, or to the capacity and strength of the digestive cavity—or according to any [other] reason that I don't know, [but] which is understood to be important—restores the energies; nor does the stomach swell, nor is it burdened with a strange heaviness; nor is the abdomen disturbed by colic; rather, in the space of two hours, [these waters] flow gently and calmly, restore intestinal motility, and quench the thirst.

Considering at first the external [use], the amazing properties [of these waters] were tested against rheumatic **32**] and arthritic pains, and against various diseases of the nerves; and others who witnessed those favorable experiments, having—so to speak—swallowed the fear, and having conceived the hope of a greater efficacy, and of a more successful outcome, eagerly drank that same water, running in crowds to it, as if it was not just a harmless remedy, but an incomparable one; and without previous purging, nor any distinction of sex, age, or time, they drank copiously, and—as if a miracle—almost all of them healed. No matter how severe the symptoms of the diseases: they subsided with the strength [of the waters], so that the name “universal remedy” could be heard among the neighboring peoples. But the insane urge to drink faded away, when [they] poisoned with an even greater damage someone who unwisely drank them without due caution, and with an unpurged body. It is unquestionably typical of the great remedies to acquire a poisonous nature, when improperly used. Eventually, things went so far that [the waters] are wisely administered under the advice of physicians, without disappointing the expectations of the patients; and, having been prohibited to many, they don't bring help indiscriminately to everyone. But let us proceed to the main course.

It could have been either an ignis fatuus (or “will-o'-wisp,” in Italian “fuoco fatuo”: weak flames produced by the decomposition and natural combustion of organic matter) or the bioluminescence of fireflies.

²³⁶Bagno della Pieve, a spa still used in the municipality of Pieve Fosciana (Province of Lucca). It is also described in Vallisneri 1711, 355–356; 1728, 105–107.

²³⁷Jacopo Lavelli (XVI–XVII century), a physician from Castelnuovo and Professor of Medicine at the University of Pisa. In 1609, he wrote a letter in Latin on these thermal springs. A partial transcription of this letter is reported in Paolucci 1720, 78. An Italian translation of the entire letter was then published in Vandedi 1760, 77–93, 102–103. Finally, a complete transcription of the original Latin text can be found in Pacchi 1785, *Lettera del Dottore Jacopo Lavelli di Castelnuovo intorno ai Bagni della Pieve di Fosciana, del 1609*, LXXVI–LXXIX. On this topic, see De Stefani 1879; Pacchi 1785, 197, 200–201. For a detailed chemical study of the thermal springs of the Serchio River valley, see Calvi et al. 1999.

²³⁸Terme Tettuccio, one of the most ancient and renowned spas in Montecatini Terme (Province of Pistoia). Here, Vallisneri refers to a passage from Lavelli's letter (Pacchi 1785, LXXIX): “[...] eo modo, et ordine

[The waters] get rid of persistent or often recurrent headaches; of epilepsy, dizziness, deafness; of lymphatic affections in general; of palpitations of the heart, and especially the spasmodic ones; of ulcers in the lungs; and of asthma. They are comfortable to the worn-out stomach, or to the one suffering from dyspepsia. [Moreover], they remove jaundice, and cure colic pains, hysterical passions, intestinal **33**] affections, and even someone affected by edema. In fact, one wave pushes another wave, and leads the extravasated fluids back into the proper vessels. [Also, these waters] restrain intestinal fluxes; and, by flushing the urinary passages, take away gallstones and sandy matter. By promoting menstrual discharges, and by opening the obstructed passages, they regain fertility and alleviate the torments of gout. At last, they surely remove worms, their slimy nests, and their offspring from the small, hidden recesses of the intestines.

What gives these waters such great powers is a matter of uncertain conjecture. In fact, I have not yet established a precise analysis of them: I have in mind to do that, should God grant me some leisure, and should I (after so many labors) visit again Reggio,²³⁹ where my home will be in the future. Yet, if I had to guess, it would not be so far from the truth [to say] that all the qualities derive from the alkaline, calcareous salt, and from the bitumen with which that mountain abounds. In fact, long ago the inhabitants extracted an excellent kind of bitumen from the mines above, whose smell resembled the “jet” described by Galen.²⁴⁰ However, since jet is full of qualities, so the mentioned water of the Pieve in Garfagnana, which is already enriched with them, and even with the saline ones (as if they were auxiliary troops), shall with good reason be particularly effective at destroying all the [above] described ailments.

Other extraordinary thermal waters, which were famous for being similar to milk in taste and warmth, and were useful for gently subduing the sharp muriatic salt of the bile, were once discovered on the opposite side of the mountain; **34**] but they had almost fallen into disuse in their very cradle.²⁴¹

Finally, and unexpectedly, we descended to Camporgiano: that is, the former ancient capital of the whole province, where we were most kindly received by my maternal uncles,

sumitur, quo aqua Tettuccioorum sumi consuevit.”

²³⁹Reggio (Regium Lepidi), the ancient name of the city of Reggio Emilia.

²⁴⁰From Galen’s *De simplicium medicamentorum temperamentis ac facultatibus* (Galenus/Γαληνός 2018, IX, *De lapidibus*, <https://books.google.it/books?id=pswQcfc4VkC&printsec=frontcover#v=onepage&q&f=false>): “Est et alius lapis colore atro, qui ubi igni admotus fuerit, persimilem bitumini odorem exhibet, quem Dioscorides nonnullique alii in Lycia inveniri prodiderunt, ad fluvium nomine Gagatem, unde et ipsi lapidi nomenclaturam inditam dicunt [...]” Here, too, Vallisneri refers to a passage from Lavelli’s letter (Pacchi 1785, LXXVII): “Galenus enim, et Mesues, praecipui praeceptores nostri, asserunt oleum, quod de bitumine petrae gagatis extrahitur, talia beneficia afferre consuevisse; vim enim emolliendi, aperiendi, et discutiendi ei tribuit Galenus.”

“Lapis Gagates”—“jet” in English, “gaietto” in Italian—is a type of lignite once used in jewelry (because of its relative hardness and translucence) and in medicine. On the chemical composition of the thermal waters in Pieve Fosciana, see Calvi et al. 1999, 50–52.

