José de Acosta: Historia natural y moral de las Indias

Seville, 1590

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Commentary Experiencing a New World: José de Acosta's *Natural and Moral History of the Indies*

José de Acosta was born in Medina del Campo, Spain, in 1540, the same year in which the Catholic Church formally approved the Jesuit Order, created by Ignatius of Loyola six years before. Acosta's lifetime included the years of Reformation and Counter-Reformation and of the landing, colonization, and expansion of the European powers in the "New World." Acosta entered the Society of Jesus and, between 1559 and 1567, studied philosophy and theology at the University of Alcalá, where he was influenced by the Greco-Latin tradition, Second Scholasticism, and to a certain extent by a Renaissance humanistic approach to learning. He was then sent to the Viceroyalty of Peru as a missionary and teacher. He arrived in 1572 and lived in Peru until 1586. Having returned to Spain in 1587, Acosta died in Salamanca in 1600. His activities in the New World were various—a unifying aspect being his aim of evaluating the evangelization carried out among indigenous people so far and his commitment to improving it.

For many years, Acosta held the chair of Sacred Scripture at the Universidad de San Marcos in Lima, an institution founded on May 12, 1551. But he was no armchair intellectual. As visitor and provincial superior of Jesuit missions in Peru, he traveled throughout the interior of the viceroyalty for many years, establishing direct contact with the land, indigenous communities, and Spanish settlements and assuming teaching and administrative functions in places such as Cusco, Arequipa, Potosí, La Paz, and Charcas.

Acosta was a prolific writer. In theology, his most impressive work was *De procuranda indorum salute*, published in 1588, but a similarly impactful work, and Acosta's most popular one, belonged to another field of knowledge and literary genre: *Historia natural*

y moral de las Indias, published in Seville in 1590.¹ In this narrative, Acosta stresses the notion of "discovery" and the first encounter with enormous, hitherto unfamiliar places and numerous unknown peoples. He reports the experience of *novelty* in both the natural and the human realm. But what do "natural history" and "moral history" mean? How do these concepts help us understand the structure and purpose of Acosta's book?

Acosta did not invent these literary genres. He was acquainted with a number of contemporary descriptions of nature, such as those on Mexico's flora and fauna by Francisco Hernández de Toledo (1514–1587), and the reports about South American indigenous peoples by Juan Polo de Ondegardo y Zárate (ca. 1500–1575). For the history of the Mexicans in Book 7 of his volume, José de Acosta relied on the *Historia de México* by the Jesuit Juan de Tovar (1543–1623), to whose famous manuscript he had access during his stay in New Spain in 1586–87.

"Natural" history in Acosta's sense means a comprehensive descriptive narrative about nature—that is, about the physical and biological world—as distinct from a "moral" history, which means a narrative about the inhabitants of the American continent who carry out actions, develop culture and customs, and thus make history. A moral history, then, is a narrative about deeds and sequences of deeds by human beings and human peoples, by rational-volitional agents, such as the inhabitants of Mexico and Peru. In this commentary, I will focus on Acosta's natural history. It accords with classical predecessors: Aristotle's "polyhistory," which aimed for comprehensive erudition about nature as the totality of physical and biological things and processes; and the authors of late Stoicism such as Pliny the Second, whose *Naturalis historia* Acosta frequently cites. Clearly, a biblical worldview conditions Acosta's account of nature. He was not acquainted with Nicolaus Copernicus's *De revolutionibus orbium coelestium* (published in 1543).

The first four books of Acosta's *Historia* are about nature. Book 1 comprises "cosmography," in which geocentrism is confirmed; "geography," in which hemispheres and parts of the world are considered; a kind of "geoanthropology" and "geozoology," in which the inhabited world is discussed, in particular the origin of human beings and animals on the American continent. In Book 2, the "torrid zone" (the areas inside the "equinoctial" zone) is described and discussed.² Book 3 is about the four elements and

¹ Josef de Acosta, *Historia natural y moral de las Indias*, ed. Fermín del Pino-Díaz, Colección de Acá y de Allá. Fuentes Etnográficas, 2 (Madrid: Consejo Superior de Investigaciones Científicas, 2008). There have been other modern editions of José de Acosta's *Historia*, but the one by Fermín del Pino-Díaz is a true critical edition, with several advantages for the contemporary reader in comparison to others. It takes into consideration older editions and makes linguistic corrections and actualizations; it also provides helpful footnotes with information about obsolete expressions and places and persons referred to in Acosta's book, while also preserving the author's style and intention. For information about older editions and translations, see Fermin del Pino-Díaz, "Estudio introductorio," in Josef de Acosta, *Historia natural y moral de las Indias*, lv–lvi.

