

## Mauricio de Nassau, Scientific Maecenas in Brazil

by D.J.Struik

### I

This story\* deals with the nobleman known in Brazil as Mauricio Conde de Nassau, and in the Netherlands as Johan Maurits of Nassau-Siegen (1604-1679), a near kinsman of the princes of Orange-Nassau called Maurits (1567-1625) and Frederick Henry, his brother (1584-1647). These princes, under the modest title of *stadhouder* (lieutenant), occupied an almost royal position in the Dutch Republic.<sup>1</sup>

From 1637-1645, Mauricio was governor and captain-general of Dutch Brazil, where he built his capital in Recife, Pernambuco. He was, as a whole, an able military and administrative officer, who was able to establish some kind of order in the war torn country.<sup>2</sup> But he was more than that, he was an equally able protector and patron of arts and sciences, and in that function we shall have a look at him. Incidentally, he was also the person who, more than any other, established the Dutch African-American slave traffic on permanent and lucrative basis.

When he travelled to Brazil, Mauricio, in his early thirties, had already built up a career as a gallant cavalry officer in the service of the states General of Dutch Republic in its war of independence against Spain, serving under Maurits and Fredrick Henry, he received his appointment to Brazil from the governors of Dutch West Indian Company (W.I.C.).

This W.I.C. was founded in 1621 by a group of wealthy merchants, mainly from the provinces of Holland and Zeeland. Its governors formed the board of "The Lords Nineteen". The year 1621 marked the end of twelve-year truce with Spain, and the W.I.C. intended to profit by the renewal of the war by piracy against the Spanish, trade with Africa and American and colonization if necessary. Since Portugal had, in 1580, been conquered by Spain, Portuguese possessions were also targets.

Among the settlements arranged by the W.I.C.

was New Amsterdam on Hudson River, now New York. This began in 1625, mainly in behalf of the fur trade. The conquest of Brazil began in 1630, mainly in behalf of the sugar trade. After a frustrated attempt on Bahia, the Dutch concentrated on Pernambuco. Eventually, under Mauricio Dutch occupied a region stretching North from the São Francisco River as far as Maranhão and Ceará.

Sugar had come to Brazil around 1530, brought by the Portuguese from Madcira<sup>3</sup>, first to the Southern regions more North. By 1550 sugar had reached Bahia and Pernambuco. At the time of the Dutch occupation, there were about 160 sugar mills (*engenhos*) operating in Pernambuco. The culture was run through black slaves imported from West Africa. Mauricio was able to get the sugar production, gone down during the wars, flourishing again by a regime tolerant towards Catholics, Protestants (and Jews). Mauricio himself was a practicing Calvinist.

The new captain-general arrived in Pernambuco early in 1637 with a fleet of 12 ships and 2,700 men. Other ships followed. He was not only a good soldier, and a lover of arts and sciences, but also had qualifications as a military engineer. His interest in technical matters may well have dated from his days as a child in Siegen, since Siegen's iron works date back to the early Middle Ages, its origins wrapped up in legends.<sup>4</sup> As a man of considerable culture (though not university trained), Mauricio enjoyed the company of scholars and scientists, of architects, painters and men of letters. It was the Golden Age of the Dutch Republic, and arts and sciences and engineering projects flourished.

Mauricio's military commander, Prince Frederick Henry, set the example as a patron of architects and painters. One of the secretaries of the House of Orange-Nassau was Constantijn Huygens (1478-1679), a man of great erudition and wit, who became a life-long friend of Mauricio. At Huygens' hospitable home in The Hague, Mauricio may have met many illustrious persons, including Decartes.<sup>5</sup> At the home of the patrician-historian P.C. Hooft, Mauricio met other men (and women) of letters, among them the poet Vondel, who was to sing his deeds, and the

\* Based on lectures given in February, 1983, at universities of Campinas and São Paulo. This conference was dedicated to Prof. Ubiratan D'Ambrosio.