²⁴¹Though the location of this second, unexploited thermal spring is not clear, Vallisneri is evidently referring to a passage from the last part of Lavelli’s letter (Pacchi 1785, LXXIX: “Mille passus procul a dictis thermis, sed in opposita parte alterius montis, quaedam aquae thermales nuper inventae sunt, quae ad hepar refrigerandum summopere conducunt, et inter alias (quia tres sunt numero) una ipsarum reperitur lactis saporem referens, quod monstruosum dici potest; cum in terrae cavernis id gignatur, quod in pectore solummodo animalium naturae decreto gigni consuevit. Et haec insignem hepatis affert refrigerationem; sed ob fluminis viciniam, et supereminentis montis oppressionem difficillime defendi possunt, quin aquae misceantur; et nondum intelligere potui, quid sit de ipsarum commodo usu sperandum.” Pacchi (1785, 197) agrees with Vallisneri. But according to others (Calvi et al. 1999, 46–48; De Stefani 1904, 119–120; Paolucci 1720, 78; Vandelli 1760, 101–103), Lavelli’s note refers to the Torrite thermal waters: these are located on the opposite side of the Serchio, and are described by Vallisneri later in the manuscript.

the Most Noble Sir Carlo Davini²⁴² and the Most Excellent Sir Giambattista Terni,²⁴³ and by my fellow citizen and relative, the Most Illustrious Sir Giulio Rossi,²⁴⁴ who is Capitano di Ragione; and we relieved the hard discomfort of the rugged journey, and [restored] our shattered energies. Everyone competed with favors; and, by offering merry banquets, bottles, and celebration toasts, they urged me to set aside the philosophical seriousness and the austerity of the wandering doctor. At that moment the thermal springs, the mines, and the entirety of nature lay drowned in wine, and we had fun as if we had seen a totally new [amusement].

Having taken our leave of such a lovely hospitality, we visited the Torrite baths,²⁴⁵ which are just one milestone west of Castelnuovo. I marvelled at the farsighted diligence of the Ancients, and at the negligence of the moderns. Those most elegant structures, that once were splendidly equipped for the convenience of the bathers, now appear torn into pieces by a fatal destruction. One bath has been filled with mud, ruined walls, stones, and filthy dirt, and the secret substances [which promote] warmth [now] flow into the river below through neglected paths. The other bathtub **35**] has been cleaned a bit more carefully, and can still attend to the comfort of the sick. It has a quadrilateral shape, with seats built all around and in the middle, and an arched roof made of bricks. The water, springing hot from a *hydrophylacium*²⁴⁶ at the base of the mountain, is forced through a hidden aqueduct; thence into a small channel, which is very similar to a gutter; and, [finally], it flows among the seats. However, it can be closed at will with a beak, or cover, and diverted to other uses through tortuous passages [which run] underground around the edge of the bath. Nor does warm water alone trickle out [from there]. A very cold one is poured nearby: by emerging through a tube passage from the bowels of the same mountain, it laps the contiguous side of the hot aqueduct, which, in turn, is dispersed through different passages, as needed. Thus, they regulate at pleasure the boiling heat of the former, and the freezing chill of the latter. An uncommon miracle of craft and nature, indeed. In fact, in the same bathing place, one can warm up the cold limbs, cool down the burnt ones, or cure the body, step by step, with an agreeable temperature between the two extremes. There is no need [to do] as in the Euganean [Hills]: where the descending water is mitigated by the long route, so that, having deposited the threatening heat, it softens down to a pleasant temperature.²⁴⁷ This one is calm, and is weakened much more gently, and turns lukewarm in the very entrance of the [bath]; nor is the healing power diminished by the long journey. Whence, along with Cassiodorus, I shall say about this spring: “The delicious pleasure that is obtained is not as [good] as the pleasant medicine

²⁴²Carlo Davini (16?–17?), uncle of Vallisneri. See Vallisneri 1991, 124.

²⁴³Giambattista Terni (16?–17?). Arguably, an uncle of Vallisneri.

²⁴⁴Giulio Rossi (16?–17?), from Scandiano, Capitano di Ragione (i.e., governor and chief magistrate) of Camporgiano. See Cionini 1880, 89, note 1.

²⁴⁵Torrite thermal waters, an ancient spa in the municipality of Castelnuovo di Garfagnana. The spring was located on the Apuan (western) side of the Serchio River, along the Turrise Secca Torrent. It disappeared in 1948, as a consequence of the construction of a nearby hydroelectric power plant (Calvi et al. 1999, 46–50). The Torrite thermal waters are also described in Vallisneri 1711, 356–357; 1728, 108–111. On this topic, see also De Stefani 1904; Pacchi 1785, 197–200; Paolucci 1720, 78; Vandelli 1760, 95–104.

²⁴⁶For a comment on the use of this term in the manuscript, see note 121.

²⁴⁷Despite what could be argued, the hydrothermal activity of the Euganean Hills is not a consequence of their volcanic origin. Rather, the thermal and chemical features of these springs result from the penetration of water 3 kilometers (1.85 miles) deep into the Earth’s crust through fractures in rocks. At this depth, the water meets a crystalline basement and is forced upwards by hydraulic pressure, eventually flowing at high temperature (up to 75°C) and enriched with mineral salts, including such elements as Cl, Na, K, Mg, Br, I, Si. On this topic, see Astolfi and Colombara 1990; Bosellini 2005, 98; Luzzini 2013a, 84; <http://www.parcocolleuganei.it>.