² The term "torrid zone" is used in the modern translation by Frances López Morillas in José de Acosta, *Natural and Moral History of the Indies*, edited by Jane E. Mangan (Durham, NC: Duke

their characteristic phenomena on the American continent. In Book 4 we find Acosta's most direct description of the three realms of nature—metals, plants, and animals—in the *Novus Orbis*.

At this point, some words on Acosta's own view of his insights as a historian are in order. In his preliminary address to the reader (excerpt I), he claims historiographical originality in at least two aspects. While paying tribute to other work in natural and human or civil history, Acosta claims the merit of supplying the "causes and reasons" of the facts of nature he describes and, together with these, a narrative on the deeds and history of the "ancient Indians and natural inhabitants of the New World"—which, indeed, he presents in Books 5, 6, and 7 of his work, with no accent on the deeds of the Spaniards. Acosta sees the endeavor of providing "causes and reasons" for new facts of nature as a "philosophical" one. Several examples in his work suggest that it does more than merely describing phenomena—even "new and strange" phenomena—with accuracy to produce information about nature that is based upon direct sense experience. In the following, I will discuss two significant examples of the description and analysis of things and events in *Historia natural y moral de las Indias*, regarding fauna and climate.

Acosta's experience of the fauna of the American continent led him to reflect on questions that today belong to biogenesis and biogeography. The New World contained many species of animals—such as the llama, the guanaco, and the alpaca—never seen or recorded before in Europe or other parts of the world. On the origin of human and animal life, Acosta trusted the biblical narrative of creation and of the historical deluge that was survived only by the living beings preserved in the ark of patriarch Noah (excerpt III). From the end of the deluge onwards, the region of Armenia was the center of the dissemination of life over the earth. So how did species arrive in the Andes? Finding the hypothesis of the divine recreation of animal life implausible, Acosta pursues his inquiry according to the thesis that the species of the American continent descended from the animals that survived the deluge, and must therefore have migrated from Mesopotamia to America, which they reached either by crossing land or by crossing the sea. Yet any notion that species came by sea seemed improbable, especially in view of the distances between the parts of the world and the lack of technology for deliberate transportation by human groups.

Acosta concluded that arrival by land, of both indigenous people and non-human animal species migrating from Asia or Europe, was the likely hypothesis to explain the existence of such beings on the American continent (excerpt II). It implied that there was, or had been, a land bridge connecting the eastern and western hemispheres. This is a reasonable conjecture: it offers reasons for facts that, accurately described but not fully explained by background information, pointed out a path of further knowledge, demanding more confirmation and at the same time guiding further investigation. More

University Press, 2002). The 1604 English translation by Edward Grimston uses "burning zone." Reprinted as Joseph de Acosta, *The Natural & Moral History of the Indies*, ed. Clements R. Markham (London: Printed for the Hakluyt Society, 1880).

than a century before the discovery of the Bering Strait, Acosta suggested that the peoples and animal species of the Americas had migrated from Asia—in other words, from continuous land. Acosta's eagerness to connect causes and reasons with described facts was so great that—in a sort of primary reflection on principles of biogeography that would later be set out by Carl Linnaeus in his *Politia naturae* (1760)³—he also wonders why animal species migrated at all. The answer he proposes seems to be that due to their physiological needs, "natural instinct" guided animals to regions better suited than others for their preservation. This account of animal migration reveals how José de Acosta was able to accommodate natural things and events and their hypothetical explanations to both religion and science—although it is very clear that the explanatory hypothesis is offered, and must be confirmed, by experience-based scientific inquiry.

Moving now to a different subject, Acosta's reflection on the equatorial climate (excerpt IV) shows that the force of experience, and the hypotheses it provoked in pursuit of explanation, enabled a Spanish intellectual educated by the Aristotelianism and humanistic Thomism of his times to correct long-established scientific views. Greek natural philosophers thought that the equinoctial area was torrid and not habitable—after all, the sun was believed to make its course directly over the equator and approach so close that it could set the earth's surface on fire, eliminating water and pasture. The temperatures in any one zone of the globe were assumed to be essentially proportional to the distance between the sun and the latitude of that zone. But how badly, Acosta exclaims, the Greeks (such as Aristotle), Pliny, et al. had erred about the *zona tórrida*, based on that single premise!