classicist Van Baerle (Barlaeus), who was to write them up in a book.<sup>6</sup> At the time of his departure for Brazil, he was engaged in the construction of a beautiful mansion in the Palladean style next to that of Huygens in The Hague. It is almost certain that the architect of both houses was the well-known Pieter Post (1608-1669), the builder of a number of even now famous buildings in the Dutch Renaissance style. The house he built for Mauricio is still standing (that of Huygens has disappeared), it is known as the Mauritshuis, a well-known picture gallery. Pieter's brother, Frans Post (ca 1612-1680), was a painter. He accompanied Mauricio to Brazil, where he made many pictures of men, machines and landscapes.

## II

When Mauricio received his appointment to Brazil, he must have thought not only of the Conquistadores, but also of the great historical writers who had described their deeds and the wonders of the New World they had opened; authors such as D'Oviedo, Gómara and D'Acosta. These men had thought in the classical style, in terms of Cesar and Alexander, of Livy and Pliny. The title of Pliny's book *Historia Naturalis* was used in the several of these histories; José d'Acosta's book, for instance, was called *Historia Natural y Moral de las indias* (1590), and existed in the Dutch translation of 1598. Mauricio may also have heard of the travels of Francisco Hernández, the physician of Philips II of Spain, in Mexico, searching for plants, animals and anything else of interest to science. When he returned to his king in 1578 after five years of arduous work, his collection were stored away in the Quirinal. But some of these results had been published in 1615 and 1628.<sup>7</sup>

A passion for collecting of curiosia of all kinds, including exotica from America, existed in many parts of Europe; in Amsterdam alone there existed several hundreds of such collections, all in private homes. But there was more to this passion than curiosity alone. A burning desire existed for a knowledge of useful plants, animals and minerals, and especially of herbs with curative powers. With the unending wars the recurring epidemics, the appearance of new sicknesses as syphilis, the search was on for new medicines, and especially exotic ones from America or India. There had already been successes, and there existed a literature about them. Outstanding were the books written by the Seville physician Nicolas Monardes, collected in 1574 under the title of *Historia Medicinal*. It existed in several translations; the title of the English versions: *Joyful Newes out of the New Found World* (1577) shows in its title how people felt about the information. Examples of the joyful tidings brought by Monardes, were about the sassafras, guava, sunflowers, cocaine and tobacco (good for headaches and colds). Some of these herbs had gastronomical virtues too.

Such models may have been on Mauricio's mind when he prepared for Brazil. This led him to invite a number of scholars and artists to go with him to prepare a type of D'Acosta-Monardes book, now as not a New Spain, but on Portuguese America.

Among the men thus came over with Mauricio on his fleet or on later ships we find the Calvinist minister Franciscus Platte (who later would celebrate the adventure in a long forgotten Latin poem), his physician Heinrich Cralitz, who soon died and was followed by Willen Piso,<sup>8</sup> the cosmographer Georg Markgraf (or Marcgrave), the painters Frans Post and Albert Eeckhout, both still well remembered, furthermore some architects and engineers. Among his administrators was Elias Herckmans, also a man with a sense of exploration, Willem Piso (1611-1678), Leiden born with a medical degree from Caen in France, was since 1633 a physician in Amsterdam. Georg Markgraf (1610-1644) was a German, born in Liebstadt near Meissen in Saxony, had already travelled a good deal when he matriculated at Leiden in 1636. He was trained in mathematics, astronomy and cartography, he was somewhat a protege of Willen Piso, who shared with him a love for natural history. It was the work of these two men that have made Mauricio's stay in Brazil so important in the history of American colonial science.<sup>9</sup>