that is conferred: which is truly a cure without pain, a remedy without horror, and a costless health.”²⁴⁸ There is a room annexed to the [baths], which was formerly equipped with all necessary for the convenience of both the assistants and the bathers, but which is half in ruins. The warmth **36]** of this water is scorching; and the taste, the smell, and the virtues are the same as those of the thermal [water] of the Euganean Hills, except for the [fact] that the latter turns into stone, because of a tartareous and—I suspect—internal cement.²⁴⁹ They certainly abound with salt, sulphur, volatile matter, and spirit, as is evident from the taste, the smell, the experiments, the properties, the touch, and the analysis. Hence, I think that—especially with respect to chronic and hopeless diseases—these [waters] should be appealed to as a panacea, whether an expert physician prescribes them for internal or external [use]. In fact, nobody is so unconnected to medicine to ignore that the enduring and obstinate ailments derive, from the most part, from the sealed channels of this [human] machine, and from the occluded sieves; and that, in order to open them, there is nothing more powerful than thermal waters abounding with salt, sulphur, and spirit. For they wash and clean the entrails, and, by infiltrating the small tubes and the glandulous bodies of the organs, dissolve and force the coagulated fluids; hence, by promoting the original movement of the blood, of the lymph, and of the ferments, they restore the organs (which are weakening with an idle feebleness) to their former functions. Thus, after the proper tone has been regained by every [body part], after all the small organs have been opened and cleaned, and after the untamed juices (especially the ones from the crude chyle) have been subdued, a praiseworthy circulation is then performed by the whole mass of fluids, and their purification, and their improvement, are properly carried out; from which follows the whole blessed, healthy condition. It is therefore clear, that the Torrite thermal waters can ward off almost all the progeny of those diseases arising from the said causes. **37]** Consequently, there is no doubt that they can put an end to the hypochondriac diseases that, in most cases with a protean face²⁵⁰ (so to speak), evade the common remedies, and to those ones which respond [to the name of] “scourge of doctors”: the affections of the kidneys, of the ureter, of the bladder, and the uterine filth. Nobody is unaware that [these waters] are comfortable to the chest, thanks to the sulphur; to the stomach, and to the intestines, thanks to the deterative salt; and to the head, thanks to the spirit. Yet, should any fearful [patient] recoil in terror from their excessive activity, it shall be possible to moderate the cold [waters] with an easy operation, making them entirely similar to the gently tepid, and less active, thermal springs of the Holy Virgin of Monteortone.²⁵¹

Nor do they have a sure effect only internally, but also externally. In fact, the skin diseases originate from the dregs of the blood that have not been expelled through the

²⁴⁸This is a passage from Cassiodorus’ *Variae* (Cassiodorus Senator 2018, II, 39, <http://www.thelatinlibrary.com/cassiodorus/varia2.shtml>). The same quote is in Vallisneri 2006, 291 and note 713.

²⁴⁹As is pointed out in the Italian synthesis of the *Primi itineris Specimen* (Vallisneri 1726, 382), Vallisneri is specifically referring to the Terme d’Abano: the most renowned spa in the Euganean Hills (now in the municipality of Abano Terme, Province of Padua). On this topic, see Luzzini 2013a, 84–87, 186; Vallisneri 1706.

²⁵⁰From Proteus (Πρωτεύς), a Greek mythological god of waters, who—just like water—constantly changed shape. Hence the Latin adjective “protheiformis” (“protean” in English, “proteiforme” in Italian), which means “versatile,” “mutable.”

²⁵¹Fonte della Vergine di Monteortone (“Spring of the Holy Virgin of Monteortone”), in Abano Terme. According to a legend, in 1428 the soldier Pietro Falco bathed in it, and was miraculously healed from plague. Later in the XV century, a shrine was built on this site (Santuario della Madonna della Salute, “Shrine of the Madonna of Health”), becoming a popular destination of pilgrimage. See Luzzini 2013a, 86–87; Vallisneri 2006, 246 and note 636; <http://www.abanoterme.net/abano-citta.html>; <http://www.monteortone.it/3sto/app.htm>.

skin glands, and have been entangled either in the reticular plexus,²⁵² or in the interposed [skin] areolas,²⁵³ from external injuries caused by worms, that produce pustules and small ulcers with invisible erosion; from the sharpness, and roughness, of salts; from polypous and indolent disposition of a vapid blood; from torpor of lymph, or of an acid fluid; or from any other highly related cause of anomaly that might contaminate the regular composition of the entire skin: and the sulphurous and the saline particles, agitated by the spirit and by the activity of the heat, shall be able to eject the contracted afflictions. For, by opening again the [skin] pores, by softening the curled or rough hair, by promoting the motion of the viscous **38]** humours, by effectively destroying a multitude of insects of any kind, and, eventually, by more quickly strengthening the fibers that have been weakened by the viscous fluid, [the waters] shall restore the sick to the original health more safely, and more gently, than any external mixture of remedies. For the same reason, whether administered by drops, aspersion, or immersion, they bring relief to the nervous temperaments.

Other thermal springs of this kind—or “boiled, and ignited springs,” I shall say with Cassiodorus²⁵⁴—arise on the opposite ridge of the mountain, across the torrent; [but] they are ignored, and fall down the slope, passing through rough ducts and fissured ways. And though no honor from any author has yet been given to these healing waters, nonetheless these, too, deserve the name “Aponus”;²⁵⁵ since even in these, like in so many others, there might be

A public shelter from diseases, an universal help for healers,
a propitious god, a costless health.^{256t}

Having examined these [waters], which are not without a medical effect, we continued the journey through such steep rocks, and with such a horrible and frequent thought of death that, now and then, I regretted to have granted too much to [my] curiosity. Still, the sharp desire for knowledge prevailed: and, from time to time, the daring soul encouraged with new ventures the trembling foot towards better [deeds]. Thereupon, among such precipitous rocky ridges, and among such high lands, and rough crags, in which there are no pleasures for the eyes, and especially **39]** for the palate, I admired

... tender chestnuts, and abundance of dense milk;²⁵⁷

I admired, as I said, strong and brawny men living long and happily, and charming women surpassing, at times, even the urban Venuses in beauty, and in gentle appearance. And yet,

²⁵²Here, Vallisneri is supposedly referring to the vascular network of the skin.

²⁵³Areola: a circular, pigmented area in the skin. Usually, this term refers to the colored area which surrounds the nipple.

²⁵⁴This is an adapted quote from Cassiodorus Senator 2018, II, 39, <http://www.thelatinlibrary.com/cassiodorus/varia2.shtml>: “Haec perennitas aquarum intellegendi praestat indicium per igneas terrae venas occultis meatibus influentem imitus in auras erumpere excocti fontis inriguam puritatem”; “Spatium, quod inter aedem publicam et caput igniti fontis interiacet, silvestri asperitate depurga.”

The location of this other, unexploited thermal spring is not clear, though Vallisneri (see also Vallisneri 1726, 383) places it on the eastern side of the Turrice Secca Torrent. In any case, according to Domenico Pacchi (Pacchi 1785, 200), by the second half of the XVIII century this spring no longer existed.