Here the amount of new empirical evidence and the use of reasonable hypotheses to explain phenomena indicate the new natural history's clear departure from ancient theories. That divergence is symbolically expressed when Acosta laughs at Aristotle, despite having otherwise found Aristotle's empirical method for acquiring knowledge of *naturalia et physicalia* to be "the most perfect rule." For contrary to Aristotle's assumption, the equinoctial tropics that Acosta found were quite paradisiacal, inhabited by humans and all sorts of plants and animals; indeed, of the whole world, they were "the most fruitful of water and pastures."⁴

What makes life in the equatorial zone both possible and pleasant is the inversion of rainy seasons (excerpt V). At the equator, rain comes in the summer. Then, especially if there is a large amount of water on the globe's surface, the sun draws up an "abundance of vapors," which "dissolve" back into rain. Rain due to humidity and short daylight— integrated natural factors of a different kind—soften the temperatures in the burning zone.

³ See Thayne R. Ford, "Stranger in a Foreign Land: José de Acosta's Scientific Realizations in Sixteenth-Century Peru," *The Sixteenth Century Journal – The Journal of Early Modern Studies* 29, no. 1 (1998): 19–33, 29.

⁴ Joseph de Acosta, Natural & Moral History, Book I, chap. 9, p. 28.

Latitude is surely a determining factor for different climatic conditions all over the globe. But since different regions located at similar latitudes—for example, islands and territories on the equator and lands in central Africa—have quite distinct climatic phenomena and descriptions, it is important to realize that climate demands a causal explanation capable of combining multiple systems of the natural world. As an example, Acosta believes (i) that a given region's proximity to or distance from the ocean can explain changes in climate; because the waters of the ocean, being quite deep, cannot easily warm up, they help to moderate the temperature of the air and, as a consequence, to alleviate the heat. Moreover, (ii) experience has shown that the higher the elevation of land, the less heat is felt. Acosta was not at all convinced by the ancient idea that imaginary spheres of fire in the higher celestial spheres push the cold of the air down to the so-called "middle region of air," found in mountains and elevations. The most important factor for moderating equatorial climate, Acosta argues (iii), is the wind. If there is no wind in equinoctial zones, the earth's surfaces burn; but if there is wind, temperatures and life conditions change entirely. Constellations may also influence the temperate climate of the equator. This is something that Acosta does seem to consider a hypothesis—but unlike the "three apparent and certain causes" just mentioned, it is an "obscure and dark" kind of possible cause, a hidden reason for a manifest effect, which cannot count on any experience-based evidence for support.

Discussing both nature and human beings, our author combines more or less accurate description, based on information from firsthand, direct experience—which, by means of a German word, characterizes his account as Historie-with comprehensive interpretive narrative based on causes and reasons (constant structures of causes and effects in the sequence of events) and even general historical meaning, which, by means of another German word, characterizes his account as Geschichte. Analyzing his texts, we find that the following sequence of steps seems to characterize Acosta's methodology for obtaining knowledge of the natural world: (i) direct experience of (new) facts—that is, things and events or processes-of nature; (ii) attempts to accurately describe new sense experiences; (iii) conscious comparison of the experiences described with background information, especially with knowledge theoretically acquired by reading and studying authorities; (iv) reasonable and well-reflected hypotheses—with no appeal to the supernatural, but only to the physical world itself—that can explain the novelties presented by experience; (v) integration of these hypotheses into the older background knowledge, or else a break (at least provisional) with tradition and indication of new paths of knowledge that will need further confirmation by empirical evidence.

The term "experience" (*experiencia*) can be used to describe the collation of all these cognitive steps and the whole epistemic performance for acquiring knowledge of nature in general. For the emergence of modern natural sciences, that performance is central. Many of the scientific minds of modernity, such as Alexander von Humboldt (1769–

1859),⁵ recognized how much the progress of natural knowledge in Europe owed to phenomena described in sixteenth- and seventeenth-century natural histories of the Indies and to epistemic approaches like those advanced by José de Acosta.

Further Reading

Burgaleta, C. M. *José de Acosta, S.J. (1540–1600): His Life and Thought*. Chicago: Loyola Press, 1999.

Ford, Thayne R. "Stranger in a Foreign Land: José de Acosta's Scientific Realizations in Sixteenth-Century Peru." *The Sixteenth Century Journal – The Journal of Early Modern Studies* 29, no. 1 (1998): 19–33.