Mauricio was so able to extend and established the Dutch regime, restore the sugar production, and as mentioned, bring some religious toleration. He also opposed torture, but, at the same time, he promoted the slave traffic by taking first Elmina in present Ghana (1637) and then Luanda in Angola (1641) from the Portuguese. After settling his capital on the reef called Recife, he soon found it too small for the many buildings he planned, so that a new town was laid out on the island of Antonia Vaz between the reef and the mainland. Its swampy land was drained (the Dutch had a long experience in drainage), and changed into fertile soil by large amounts of humus and manure. Here the City, called Mauritsstad (Cidade de Mauricio) was built according to a plan made by one of the architects, with government and other buildings and mansion for Mauricio called Vrijburg (Fortress of Liberty) surrounded by a park. We do not know the architect, and it is believed that it was Pieter Post, but there is evidence that he did not come to Brazil, or only for a short time; perhaps he sent the plans by mail.<sup>10</sup> The tropical climate allowed forced measures as the planting of seventy huge coconut palms carried from a far and able to bear fruit the next year.<sup>11</sup> There were other experiments: the planting of hundreds of citrus plants, apple and fig trees; vines producing grapes three or four times a year. Between hedges of (for the Dutch) exotic shrubs, three fish ponds were laid out, soon fish in abundance.

Mauricio's mansion had terraces and two towers. Since Markgraf was equipped with an astronomical observatory, we can assume that it occupied one of these towers. This tower, or the other one, was also a light house. We know of some of Markgraf's observations, such as the one of December 10/20, 1638, of a lunar and of November, 13, 1640, of a solar eclipse; he must also have used this place for his cartographic work.<sup>12</sup> Mauricio had still another, more modest, house built for himself called Schoonzicht (Boa Vista) not far from his Vrijburg, and had a bridge built to

connect with the main land. He also projected a bridge from the island to the reef, but when the architect had built it on stone pillars that sank away, Mauricio lent a hand himself and had a woden bridge constructed.

Mauricio sent his men out into the interior to report on what they found, to collect, describe, draw and paint. In the true Pliny spirit, everything was of interest, geography, tools and sugar mills, Indians, Landscape, plants and animals. His principal guide in this was Piso. This young physician must always have been very busy; he was chief physician to the governor, and headed the medical service of the colony and thus was being in charge of the sick and wounded, of whom there must have been plenty – war, tavern brawls, scurvy, prostitution – in the tropical climate under rather primitive conditions. Still he found time to travel, collect herbs, study the climate, talk to the Indians on popular lore, especially lore on diseases and their cures, helped in this by Markgraf and others. Markgraf, for himself, was equally busy, working on maps, observing the stars, making notes of plants and sketching them, for which he must have travelled a good deal and like Piso, talking with the Indians about their medicines. His maps are carefully made, his figures probably drawn (as was the custom) from herbarium specimens, quite clear. The painters, too, were busy, working in oil and water color, making small sketches as well as big tableaus of landscape, water and sugar mills,<sup>13</sup> Indians and settlers. Thus Mauricio assembled in his mansion a collection of considerable size: Indians arms, tools and textiles, herbaria, shells, stuffed animals, sketches and paintings, notes by Piso, Markgraf and others, maps, ethnological observations. His counselor Herckmans was sent in 1641 on an expedition inland into the wild tropical forest to discover gold mines – the old chimera of El Dorado –, but finding little of value, spent a good deal of time observations on land and people, notary on the Tapuya Indians. In 1643, an expedition of 5 ships was even sent to Chile through the dangerous Strait of LeMaire, Herckmans also participating. It adventured as far as Valdivia, but accomplished little. It brought Herckmans before a court martial, but he was acquitted. He died soon afterward. Markgraf also died around this time of a fever caught in Angola where he was making observations. He only reached 34 years of age.