²⁵⁵Variation of Aponus, a deity of the ancient Adriatic Veneti, later identified with the Greek god Apollo (Ἀπόλλων) and, as such, dispenser of health. Hence the modern name “Fonte d’Abano” (“fons Aponi”). On this topic, see Lazzaro 1981.

²⁵⁶Claudianus 2018a, 69–70, <http://www.curculio.org/Claudian/aponus.html>. The same quote is in Vallisneri 2006, 291 and note 714.

²⁵⁷Vergilius 2018c, I, 82, <http://data.perseus.org/citations/urn:cts:latinLit:phi0690.phi001.perseus-lat1:1>.

^tMargin note (left): Claudian

they drink only clearest water, and fill the growling stomach with the most rustic food. I shall use the words of Saint Jerome:²⁵⁸ “They do not embellish the face by artificial means, with purple, nor do they arrange towering crowns with strange ornaments.”²⁵⁸ Neither Minerva, nor Ceres, nor Bacchus dispenses his gifts in that place; still, you might say that the ancient relics of the Golden Age lurk there. Given the scarcity of wheat, they make the starch—for stiffening linen clothes and mantles to a certain consistence—from the arum root,²⁵⁹ with provident advice of [that] astute people, and of nature, which never fails anywhere. In fact, after having removed the external peel, they soak the roots in spring water, until these become soft; then they squeeze out the juice which, after that, precipitates easily on the bottom of the vase. Once the first water—I shall say with the chemists—is decanted, they pour other [water] at will, which dissolves the corrosive salts; and, these having been carefully discharged, they dry the shining white substance under the sun; and its consistence, color, and use cannot be distinguished from those of our starch. They asserted that occasionally, in times of famine, they used [these roots] as healthy food, **40**] all the caustic power, and the corrosive strength (which they find out from the painful sensation in the hands, and by tasting the first pressings), having been absorbed by the aqueous particles.

[Hiking] along barely passable trails, we finally reached the extreme boundaries of the [Apuan] Alps, called Panie, not far from which the raging Tyrrhenian Sea can be seen. There is a large wealth of mines here, among the barren rocks, with dark stones at the entrance: here, a curious seeker of nature can weary body and mind alike, and satisfy his passionate hunger for knowledge, while increasing the one of the body. Nor are the inhabitants absent among [those] dreadful caverns. There is a poor village, called (with a not inappropriate name) Fornovolasco, where a hard and most warlike people live. Ariosto described the ancient and famous road [leading to this] place, and the harshness of the land, with these elegant [words]:

The promontory where Suspicion dwells is six
hundred yards above the sea, encircled by sheer
cliffs, threatening a fall on every side. The
narrowest path that goes to Forno, there where
the Garfagnan seeks for iron, I would call the Via
Flaminia or the Appian Way, beside the one
which went to this ridge’s summit from the sea.²⁶⁰

The inhabitants assert that, at first, huts and small houses had been erected by miners from Brescia, a **41**] non-trivial proof of this being that many [dialect] terms from Brescia can still be heard, which the unaware people combine with the Tuscan gracefulness.²⁶¹

²⁵⁸This is an adapted quote from Saint Jerome’s *Epistolae* (Hieronymus 2018, CXXX, 7, <http://ctsstage.dh.uni-leipzig.de/text/urn:cts:latinLit:stoa0162.stoa004.opp-lat3/passage/130.7.11-130.7.14>): “Polire faciem purpurisso, et cerussa ora depingere; ornare crinem, et alienis capillis turritum verticem struere.”

²⁵⁹Italian arum, in Italian “gigaro chiaro” (*Arum italicum* Miller), Family Araceae. It is a herbaceous, perennial plant native to the Mediterranean region, growing 30 to 46 cm in height (12–18 in). Its tuberous rhizome is particularly rich in starch, which in Trassilico was once used as a substitute for the common wheat starch. On this topic, see Gastaldo 1987, 469–470; <http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=y760>.

²⁶⁰Ariosto 1548, 9r. English translation: Ariosto 1996.

²⁶¹In the second half of the XV century, the Duke Ercole I d’Este (1431–1505) promoted the exploitation of

²⁶¹**Margin note (left):** Saint Jerome, *Epistolae*

On the left bank of the Petroschiana Torrent,²⁶² that flows from west to east, some small houses lie at the rocky base of the mountain layers, from which rough boulder cliffs rise, dreadful in [their] color, ruggedness, barrenness, and with [their] enormous stones.²⁶³ Now they are bent in an arc shape with curved strata, now rise upwards with high hills; and, as various sports of nature, they rise again: straight, obliquely, in circle, like new mountains above [other] mountains. Not far from there are the iron and vitriol mines, which we inspected, to our utmost pleasure, under the guidance of a certain sagacious man. [In fact], the unexpected politeness of a youngster overwhelmed [our] minds and eyes with sweet delight: having entered the small inn where I was staying, he covered me with devoted and trustworthy embraces, showing clear signs of joy with his voice and face. I was amazed at such kindness in such a rude place; and when I asked where so much courtesy, and such an excellent character, could live among crags and caves, he openly revealed that he, too, was a foreigner, and that his name was Domenico de' Corradi d'Austria,²⁶⁴ superintendent of mines (I don't know by what fortune). Since, by an unexpected gift of fate, I was not unknown to him, he invited me to share dinner with him; nor did he want me to spend the night in [that] desolate tavern, which was often **42**] unsafe for strangers. As soon as I heard [that] name (which was equally familiar to me), and since it seemed to me that I was imprisoned in [that] cruel inn in the [company] of a deadly gang, or as if I was in a jail, I did not refuse the loyal hospitality and the friendly services of [my] host; and, with the promise of a safe shelter, and with the most pleasant conversation, I restored my energies, drained by the difficult journey. What a perfect knowledge of the natural things in a youthful mind, indeed! What an abundance of secrets! What an incomparable erudition! For, during the sweetest rest of the night, there was no rest at all: we conversed on the admirable structure of mines, on the inaccessible origin of springs and of thermal waters, and on the great inheritance of medicines and [natural] wealth, unknown to the medical community, that the Divine Protoplastes²⁶⁵ had stored in those chasms. Nature, we said, does not always embellish [its] cures in beautiful vegetation under the open sky, mixing delights and remedies in its form, and restoring the sick to health. Rather, sometimes it hides health (though helpful) under an unpleasant look, in darkest caverns, [making it] rough in touch, smoky in appearance, and bad in taste. I shall be happy to provide you with a detailed description of all these [matters] in another place, saving them for a more free time, and a less busy pen. In the meantime, my sweetest friend, I am glad that you don't laugh at the great consolations of a not little work. You will learn that a not small part of nature hides even in these observations, for how small they are. And indeed, before our

the iron deposits in Fornovolasco. To this purpose, he availed himself of expert miners from the Lombard city of Brescia. See Luzzini 2013a, 100n.