Martin, Craig. "Francis Bacon, José de Acosta, and Traditions of Natural Histories of Winds." *Annals of Science* 77, no. 4 (2020): 1–20.

Mignolo, Walter D. "Introduction to José de Acosta's *Historia Natural y Moral de las Indias*." In José de Acosta, *Natural and Moral History of the Indies*, edited by Jane E. Mangan, p. xvii–xxix. Durham, NC: Duke University Press, 2002.

Prieto, Andrés I. *Missionary Scientists: Jesuit Science in Spanish South America, 1570–1810.* Nashville, TN: Vanderbilt University Press, 2011.

Source Text and Translation

Excerpts from: Josef de Acosta, *Historia natural y moral de las Indias* (1590), edición crítica de Fermín del Pino-Díaz (Madrid: CSIC, 2008).

English translation from: Father Joseph de Acosta, *The Natural & Moral History of the Indies*, edited by Clements R. Markham, 2 vols. (London: Printed for the Hakluyt Society, 1880) (reprinted from the 1604 English translation by Edward Grimston).

Note: I have modernized the spelling of the 1604 English translation where relevant.

⁵ See Jaime Marroquín Arredondo, "La historia natural de José de Acosta y la *física del globo* de Alexander von Humboldt," *Nuevo Mundo Mundos Nuevos* (2019): 1–16; <u>https://doi.org/10.4000/nuevomundo.77934</u>

(I)

Del Nuevo Mundo e Indias Occidentales han escrito muchos autores diversos libros y relaciones en que dan noticia de las cosas nuevas y extrañas que en aquellas partes se ha descubierto, y de los hechos y sucesos de los españoles que las han conquistado y poblado. Mas hasta agora [ahora] no he visto autor que trate de declarar las causas y razón de tales novedades y extrañezas de naturaleza, ni que haga discurso e inquisición en esta parte; ni tampoco he topado libro cuyo argumento sea los hechos y historia de los mismos indios, antiguos y naturales habitadores del nuevo orbe.

A la verdad ambas cosas tienen dificultad no pequeña. La primera, por ser cosas de naturaleza que salen de la Filosofía antiguamente recibida y platicada: [...]. La segunda—de tratar los hechos y historia propria de los indios—requería mucho trato y muy intrínseco con los mismos indios, [...]

("Proemio al lector," p. 5)

Many have written sundry books and discourses of the New World at the West Indies, wherein they describe new and strange things discovered in those parts, with the acts and adventures of the Spaniards, which have conquered and peopled those countries. But hitherto I have not seen any other author which treats of the causes and reasons of these novelties and wonders of nature, or that has made any search thereof. Neither have I read any book which makes mention of the histories of the ancient Indians and natural inhabitants of the New World. In truth, these two things are difficult. The first being the works of Nature, which differ from the ancient and received Philosophy, [...]. The second thing it treats of is the proper history of the Indians, the which required much conference and travail among the Indians themselves: [...]

("The Author's Advertisement to the Reader," p. xxiv)

Así que, aunque el Mundo Nuevo ya no es nuevo sino viejo según hay mucho dicho y escrito dél, todavía me parece que en alguna manera se podrá tener esta Historia por nueva: por ser juntamente historia y en parte filosofía, y por ser no sólo de las obras de naturaleza sino también las de libre albedrío, [...]. Por donde me pareció darle nombre de *Historia Natural y Moral de [las] Indias*, [...]

("Proemio al lector," p. 5).

So, as although this new World be not new, but old, in respect of the much which has been written thereof; yet this history may, in some sort, be held for new, for it is partly historical and partly philosophical, as well for that they are the works of nature as of free will, [...], which has caused me to name it the *Natural and Moral History of the Indies*.

("The Author's Advertisement to the Reader," p. xxv)

(II)

Siendo así todo lo dicho, ¿por dónde abriremos camino para pasar fieras y pájaros a las Indias, de qué manera pudieron ir del un mundo al otro? Este discurso que he dicho es para mí una gran conjetura para pensar que el nuevo orbe, que llamamos Indias, no está del todo diviso y apartado del otro orbe. Y, por decir mi opinión, tengo para mí días ha que la una tierra y la otra en alguna parte se juntan y continúan; o, a lo menos, se avecinan y allegan mucho.