All this was exciting and useful, but it cost money, and Mauricio was never one eager to economize, very much to the displeasure of the Lords Nineteen, always eager to save a penny. There were conflicts which eventually led to Mauricio's request to be relieved from his office. His request was granted and he sailed back in May 1644 with a richly equipped fleet of 13 ships and 1,400 men. By this time Portugal had regained its independence and with it the eagerness also to regain its lost colony. The Dutch, without the steering hand of Mauricio, lost more and more ground. By 1651, the Portuguese were master of the land. In 1661, at a conference at The Hague, the W.I.C. and States General yielded to Portugal all rights to Brazil and Angola for an indemnification of eight million guilders and the guarantee of free

trade.<sup>14</sup>

"*Verzuimd Brasil*" (The Missed Brazil), an 18<sup>th</sup> century Dutch poet moaned.

The plans of Mauricio to found a university in Brazil at the model of Leiden, remained unfulfilled.<sup>15</sup>

#### IV

Back in the Netherlands, Mauricio resumed his military career in the service of the States General. His beautiful house in The Hague had been finished in his absence and here he settled with his collections next to his friend Huygens. In 1647 the Elector of Brandenburg, Frederick William (called the Greater Elector), married to a daughter of Frederick Henry and thus a kinsman of Mauricio, appointed him *stadhouder* of his possessions, Mark, Cleves and Mindem, all in North East Germany, a position Mauricio held until his death in 1679 with interruptions due to his military duties as an officer in the armies of States General. He would not have been Mauricio, the princely Maecenas, if he had not built a new stately mansion in his function of *stadhouder*, this time near Cleves and not far from the Dutch Republic.<sup>16</sup> On this mansion, Bergendal (Mountain and Valley), and its park he spent time and money and here he brought some of his collections. Here he also died, in 1679. He was buried near Cleves, but the remains were later transferred to Siegen, here you can find his tomb in the *Fürstengruft* (Prince's Vault), prepared by himself in 1670. The tomb is made of cast iron, supposedly to honor Siegen's age old iron industry. Both the tombstone at Bergendal and the tomb at Siegen carry Mauricio's motto *Qua patet orbis* – as far as the world stretches.

He has not been forgotten. In 1979-80, at the occasion of the 300<sup>th</sup> anniversary of his death, three exhibitions have been held, one in Siegen, one in Cleves, and one in the Maurithius, the present museum, in The Hague.

#### V

What happened to the collections? We may suppose that many of the plants, stuffed animals, etc., simply have disappeared from old age or neglect, as so many *curiosa* assembled in that period. Mauricio may have given some away, as he did with many of his pictures. In 1652, the Great Elector received a precious part of them. The King of Denmark also was a recipient. And in his later days Mauricio offered some paintings to Louis XIV. The work of Post, Eeckhout, Markgraf and others has thus been scattered over many places, and has, in part at least, been preserved. Some of the Brazilian paintings have served as models for gobelins.

The mains scientific document coming out of Mauricio's stay in Brazil, was the magnificent folio entitled *Historia Naturalis Brasiliae*, published by Elsevier in Amsterdam in 1648, consisting of 4 books by Piso (128 pp) and 8 books by Marcgrave (293 pp) plus index. The book was edited by Mauricio's friend, DeLaet, with the aid of Piso, who had returned to his Amsterdam medical practice; Markgraf was no longer

alive, so that Delaet had to compose and edit the Marcgrave part of the book, with great zeal but not always great expertise. A second edition appeared in 1658 under a new title, *De Indiae utriusque re naturali et medica*, in 14 books, edited by Piso, who worked Markgraf material into his own text (while giving credit) and added work by Dutch physician Jakob De Bondt (Bontius, 1592-1631) on tropical diseases in the East Indies, hence the title: "about the Indies on both sides". The book of 1648 was republished in São Paulo in 1942.<sup>17</sup>