²⁶²Turrite di Gallicano, also known as the Petroschiana Torrent: a western tributary of the Serchio. The two streams merge in Gallicano.

²⁶³The area of the iron mines in Fornovolasco has an extremely complex geological history. In particular, the mines are hosted in a Paleozoic outcrop whose quartz-muscovite phyllites (SiO_2 ; $\text{KAl}_2(\text{Si}_3\text{Al})\text{O}_{10}(\text{OH}, \text{F})_2$) date back to the late Cambrian and Ordovician periods (540–440 Ma), while the origin of the rich pyrite veins in this zone is related to evaporitic processes typical of coastal lagoons. Cartographic source: *Carta geologica del Parco delle Alpi Apuane, Tavola 1* n.d. On this topic, see Biagioni 2009; Bonini and Biagioni 2007; Luzzini 2013a, 100, note 108; <http://www.vallisneri.it/osservazioni-ferro.shtml>.

²⁶⁴Domenico de' Corradi d'Austria (1677–1756), chief superintendent of artillery on behalf of the Duke and a very expert miner. His practical knowledge played a key role in the success of Vallisneri's investigations in Garfagnana, as Corradi provided him with advice, direct assistance, helpers and equipment for his explorations. See Luzzini 2008, 351, 355; 2010, 97, 102, 104, 107; 2011a, 107–108; 2013a, 100–101, 124–129; 2014a, 214. On the fruitful editorial collaboration between Vallisneri and Corradi, see Luzzini 2012, 51; 2013a, 101; 2017, 134, 136.

²⁶⁵God.

43] most blessed age, there was no greater desire to know the authentic history of [nature], unstained by the exaggeration of idle speech; still, no attention was lesser than the many ones [of those] closed in the cages of the cities. Let it be enough, then, to have hastily tasted these ones, which are few, but sincerely written, as if on writing tablets, or on a manuscript; for I can already hear the sound of the school bell, which tomorrow will call me back to my work, the public lectures of the Lyceum of Padua.²⁶⁶ Nevertheless, I don't think that what I have observed about the springs, and in those caverns (which, as I hinted above, abound with perpetual waters), is to be disregarded; since their origin, especially now that [this issue] still keeps your pen busy, tickles my curiosity in turn.

Even in those mines there are perpetual waters. In truth, I don't know whether they arrive from the center [of the Earth], or just from above, or if both of them merge together. I certainly observed the vertical, or celestial ones (from which, I suspect, the seeds of the mines suck their particular nourishment, as if it was milk) flowing slowly through large and gaping fissures from above, and through the broken ceilings of the [rock] strata, where the main trunk of the iron vein flourishes. With regard to another, more abundant nourishment flowing from subterranean seas, as you declare in your most famous book,²⁶⁷ and as the Most Illustrious Count Luigi Marsili (who is highly regarded for the nobility, the excellence, and the splendor of his manners) recently told me in letters,²⁶⁸ I am still doubtful. In fact, I am somehow wondering if [the mines] can absorb nourishment from the rains above, that are impregnated with niter,²⁶⁹ different salts, and earthly moisture, tempered by the sun's rays, **44]** and imbued with that [vital] light which gives life to the entire world. We have an analogy with the seeds of plants. If sprinkled only with underground waters—which are imbued with a certain crude and rough quality—and if deprived of the celestial [waters], they will rot. As even you remarked, the sagacious Boyle^v observed “an ore mine that had been excavated, despoiled of [its] minerals, and exposed to air, as if unprofitable, which many years later had perfectly regenerated new minerals of the same kind, weight, and consistence, as if they had been produced in an entirely mineral, earthly womb.”²⁷⁰ Why, then, should we seek in the sea what we can clearly recognize in the air? Why do we look for what is hidden in the innermost part of the abyss, when we can surely have it in a sunny cellar? The dried and exhausted seeds could flourish again in the air, but could not do so in the sea. [For] the [sea] mixes with

²⁶⁶The University of Padua.

²⁶⁷Fabra (dalla) 1700. In this treatise, Luigi dalla Fabra, who already studied the therapeutic properties of the renowned white, aluminium- and silica-rich clay of Nocera Umbra (now in the Province of Perugia), focused on a strange “tartareous substance” found in a fountain of that city. Once put in boiling water, he noticed the formation of “silvery, shining bubbles,” and the following precipitation of an “extremely white and solid matter” (arguably, silica and/or aluminium salts) on the bottom of the bronze vases where the experiments were performed (“aheneorum lateribus, et fundo sensim adhaerens concrevit, ut in materiam albam, densam, nonnihil ponderosam, nec de facili friabilem, asperioremq; et crystallinam, gustui aliquantum subacidiusculam, dentes nonnihil exasperantem, et in aqua indissolubilem, indurescat”). On this topic, see Vallisneri 1717a.

²⁶⁸Unfortunately, the letters Vallisneri refers to are missing.

²⁶⁹Arguably, potassium nitrate (KNO₃).

²⁷⁰This adapted, recapitulatory quote refers to Boyle 1676, Latin edition of Boyle 1674. Boyle's corpuscularianism strongly influenced Vallisneri's early thought about mineral genesis and growth. On Boyle's theory, see Anstey 2002; Clericuzio 1990; Hirai and Yoshimoto 2005; Luzzini 2011a, 109–110; 2013a, 134–135; Pighetti 1988; Yoshimoto 1992. For a study on Boyle's alchemical interests, see Principe 1998. On the early modern debate about the existence of biological features in minerals and rocks, see Hirai 2005; Norris 2009; Oldroyd 1974.