[...]. Porque al Polo Ártico—que llaman Norte—no está descubierta y sabida toda la longitud de la tierra, [...]

(Libro I, c. 20, pp. 36–37)

All this being true which we have spoken, what way shall we make for beasts and birds to go to the Indies? And how can I say they passed from one world to another? I conjecture then [...] that the new world, which we call Indies, is not altogether severed and disjoined from the other world; and to speak my opinion, I have long believed that the one and the other world are joined and continued one with another in some part, or at least are very near. [...]. For towards the Artic or Northern Pole all the longitude of the earth is not discovered, [...]

(Book I, chap. 20, p. 60)

(III)

Pues, si decimos que todas estas especies de animales se conservaron en el arca de Noé, síguese que como esotros animales fueran a Indias desde mundo de acá [en Europa y/o Asia], así también éstos que no se hallan en otras partes del mundo.

Y, siendo esto así, pregunto: ¿cómo no quedó su especie dellos por acá?, ¿cómo sólo se halla donde es peregrina y extranjera? Cierto es cuestión que me ha tenido perplejo mucho tiempo. [...]. Si no es que digamos que [...] por instinto natural y providencia del cielo diversos géneros se fueron a diversas regiones, y en algunas dellas se hallaron tan bien que no quisieron salir dellas; o, si salieron, non se conservaron o por tiempo vinieron a fenecer, [...]

(Libro IV, c. 36, p. 138)

If we say then that all these kinds of creatures were preserved in the Ark by Noah, it follows that those beasts, of whose kinds we find not any but at the Indies, have passed

thither from this continent, [...]. This supposed, I demand how it is possible that none of their kind should remain here [in Europe and/or Asia]? And how they are found there, being as it were travellers and strangers? Truly it is a question that has long held me in suspense. [...]. We must then say that [...], by a natural instinct and the providence of heaven, diverse kinds dispersed themselves into diverse regions, where they found themselves so well, as they would not part; or if they departed, they did not preserve themselves, but in process of time, perished wholly, [...]

(Book IV, chap. 36, pp. 277-78)

(IV)

En esta línea Equinocial hallamos tantas y tan admirables propiedades que, con gran razón, despiertan y avivan los entendimientos para inquirir sus causas, guiándonos non tanto por la doctrina de los antiguos filósofos cuanto por la verdadera razón y cierta experiencia.

(Libro II, c. 1, p. 45)

Añaden algunos otra razón para lo mismo, y es el movimiento del cielo: que dentro de los trópicos es velocísimo, y cerca de los Polos tardísimo. De onde concluyen que la región que rodea el Zodíaco tiene tres causas para abrasarse de calor: una, la vecindad del sol; otra, herirla derechos sus rayos; la tercera, participar [d]el movimiento más apresurado del cielo.

[...]. Considerando, pues, lo que está dicho Aristóteles y los otros filósofos atribuyeron a la región media [...] juntamente exceso de calor y de sequedad: [...]

(Libro II, c. 2, p. 46)

[...] la región media—que llaman Tórrida—en realidad de verdad la habitan hombres, y la hemos habitado mucho tiempo, y es su habitación muy cómoda y muy apacible. [...]. [Cerca de esto] primero diremos cuál sea la verdad, según la experiencia certísima nos la ha mostrado: y después probaremos (aunque es negocio muy arduo) a dar la propia razón, conforme a buena filosofía.

(Libro II, c. 3, p. 46)

Siendo así que en las causas naturales y físicas no se ha de pedir regla infalible y matemática sino que lo ordinario y muy común eso es lo que hace regla, conviene entender que en ese proprio estilo se ha de tomar [...] que en la Tórrida hay más humidad que en esotras regiones, y que en ella llueve cuando el sol anda más cercano, [...]

(Libro II, c. 8, p. 51)

[...], al mismo tiempo que la [i.e.: la Equinocial] pasé, sentí tal frio que algunas veces me salía al sol, por abrigar; y era en tiempo que andaba el sol sobre las cabezas derechamente, que es en el signo de Aries, por Marzo. Aquí yo confieso que me reí e hice donaire de los *Meteoros* de Aristóteles, y de su filosofía, viendo que en el lugar y en el tiempo que—conforme a sus reglas—había de arder todo y ser un fuego, yo y todos mis compañeros teníamos frío.

(Libro II, c. 9, p. 52)

In this Equinoctial line we find so many admirable qualities, that with great reason man's understanding does study and labor to search out the causes, not moved thereunto so much by the doctrine of ancient Philosophers, as by reason and certain experience.