The four books by Piso in the *Historia Naturalis*, entitled *De medicina Brasiliensi* deal with the climate, the imported and endemic diseases, the poisons of plants and animals with the antidotes, and the curative virtues of native herbs, describing 104 plants with simple pictures. The following eight books are by Markgraf, or, as we know, brought together by Piso and DeLaet from notes left by the late cosmographer, and are entitled *Historiae Rerum Naturalium Brasiliae*. They report on plants, mammals, birds, fishes, snails and insects, while the eighth book and an appendix are dedicated to native people as the Tapúyas. Piso added a tribute to Markgraf, so "that the ashes of my dead receive due honor". The arrangement of the different species is rather arbitrary, since we are in a period before the attempts at scientific classification of Tournefort, Ray and Linnaeus. Added is information on Peru and Chile, where Acosta is cited.<sup>18</sup>

The merits of Piso's account have been pointed out by Dr. Van Andel in the *Opuscula*, and we follow him here. Piso, he writes, appreciate the traditional knowledge of the native people, as for example, that the Ipecacuanha root, tested and confirmed by his own experience. "Also for the treatment of venereal disease of which he distinguishes two kinds: French pox and bubas<sup>19</sup>, probably framboesia tropica. He prefers for the second, which he considers endemic, the method of the native experts, who, as a rule, reach better results than the surgeons." He also praises the curative powers of tobacco, in the use of antidote for arrow poison and animal bites. Furthermore: "he gives, for instance, a lively description of the symptoms of tetanus - equally correct are his observations on the causes of hemeralopia or night blindness<sup>20</sup>, chiefly occurring among poor people and common soldiers"... and "Finally we are struck by his clear insight into the cause of the tremendous infant mortality among the colonists, if compare with that among the native population". He ascribes this to the ignorance of the mothers who swaddle their babies as is customary in the Netherlands, thus disregarding the rules of tropical hygiene. In general, the Dutch should adapt their whole way of living to the Brazilian climate.

As an example of the style of the book we translate part of Piso's section on Ipecacuanha, the herb whose roots were used by Brazilian Indians as a medicine against several diseases. It has remained part of our present pharmacopoeia<sup>21</sup>.

"*Ipecacuanha*. Lastly I must praise the salutary roots which together with the faculty to clean the body by vomiting and purging, also posses the power of a valueble antidote. I do not believe that it would

be easy to find a more outstanding remedy in these parts of the world for most of the illness arising from long continued obstruction, especially for the cure of abdominal flux.

There exist two kinds, neither of which, for so far as I know, has been described by anybody, nor have their excellent properties been brought to light...<sup>22</sup>

Piso then describes the low lying kind "like fleebane" (pregelio), probably now indicated by *Pulicaria*, the European flea bane, a herb with many hairy leaves and occurring in meadows, and another kind, half a cubit (about 9 inches) long, with only from three to five leaves and found exclusively in dense woods. Purgative, emetic, antidote: "Hence there is something the Brazilians have known for a long time and hold in great respect; they were the first to reveal it to us."<sup>23</sup>

Indeed, Piso made it clear that "though in such barbaric surroundings many customs are found that are wrong and rough and unworthy of the art of Hippocrates, yet there are a few that are very effective and deserve a place in classical medicine, so that one finds the most experienced physicians, that establish themselves here, accepting them".

Another folio written under Mauricio's auspices was that by his friend: Barlaeus' *Rerum per Octennium in Brasilia... Historia*, published in 1647 in Amsterdam.<sup>24</sup> It is as beautiful a tome as the *Historia Naturalis* and deals mainly with the political and military aspects of the Dutch regime. But it has full page documentary illustrations by artists around Mauricio, among them Markgraf. The carefully drawn maps of Mauritsstad, the only one that gives an idea of how the city and how Vrijburg looked. Barlaeus included the story of Herckman's voyages and a description of the sugar industry.