^v**Margin note (left):** *De Generatione Metallorum*

salts of a certain kind, and not with all [kinds of salts]; while the [air] mixes with all [salts], and not just with that certain kind. A simple experiment is made clear in light of the operation²⁷¹ and the effect of both [air and sea]. And consider, O most famous man, that if the waters bathing and nurturing the mines are filled with such an abundance of sea salt, why then, once tasted, don't they have the bitter, salty flavor of the sea? Why cannot its cubic fragments be found everywhere in the mine, not even mixed with other [minerals]? Why, for the most part, do they emit a smell of a tasteless, or vitriolic, quality? Please, clean my mind from [all] the thick rust, and examine again the recesses of those paths, which are covered with a dark filth. But let us go back to the **45]** fountains.

Many [springs] emerge from the stern boundaries of these mountains; and, as I said, they are more abundant than the largest ones in the Alp of Saint Peregrine. Among the others, the one flowing in the Screaming Cave (commonly known as Grotta che urla),²⁷² and which, in turn, hides in that same place, is the most famous. This cavern opens southward, a little above Fornovolasco: it is rough and dark, with much tartar, and is terrifying because of the confused noise of the roaring waves. Its entrance is dirty, with much yellowish earth and sand that are emitted by the internal brook, especially when it is swollen and turbid. In fact, when the south wind blows, or when the air is warmer than usual, it swells, and overflows with the melting snows of the high peak [above]; and since it cannot be totally absorbed by the hidden channels that are excavated in the flank of the cavern, having been driven back, and returning into itself, it flows at first into the nearby openings, and soon later—having been [further] compelled—in all directions. Thus, by breaking violently out of the entrance of the cave, as it subsides, and calls the calm waves back, finally it deposits the dirt and waste from the mountain in that place. Hence, in order to enter, a stranger [must] bend over; and, very often, [his] back itself gets soiled, because of the low ceiling. After about twenty feet, [the passage] expands into a wide and high cavern, and various oddities, made of a lapidescent juice, come into sight, [produced by] the playful nature: which, by fashioning many figures, though by no art, equals art with its talent, and surpasses it in substance.²⁷³ Nowhere was an arched grotto more suited to a royal garden, the tasteful nature imitating in the darkness small pyramids [hanging] upside down here and there from the ceiling, and a turtle marked with a cross, made of an uncut, **46]** porous rock,^w and of curved, hard tuffs. Then we heard the waters, that were falling diagonally and secretly with a sad murmur, and, finally, were swallowed down with spinning vortexes by a deep chasm, and diverted through a hidden path into the nearby Petrosiana Torrent. Nor was this the end of the journey. Having crossed a curious torrent, carried^x on the backs of porters, and past many rough, stony tracks, we arrived at a large and vaulted room, in which—like many floral ornaments—countless tartareous concre-

²⁷¹ See note 19.

²⁷² Tana che urla (“Screaming Cave”) of Fornovolasco, one of the most interesting and renowned karst caves in Garfagnana. An experimental replication of Vallisneri’s exploration was performed in 2006. On this topic, see Luzzini 2008; 2010, 104–114; 2013a, 100–101, 124–129; 2014a, 214; <http://www.vallisneri.it/osservazioni-tana.shtml>.

²⁷³ The deposition of calcite (CaCO_3), the dominant mineral in karst environments, is controlled by the reversible chemical reaction $2\text{HCO}_3^- + \text{Ca}^{2+} \rightleftharpoons \text{CaCO}_3 + \text{CO}_2 + \text{H}_2\text{O}$. Consequently, the dissolution or precipitation of calcium carbonate is strictly influenced by changes in the chemical equilibrium of this reaction, which depends on the amount of carbon dioxide (CO_2) in the water (the lesser the amount of CO_2 , the more CaCO_3 is deposited). In turn, the solubility of CO_2 in fresh water increases with increasing pressure and decreasing temperature. On the karst caves in Fornovolasco, see Bonini and Piantini 2001; Speleoclub 1999.

^w **Margin note (left):** The <...> sentence is too complicated

^x **Margin note (left):** Or “transported”

tions, and innumerable, hardened cements could be seen, which, interwoven in wonderful ways, emulated columns, bases, animals, and branches.²⁷⁴ Here was the origin of the small stream flowing from above (as if from an architrave), that, by means of lapidescent waves, in part glued new stones to the old ones in an enduring fellowship, and in part slid with a foaming course down through the described channel. Besides, in a not dissimilar way, the cruel winter freezes the waters falling down from the edges of cliffs with the northern winds, while others still run with the original fluidity.

“Whence”—you [may] ask—“does the flow of the perennial waters become now clear and calm, now dirty and swollen?” The inhabitants believe that they are drawn out from the nearby sea: for they rage when the south wind blows, and the sea rages; and, when it calms down, they, too, are still. But, having explored the summits of the mountain, and having reflected on the rising and lowering waters, we had a different opinion. The waters and the dissolved snows percolate through slightly adhering layers (which are bent downwards 47] on the side), being at first absorbed by the various chasms that pass through rocks and bibulous gravel. Thence, by [moving] through the furrows, as if [through] channels, they creep along [this] hidden bed to a cavernous spring that flows continuously: for in certain abysses, that are inaccessible to the sun’s rays, the glaciers and snows linger almost perpetually, untouched, separating cliff from cliff, mountain from mountain; and they surrender not with the first heat, but when, in late spring, the sun is more furious, and softens the snows. These melt slowly and gently; and, as if filtered, descend without mud, crystalline, and for a long time. In fact, when the warm winds breathe, so [the snows], having been reduced at once to liquid, like wax in a fire, run (rather than flow) through underground waterfalls, and carry mud and sand with them. Hence, the above said fountain is now clear, and poor in water; and now muddy, and abundant. Similarly, having been collected in cisterns, and perhaps in hidden pits, they are gradually sifted through the wide pores of the earth and, after a brief delay, fall into the basin of the fountain, as if on a plate; or, if [the waters] swell enormously, they will fall into a more empty basin, having overflowed the mounds. I could not persuade myself that [the waters] originated and increased from the nearby sea; for—I shall say with Agricola—if veins and venules, if channels and gutters²⁷⁵ are so wide to let the sand and gravel in, why don’t they receive salts, small shells, 48] little fishes, and [other] marine trifles? But you, O most wise friend, may object that vapors are raised high above [the sea]; and, having been condensed by the coldness of the rocks, turn into dewy drops. [Thus], if sometimes the waters are disturbed [by an external cause, this] is from the small brooks of the mountain which descend from above and merge together, and not from the sea. This is the general opinion among Italians. Yet, I can’t imagine these immense alembics; nor does the structure of the mountains permit [them], made as it is of superimposed layers, as if arranged in pieces. Nonetheless, even granting that a cavern or two ripped—so to speak—the guts of the strata, and formed some hollow cavities, the vapors condensed into water drops would still flow down back to the bottom, either perpendicularly, or almost perpendicularly (as we continually see in the

²⁷⁴On the wide array of speleological formations that can be observed in the Tana che urla, see Luzzini 2008; 2010, 104–114; 2013a, 124–129, Tabs. XIX–XXI; <http://www.vallisneri.it/osservazioni-tana.shtml>.