(Book II, chap. 1, p. 73)

Some urge another reason to this effect, which is that the motion of the heaven is very sudden and light towards the Tropics, but near the Poles it is slow and heavy, whereby they conclude that the region which the Zodiac circles and contains, is set on fire with heat for three causes and reasons; the one for the nearness of the Sun, the other for that his beams reflect directly, and the third for that it does participate and feel this swift and sudden motion of the heaven.

[...]. These things therefore considered, Aristotle and other Philosophers attribute to the regions of the South [...] an excessive heat and a drought likewise.

(Book II, chap. 2, pp. 74-75)

[...] the Region of the South, which they call the burning Zone, is peopled and inhabited by men; and we ourselves have stayed long there, being very commodious, pleasant, and agreeable. [...]; we will first show the truth [of this], as assured experience does teach us, then will we prove it, although it be very difficult, and will endeavor to give a reason, following the terms of Philosophy.

(Book II, chap. 3, pp. 75-76)

If in natural and physical things we must not seek out infallible and mathematical rules, but that which is ordinary and tried by experience, which is the most perfect rule, we must then believe [...] that there is more humidity under the burning Zone than in other Regions; and that it rains [...] there,⁶ when the sun is nearest, [...]

(Book II, chap. 8, p. 88)

[...]; for when I passed [the Equinoctial], which was when the sun was there for Zenith, being entered into Aries, in the month of March, I felt so great cold, as I was forced to go into the sun to warm me; what could I else do then, but laugh at Aristotle's *Meteors* and

⁶ The 1604 translator has "rains less there," but in the context and based on the Spanish text, this is clearly a translation error.

his Philosophy, seeing that in that place and at that season, when as all should be scorched with heat according to his rules, I and all my companions were cold?

(Book II, chap. 9, p. 90)

(V)

En resolución, en las dos regiones o zonas templadas el verano se concierta con el calor y la sequedad, el invierno se concierta con el frío y humidad. Mas dentro de la Tórrida zona no se conciertan entre sí de ese modo las dichas cualidades; porque al calor siguen las lluvias, al frío (frío llamo falta de calor excesivo) sigue la serenidad.

(Libro II, c. 5, p. 48)

Pensando muchas veces con atención de qué causa proceda ser la equinocial tan húmida como he dicho, [...], no se me ha ofrecido otra, si no es que la gran fuerza que el sol tiene en ella atrae y levanta grandísima copia de vapores de todo el Océano que está allí tan extendido; y juntamente con levantar mucha copia de vapores, con grandísima presteza los deshace y vuelve en lluvias

(Libro II, c. 7, p. 50)

[...], y finalmente no siendo uno el temple de Tórrida y Equinocial sino que un mismo clima aquí es cálido, allí frío, acullá templado—y esto en un mismo tiempo—, por fuerza hemos de buscar otras causas de donde proceda esta tan gran diversidad [...].

Pensando, pues, en esto con cuidado hallo tres causas ciertas e claras, y otra cuarta oculta. Causas claras y ciertas, digo: la primera el Océano, la segunda la postura y sitio de la tierra, la tercera la propiedad y naturaleza de diversos vientos.

(Libro II, c. 11, p. 54)

To conclude, Summer is always accompanied with heat and drought, in the two temperate Zones, and Winter with cold and moistness; but under the burning Zone those qualities are not alike, for that rain accompanies heat, and drought follows the cold: [...]

(Book II, chap. 5, p. 79)

Considering [...] what should cause the Equinoctial to be so moist, [...], I find no other reason but the great force of the sun in those parts, whereby it draws unto it a great abundance of vapors from out of the Ocean, which in those parts is very great and spatious; and having drawn unto it this great abundance of vapors, does suddenly dissolve them into rain, and it is approved by many tried experiences, that the rain and great storms from heaven proceed from the violent heat of the Sun; [...]

(Book II, chap. 7, p. 84-85)

Also, that the temperature is not there [in the burning Zone] equal in all places, but under one climate, one part is hot, another cold, and the third temperate, all at one season; we are forced to seek out other reasons, whence this great diversity should proceed [...]. Discoursing therefore upon this question, I do find three apparent and certain causes, and a fourth more obscure and dark. The apparent and certain causes are: The first is the Ocean, the second the situation of the land, and the third, the nature and property of many and sundry winds.

(Book II, chap. 11, pp. 93-94)