The *Historia Naturalis* remained for a century and a half the only source of knowledge on Brazilian natural history in Europe. The great 18<sup>th</sup> century naturalists, Ray, Buffon, Linnaeus, used it. The French botanist Charles Plumier (1646-1704), an explorer of the Caribbean and a section of the southern coast of Brazil, baptized two plants *Pisonia* and *Marcgravia*. Study of Brazil's nature by European scientists and explorers started again in the later years of the 18<sup>th</sup> and the beginning of the 19<sup>th</sup> century, in the same period that Spain allowed it in its empire. The most famous of these explorers is, of course, Alexander Von Humboldt; traveling between 1799 and 1804. Of the Brazilian explorers we only mention Felix de Azara, a Spaniard active in and near Paraguay (between 1784 and 1796), the Frenchman Auguste Saint-Hilarie (between 1816-22) and the Germans Friedrich W. Sieber (between 1800 and 1812). Prince Maximilian von Wied travelled in Brasil during 1815-7, accompanied by Friedrich Sellow, and followed by the equally well known travels of F.P. Martius (between 1817-20). Some of these men concentrated on birds, others on plants and fishes.

Many of the German animal finds landed in the Zoological Museum of Berlin, founded in 1810 at the initiative of Von Humboldt. Here they drew the attention of its director Heinrich (M.H.C.) Lichtenstein (1780-1857), appointed in 1811 as professors of zool-

ogy at the equally new University of Berlin after years of exploration in South Africa. The Brazilian collection fascinated him and led him to study of the *Historia Naturalis*.

At this same period the oil and water colors that Mauricio had given to the Great Elector were discovered in the Royal Berlin Library, the oils in four large, the water colors in two smaller volumes. Lichtenstein concluded that they were mostly from Markgraf's hand and corresponded to Pictures in the *Historia Naturalis*. It now turned out, however, that DeLaet had often erred and that text and pictures in the book did not correspond. Lichtenstein next tried to set the record right in a series of articles published between 1815 and 1826 also available in Portuguese.<sup>25</sup>

When we compare Markgraf's original text with Lichtenstein's remarks, then we can appreciate the enormous amount of work, also critical work, that has gone in this descriptions of animals – mammals as monkeys, redents and cats, birds, reptiles and especially fishes (about 40 pages). We understand the loss 17<sup>th</sup> century science has suffered when this young energetic and industrious scientist died in his early thirties. And his notes and pictures remained in part unpublished or published with errors, "How many errors, how many guesses, how much babble and useless fights would have been saved if Markgraf himself would have been able to communicate and order his material", wrote Lichtenstein.

For further studies on Markgraf's work, we refer to the article by Van der Pas.