²⁷⁵Agricola (Bauer) 1546. The terms “venae,” “venulae,” “canales,” and “canaliculi” can be ubiquitously found in Agricola’s treatise. However, it is worth mentioning here a significant passage from the third book of the *De natura eorum quae effluunt ex terra* (Agricola (Bauer) 1546, 127), that clearly shows Agricola’s opinion about the origin of fresh water: “[...] canales aquarum, quae fluunt aut propria earum vis effecit. Etenim fontanarum vis excavavit venas, suas charadras torrentium, rivorum et fluminum suos alveos: per paucis exceptis, quos homines foderunt. Aut hominum manus eos canales effecit: sicuti fistulas, tubos, fossas aquae ductuum. Igitur aquae quae fluunt, omnes sunt aut fontanae, aut pluviae, aut nivales.”

exposed caves and in the damp vaults), and would not meet and flow out through the side hole of an alembic, once collected from the inside of its curved edges. For who did ever enter the bowels of the Earth, and saw such perfect chemical laboratories? We often alter the truth, so that it corresponds to our system, and not to nature. Caverns are excavated by chance, and not by design of the inscrutable Mother [Nature]; and if they maintained secret communications with the sea, as is still easily affirmed, the marine vapors rising all the way up to the farthest roots of the mountains through obscure distances—that is, through the shattered entrails and sequences of the rocks—would more probably run back into the sea below, rather than flowing laterally through imaginary pipes or supposed gutters, as if skillfully adhering all around. Add then, that the sea water which has been distilled through alembics (as nobody ignores) always carries volatile particles of salts along with it; from whose constant drinking, blood is produced with urine,²⁷⁶ as is well known from many experiments: a fault that the above said mountain springs most certainly don't have. For they are freshest, and most healthy for the inhabitants, who drink them since long time. I will explain more in detail **XXIII.r]** **XXIII.v]** what I think about these matters, but elsewhere, in a particular letter.²⁷⁷ “For my part,” I shall say with Plato in *Protagoras*, “I believe that we should concede each other something, and to dispute together about what is said, but without quarreling. For friends dispute with friends in terms of kindness; whereas enemies have quarrels with enemies.”²⁷⁸ Therefore, for the time being, accept without blame of rashness what I will declare about the fountains, brooks, and rivers of our Alps: that, for the most part, carry their load downstream to the Po [River], all of them owing everything to the rains, and to the melted snows. As to my opinion on the Danube, Rhine, and Rhône Rivers, I am unacquainted [with them]. I am truly astounded at such great names, and can [only] think great things about [their] origin, having not been familiar with their springs. Should we observe with our own eyes [those] enormous mountains, [those] immense regions, and [those] greatest wildernesses, with [their] almost eternal masses of snow, frozen by a perpetual winter, perhaps **49]** the astonishment will give way to laughter, and we will not mix the mountains with the sea, nor the seas with the mountains.

“There is no spring anywhere, and no beauty of summer; unsightly winter alone inhabits the gruesome heights, and dwells forever there.”^{279y}

In fact, those [mountains] surpass our [Apuan] Alps as much as

The British whale exceeds a dolphin.²⁸⁰

[My] mind, accustomed to our summer heat, and overwhelmed by many torrid months, cannot get rid of preconceptions, or resist hesitation about an experiment that it can barely

²⁷⁶Drinking sea water (or not adequately desalinated water) causes many dangerous and potentially lethal effects, including dehydration, the ingestion of harmful bacteria, and kidney damage. This may lead to urinating blood (hematuria), as Vallisneri probably observed in one or more of his patients.

²⁷⁷Eventually, Vallisneri realized his purpose ten years later, in 1715, with the publication of the *Lezione Accademica intorno all'Origine delle Fontane*. Not by chance, in this treatise many disputations and reports (as, for example, the field research in the Apennines and the exploration of the iron mines and of the Tana che urla in Garfagnana) recall and develop the content of the *Primi itineris Specimen*. On this topic, see Luzzini 2008; 2010, 104–114; 2011a; 2013a, 90–160, Tabs. VII–XXVIII; 2014a.

²⁷⁸Plato/Πλάτων 2018c, 337, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg022.perseus-grc1:337b>.

²⁷⁹Silius Italicus 2018, III, 487–489, <http://data.perseus.org/citations/urn:cts:latinLit:phi1345.phi001.perseus-lat1:3>.

²⁸⁰Iuvenalis 2018, X, 14, <http://data.perseus.org/citations/urn:cts:latinLit:phi1276.phi001.perseus-lat1:4.10>.

^y**Margin note (left):** Silius Italicus

conceive. A subject can be prone to illusion, when the unknown is so great. In most cases, what drew the attention of excited minds from lands far away with some scattered, confused appearances, loses its interest after being seen or considered. I said a few words about small problems, but as an eyewitness: you, more fortunate, will say important things about important issues. “You will do me much more good,” I shall say with the rather contentious Euthydemus, in Plato’s [dialogue], “if you heal my spirit of ignorance, rather than my body of disease... for I have one significant good quality, which saves me: I am [always] ready to learn, nor am I ashamed of that.”²⁸¹ In fact, I am not writing these trifles to earn immortality with an ugly manuscript; but to learn the truth, once it has been unveiled by you; and to discuss freely about honest topics. If I had listened to the advice of my conscience, I would have had to remain silent; but the desire for knowledge, and not human vanity, prevented [me from doing so]. Courage then, my amiable friend. May the first fruits of my **50**] journeys, and the plaything of this new work (that have a taste more for nature than skill), feel the sweating efforts of your pen. They expect a large share of [your] light from you, whose talent has been diligently employed on these subjects. May this not be an arrogant dispute between intellectuals, nor a bitter logomachy which sets us one against the other, or which breaks the sweet pact of [our] friendship for the fire of battle. Let us abhor these thoughts, and let us not stain [our] papers with the miserable absinthe. May the eviscerated Earth, you being the author, disclose what it had concealed for a long time; and may you direct your attention to me alone, with friendly severity, so that you may dig deeper. Let others add their imagined fables to the ancient stories, and utter useless babblings, occupied with the laboured invention of fantasy. We admire studies, but pity inventions. As for you, dig out the marrow: so that it shall have a sweet taste, nourish abundantly, and reach every part of [your] healthy heart.