## NOTES

1. Mauricio was the grandson of John "the Ancient" (1535-1606), count of Nassau, brother of William "the Silent" (1533-1584), the leader of the revolt of the Netherlands against Spain. William's sons were the *stadhouders* Maurits and Frederick Henry. The present royal house of the Netherlands is in direct descentance from John the Ancient.
2. For details, see the books by *Barlaeus* (which exist in Portuguese translation), *Wätjen* (in German) and *Gonçalves de Mello*, this one with ample bibliography, also of Dutch and sources.
3. The Moors had brought the sugar to the Iberian Peninsula.
4. The smith-magician Wieland, after whom a song is called that may date back to the sixth century, learned his trade from dwarves living around Siegen. Even at present Siegen has iron industry.
5. One of Constantijn's son became famous as an astronomer and mathematician. This was Christiaan Huygens (1625-1695).
6. Joost Van den Vondel (1587-1679) was (and is) the most famous poet of the Dutch Golden Age. Caspar Barlaeus (1584-1648) was a professor of logic in Amsterdam. Another friend was the Amsterdam merchant, Johannes de Licet one of the Lords Nineteen and historian of the W.I.C.
7. A full edition of Hernandez' notes was published in Madrid (1790); a new edition has been published by the National University of Mexico as *Obras completas* (1959-66).
8. Von Andel in the *Opuscula* p. XIV-XV, writes that Willem Piso replaced the physician Wilhelm Van Milaenen, deceased shortly after arrival. Cralitz is mentioned by Wätjen and others.
9. On Piso and Markgraf, see the Dictionary of Scientific Biography articles by P. van der Pas and F. Markgraf (see Bibliography). Markgraf (and Cralitz) belonged to these well educated or highly skilled Germans who during the 17<sup>th</sup> and 18<sup>th</sup> centuries were unable to find satisfactory employment under the backward German regimes of more than a hundred larger and smaller states, many of them suffering of war devastation. They found employment in England, the Dutch Republic (especially in its colonies), Russia (with and after Peter the Great) and elsewhere. Another such German in Brazil was the painter Zacharias Wagener, who came as a soldier.
10. The appearance of Vrijburg (on a picture in Barlaeus) reminds us of the Palladean style of the Mauritshuis in The Hague, and thus of Pieter Post. See *Bowman*, footnote 30, p. 208, citing G.A.C. Blok, *Pieter Post* (1937).
11. The Dutch had a long experience in horticulture. We remember that at the time of Mauricio's stay in Brazil there was a wild speculation in tulips (1637), then a fairly new exotic flower in the Netherlands.
12. According to *Bowman*, footnote 75, pp. 209-210, there exists at the municipal archives of Leiden a manuscript scribed by Markgraf, containing astronomical and astrological computations, (including the lunar eclipse of 1638), drawings of instruments as well as a map of an astronomical observatory. This is of some interest since Jacobus Golius, professor of astronomy at Leiden when Markgraf was there, had an astronomical observatory added to the university in 1633 (the first in the Republic). Markgraf thus came straight from Golius to Mauricio with his ideas. The eclipse of 1640 is mentioned by Markgraf, see Bibliography.
13. "The iconography of sugar in Brazil begins with the Dutch" writes Gama, p. 119. His book has illustrations of engenhos by Frans Post on p. 124, 150, 249.
14. On this period, see *Wätjen*, pp. 132-178.

15. There existed already universities in Mexico and Lima, that is, in New Spain. At the time of Mauricio's stay in Brazil, a university was founded in New England (Harvard) and a Jesuit college in Quebec, New France. The Spanish and French schools were Catholic, Harvard was Calvinist, as Mauricio's university would have been.
  16. As Grand Master of Order of the Hospitalers of St. John he also restored their castle, Sonnenburg in East Prussia (1661-67).
  17. A Dutch version appeared in Amsterdam (1694) and an edition of Piso's first two books of the *Historia Naturalis* was published in Vienna (817).
  18. Also P. Alonso D'Ovaglia *Historia Relativa Regni Chili*.
  19. Piso, according to *van der Pas*, was the first to distinguish *bubas* translated as from venereal disease.
  20. Not night blindness, as *Van Andel* writes, but day blindness, writes *van der Pas*.
  21. Ipecacuanha: *Cephaelia ipecacuanha*, family *Rubiaceae*. The active ingredient is emetine, an alkaloid, still obtained from the roots.
  22. Ipecacuanha. Tandem ad decantatas has salutiferas radices ordo nos deducit, quae praeter facultatem purgatricem per superiora et inferiora, omni veneno eximie advesantur. Nec credo, praestantius remedium adversus plurimos morbos ex longa obstructione ortos, imprimis in ventris fluxibus medendis, in hisce terris reperiri facile.  
  
Duae existunt species, neutra a nemine, quod sciam, descripta, earumve qualitates, eximiae in lucem protactae.  
  
Translation is after *Van Andel* in *Opuscula*. The herb had already been introduced and described in Europe, but Piso was the first to give precise directions to its used (*ibid* p. XXIX).
  23. Quamobrem religiose a Brasiliensibus reservatur, qui illius virtutes primi nobis revelarunt.
  24. A second edition appeared in Cleves (1660), a third one in 1698. There exist translations in German (1659), in Portuguese and in Dutch (a very beautiful folio edition of 1923).
  25. Lichtenstein also made use of a copy of Piso owned by Mauricio himself, with notes.
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