Although the struggles of cities and peoples strike us; though the fury of their Transalpine arms carries out the will of fate by destroying the so far harmless and peaceful lands, and I look back at the dear remains of my homeland, sadly disfigured with blood and tears; nevertheless, I endure sorrow with letters, and I call forth the Muses, who are crying in front of the Temple of Janus (that has been open for so many years, already),²⁸² to the sweet comforts of [my] rude pen, with the wonders of nature. In the meanwhile, accept whatever else the letter intends to report, as if lesser fruits. However, [know that] not all of them are **51**] properly ripe yet, and need longer journeys and new works.

- 1° All the herbs and plants, valued for [their] roots, [that are found] in the mountains of Modena.
- 2° Other crystals, crystal-like [minerals], specular stones (or selenites), fossil salts, and the variegated, sculpted stones, [along with] the [singularly] shaped, curative, chalky, gypseous, precious ones, etc.
- 3° The stony, chalky, gravelly, sandy layers of the mountains; those made of earth, etc.; whence they originated, where they are bent, in which direction they stretch, their necessity, use, structures, etc.
- 4° The so-called antediluvian and postdiluvian bodies which can be found in these [layers]: either petrified, or enclosed within the rocks, or barely enveloped in the

²⁸¹ Actually, the quoted passages are not from Plato’s *Euthydemus* (Plato/Πλάτων 2018a, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg021.perseus-grc1:271a>), but from *Hippias minor* (Plato/Πλάτων 2018b, 372, <http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg026.perseus-grc1:372e>).

²⁸² Janus (or Janus) was one of the oldest and most important deities in ancient Rome and among the early Italic peoples. It was the god of beginning and transitions. Because of this symbolism, his effigy (typically

bowels of the Earth; and whether they are mussels, snakes, fishes, sea urchins, snail shells, oysters, pectens, tube [worms], bones of animals, wood, fruits, etc.

- 5° The outer surface of the mountains; the quality of every soil; the elucidation of every stone, streak, and concretion of tartar or marble. In fact, in the farthest part of the [Apuan] Alps, I observed some jaspers²⁸³ resembling the eastern ones.
- 6° The particular nature, the pastures, the use, etc., of any mountain, all the way down to the Tyrrhenian Sea.
- 7° The rarest insects that build their nests among herbs and plants in those crags.
- 8° Which birds, and which quadrupeds [live there]; which ones [live] in brooks, springs, torrents, etc. Which fishes, etc.
- 9° Which fruits and grains are there, which ones are used as food and drink by all of our mountaineers. **52]**
- 10° Which customs, arts, buildings; which diseases, torments, and delights.
- 11° Which is the air's weight, measured with a barometric device; which is the climate, measured with a thermometer.
- 12° The height of mountains; their fissures, slidings, decreases, etc.
- 13° A more accurate description of the other springs, rivers, torrents, thermal waters, mines, etc.
- 14° On milk and dairy products; how they are prepared in our mountains.
- 15° A careful and accurate description of every mine.²⁸⁴

Such are the things that, perhaps, I will dare to carry on my reluctant shoulders; still,

We undertake greatest deeds
in a [too] short time.²⁸⁵

“Sometimes, the fear of sharp critics” (I shall say with Petrarch, [*De Rebus Familiaribus*], Preface, Tome 2) “commands me to speak of other things; for those who don’t write anything that could be judged, judge the others’ talents: a really shameless temerity, protected by silence alone. It is easy, for those who sit on the shore with clapping hands, to say what they want about the helmsman’s skill.”²⁸⁶ But I understand that you **53]** are exhausted from [this] too long letter. Yet, I would like you to know that I would have eagerly lengthened this fabric with [my] coarse yarn, and with multicolor threads woven in, almost on purpose; since it has reminded me of your face, although widely scattered over so many lands. As to the rest, I intend to start weaving a perhaps better one, which would certainly be worthy of your name, if—as the above praised author wrote about himself—a steady residence coincided with leisure, which is always sought after in vain.

consisting of two faces, looking both to the future and the past) frequently appeared on gates and passages. The doors of the main Temple of Janus in Rome were kept open in time of war, and closed in time of peace. With this image, Vallisneri is referring to the War of the Spanish Succession, which in 1705 was raging in Italy and Europe. On the cult of Janus, see Burchett 1918; Gasperoni Panella and Cittadini Fulvi 2008.

²⁸³Jasper (SiO₂): a microcrystalline, opaque variety of chalcedony. It can occur in different colors, depending on the impurities in it. Red jasper, whose color is due to iron inclusions, can be commonly found in the Apuan Alps. On this topic, see De Stefani 1889, 330–333.

²⁸⁴In the next two decades, Vallisneri refined and enriched this list, in his effort to define the ideal goals and procedures of a *philosophical* field research. In the *Continuazione dell’Estratto* of 1726, the “Indice di osservazioni” (“Index of observations”) listed up to 26 points (Vallisneri 1726, 404–417). On this topic, see Luzzini 2013a, 104–106; 2014a, 215–217.

²⁸⁵Seneca 2018, III, 1, <http://www.thelatinlibrary.com/sen/sen.qn3.shtml>.

²⁸⁶Petrarca 1581, *Epistolarium de Rebus familiaribus Lib. VIII*, Praefatio, 569. On the identification of this source, see Vallisneri 1726, 421.

Farewell, my dear, and may God protect you.

Padua, in my Museum, January 1, 1705

Most Humble, and Most Dedicated Servant
Antonio Vallisneri of the Nobles of Vallisneria
On-Site Public Professor of Practical Medicine, and
Member of the English Royal Society. Etc. **54]**